

# Beyond X™

# Susol ACB

Air Circuit Breaker up to 800 / 900 / 1000 / 1150V







vector Energy

LS ELECTRIC

# Susol
# AIR CIRCUIT BREAKER up to 800/900/1000/1150Vac

Latest “AV”, “AW” series of LS ELECTRIC is suitable for PV, ESS, Wind Power Facilities in harsh environment conditions(high altitude, etc).
It also provides smart connectivity and delivers electrical status with Smart Trip Unit (Smart LV Application).






## Features

- E-Frame: (~ 4000AF)
- D-Frame: (~ 2000AF)
- C-Frame: (~ 1600AF)
- 1150Vac, 1000Vac, 900Vac, 800Vac
- PV market, high altitude area, wind power
- D/E Frame with new Trip Relay (STU)
- Instrumentation precision
  - Current/Voltage: 0.5%
  - Power: Class 1.0

| Ampere Frame | | | AV-20D□ | AV-40E□ |
|---|---|---|---|---|
| | | | ~ 2000AF | ~ 4000AF |
| Rated current (In) at 40°C (A) | | (A) | 200 / 400 / 630 / 800 / 1000 / 1250 / 1600 / 2000 | 400 / 630 / 800 / 1000 / 1250 / 1600 / 2000 / 2500 / 3200 / 4000 |
| Rated ultimate breaking capacity (Icu) | 1150V | (kA) | 30 | 50 |
| | 1000V | (kA) | 42 | 65 |
| | 900V | (kA) | 50 | 75 |
| | 800V | (kA) | 50 | 75 |

* AV series are applicable for IT system

| Ampere Frame | | | AW-16C□ | AW-20D□ | AW-40E□ |
|---|---|---|---|---|---|
| | | | ~ 1600AF | ~ 2000AF | ~ 4000AF |
| Rated current (In) at 40°C (A) | | (A) | 400 / 630 / 800 / 1000 / 1250 / 1600 | 200 / 400 / 630 / 800 / 1000 / 1250 / 1600 / 2000 | 400 / 630 / 800 / 1000 / 1250 / 1600 / 2000 / 2500 / 3200 / 4000 |
| Rated ultimate breaking capacity (Icu) | 1150V | (kA) | - | - | - |
| | 1000V | (kA) | - | - | - |
| | 900V | (kA) | - | 42 | 50 |
| | 800V | (kA) | 40 | 50 | 65 |

* AW-08/16C are applicable for IT system

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## ACB ordering

**AV** — **10** **D** **3** — **10** **A**

| Type |
|---|
| Circuit Breakers |
| AV |
| AW |

| Ampere Frame | |
|---|---|
| 06 | 630AF |
| 08 | 800AF |
| 10 | 1000AF |
| 13 | 1250AF |
| 16 | 1600AF |
| 20 | 2000AF |

| Frame sizes & phase array | |
|---|---|
| D | 630~2000AF 3P/4P Standard RST(N) |
| W | 630~2000AF 4P Reverse phase type (N)RST |

| No. of poles | |
|---|---|
| 3 | 3-pole type (D) |
| 4 | 4-pole type (D, W) |

| Rated current (CT SPEC.) | |
|---|---|
| 00 | Without Trip relay & CT |
| 02 | 200A |
| 04 | 400A |
| 06 | 630A |
| 08 | 800A |
| 10 | 1000A |
| 13 | 1250A |
| 16 | 1600A |
| 20 | 2000A |

| Connections | |
|---|---|
| | Draw-out type |
| J | Manual connection |
| A | Automatic connection |
| | Fixed type |
| H | Horizontal type |
| V | Vertical type |
| M | Mixed type Horizontal Vertical |
| N | Mixed type Vertical Horizontal |
| P | Front type |

* 2000AF only offers with vertical type mounting terminals(Busbar).

| | |
|---|---|
| 06 | 630AF |
| 08 | 800AF |
| 10 | 1000AF |
| 13 | 1250AF |
| 16 | 1600AF |
| 20 | 2000AF |
| 25 | 2500AF |
| 32 | 3200AF |
| 40 | 4000AF |

| | |
|---|---|
| E | 630~4000AF 3P/4P Standard RST(N) |
| X | 630~4000AF 4P Reverse phase type (N)RST |

| | |
|---|---|
| 3 | 3-pole type (E) |
| 4 | 4-pole type (E, X) |

| | | | |
|---|---|---|---|
| 00 | Without Trip relay & CT | 13 | 1250A |
| | | 16 | 1600A |
| 04 | 400A | 20 | 2000A |
| 06 | 630A | 25 | 2500A |
| 08 | 800A | 32 | 3200A |
| 10 | 1000A | 40 | 4000A |

*4000AF only offers with vertical type mounting terminals(Busbar).

* Please, refer to cradle installation instruction for draw-in/out types.
Note 1) 20D, 40E types are equipped with vertical-only terminals.
2) Front connection terminals should be purchased separately (see Page 6.)

[G frame ]

| | |
|---|---|
| 40 | 4000AF |
| 50 | 5000AF |
| 63 | 6300AF |

| | |
|---|---|
| G | 4000/5000/6300AF 3P/4P Standard RST(N) |
| Z | 4000/5000/6300AF 4P Reverse phase type (N)RST |

| | |
|---|---|
| 3 | 3P(G) |
| 4 | 4P(G, Z) |

| | |
|---|---|
| 00 | Trip Relay & CT N/A |
| 40 | 4000A |
| 50 | 5000A |
| 63 | 6300A |

* Please, refer to cradle installation instruction for draw-in/out types. (p.144~147)

Note) 1. AH-20D, AH-40E types are equipped with vertical-only terminals. In case of G/Z Frame size, front type & mixed type connection is not available.
2. In case of DH type Switch Disconnector, the rated current (CT Spec.) will be applied 00 (without Trip Relay & CT)
3. For the busbar installation method of draw-out type, please refer to the connection type of cradle which describes in page 19
4. Front connection terminals should be purchased separately




**D-Frame** ~ 2000AF
50kA @900Vac
30kA @1150Vac




**E-Frame** ~ 4000AF
75kA @900Vac
50kA @1150Vac

| M1 | D1 | D1 | AX | SS1 | U1 | AL |
|---|---|---|---|---|---|---|

| Motor rated voltage | |
|---|---|
| MA | No motor |
| M1 | AC/DC 100V~130V |
| M2 | AC/DC 200V~250V |
| M3 | DC 125V |
| M4 | DC 24V~30V |
| M5 | DC 48V~60V |
| M6 | AC 380V~415V |
| M7 | AC 440V~480V |
| M8 | AC 48V |

| Closing coil rated voltage | |
|---|---|
| D0 | No input coil |
| D1 | AC/DC 100V~130V |
| D2 | AC/DC 200V~250V |
| D3 | DC 125V |
| D4 | DC 24V~30V |
| D5 | DC 48V~60V |
| D6 | AC 380V~480V |
| D7 | AC 48V |

| Shunt coil rated voltage | |
|---|---|
| D0 | No trip coil |
| D1 | AC/DC 100V~130V |
| D2 | AC/DC 200V~250V |
| D3 | DC 125V |
| D4 | DC 24V~30V |
| D5 | DC 48V~60V |
| D6 | AC 380V~480V |
| D7 | AC 48V |

| Auxiliary contact and charge method | |
|---|---|
| AX | Standard type OFF – Charge 3a3b |
| AC | Standard type ON – Charge 3a3b |
| BX | Standard type OFF – Charge 5a5b |
| BC | Standard type ON – Charge 5a5b |
| HX | High capacity OFF – Charge 5a5b |
| HC | High capacity ON – Charge 5a5b |
| CC | Standard type ON – Charge 6a6b |
| JC | High capacity ON – Charge 6a6b |
| GX | High capacity OFF – Charge 3a3b |
| GC | High capacity ON – Charge 3a3b |
| TX | TCS OFF – Charge 4a4b |
| TC | TCS ON – Charge 5a5b |

Note) TCS (Trip Circuit Supervision): The terminal supervising trip circuit and monitoring disconnection or disable of trip.

| STU |
|---|
| Refer to page 7 |

| UVT | |
|---|---|
| U0 | No UVT |
| U1 | AC/DC 100V~130V |
| U2 | AC/DC 200V~250V |
| U3 | DC 125V |
| U4 | DC 24V~30V |
| U5 | DC 48V~60V |
| U6 | AC 380V~480V |
| U7 | AC 48V |

* UVT Delay is composed from AC/DC 48V

Note 1) Reduplicate of AL is not available.
2) Reduplicate of Key lick is not available.
3) Reduplicate of Double shunt coil is not available. It can not be used simultaneously with UVT.
4) RCS and CS2 cannot be used simultaneously.
5) TM and auxiliary contacts TX, TC, CC, JC cannot be used simultaneously.
6) MI, DI and MOC cannot be used simultaneously with SBC.

| Option | | |
|---|---|---|
| Option | Type name | Option Description |
| AL | AL1 + MRB | |
| A1 | AL1 + MRB + RES(AC 110~130V) | |
| A2 | AL1 + AL2 + MRB | |
| A3 | AL1 + MRB + RES(DC 110~125V) | |
| A4 | AL1 + MRB + RES(AC 200~250V) | |
| A5 | AL1 + MRB + AUTO RESET | |
| A6 | AL1 + AL2 + MRB + AUTO RESET | |
| A7 | AL1 + MRB + RES(DC 110~125V) + AUTO RESET | |
| A8 | AL1 + MRB + RES(AC 200~250V) + AUTO RESET | |
| A9 | AL1 + MRB + RES(AC 110~130V) + AUTO RESET | |
| Y2 | AL1 + AL2 + MRB(2b contact) | |
| Y6 | AL1 + AL2 + MRB + AUTO RESET(2b contact) | |
| Z2 | AL1 + AL2 + MRB(1a1b contact) | |
| Z6 | AL1 + AL2 + MRB + AUTO RESET(1a1b contact) | |
| C | C | Counter |
| S | CS2 | Charge switch communication |
| B | B | On/Off Button lock |
| B1 | B1 | On/Off Button lock S type |
| B2 | B2 | On/Off Button lock |
| M | MI | Mechanical interlock |
| D | DI | Door Interlock |
| | | Door Interlock (Catcher type) |
| | MOC | Mechanism operated cell switch |
| K | K1 | Key Lock |
| K2 | K2 | Key Interlock Set |
| K3 | K3 | Key Lock Double |
| R | RCS | Ready to Close switch |
| T | TM | Temperature Monitoring |
| H1 | SHT2 | AC/DC 100~130V |
| H2 | SHT2 | AC/DC 200~250V |
| H3 | SHT2 | DC 125V |
| H4 | SHT2 | DC 24~30V |
| H5 | SHT2 | DC 48~60V |
| H6 | SHT2 | AC 380~480V |
| H7 | SHT2 | AC 48V |

Note 1) Note 2) Note 3)

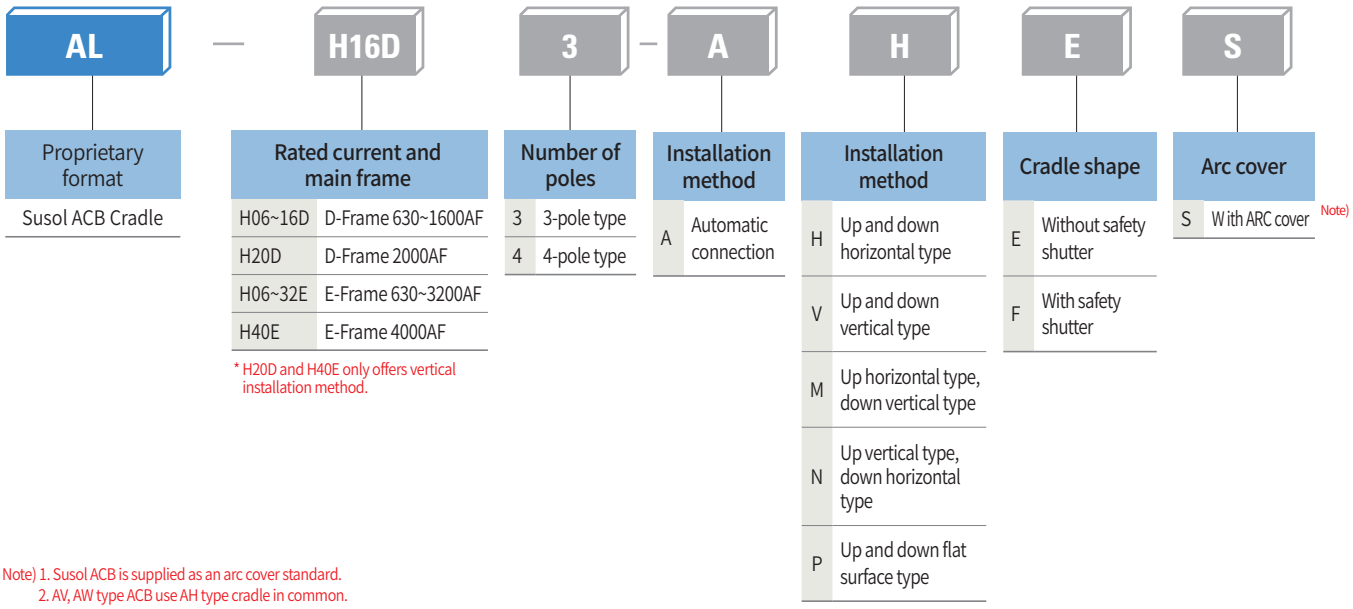


W = 785mm

## G-Frame

~ 6300AF
85kA @900Vac
65kA @1150Vac

## ACB Cradle ordering




Note) 1. Susol ACB is supplied as an arc cover standard.
2. AV, AW type ACB use AH type cradle in common.
3. Terminals are purchased separately for flat type products.

## Front connection terminal types

| Connection type | Code | Description | Breaker |
|---|---|---|---|
| Front connection/Standard | 62363461507 | SUB ASS'Y, ADAPTER KIT ASS'Y_FRONT, AN/AS/AH-D3 | D3-Frame |
| Front connection/Standard | 62363462510 | SUB ASS'Y, ADAPTER KIT ASS'Y_FRONT, AN/AS/AH-D4 | D4-Frame |
| Front connection/Standard | 62363463507 | SUB ASS'Y, ADAPTER KIT ASS'Y_FRONT, AN/AS/AH-E3 | E3-Frame |
| Front connection/Standard | 62363464512 | SUB ASS'Y, ADAPTER KIT ASS'Y_FRONT, AN/AS/AH-E4 | E4-Frame |
| Front connection/Mixed | 62363461508 | SUB ASS'Y, ADAPTER KIT ASS'Y_F&V/H, AN/AS/AH-D3 | D3-Frame |
| Front connection/Mixed | 62363462511 | SUB ASS'Y, ADAPTER KIT ASS'Y_F&V/H, AN/AS/AH-D4 | D4-Frame |
| Front connection/Mixed | 62363463506 | SUB ASS'Y, ADAPTER KIT ASS'Y_F&V/H, AN/AS/AH-E3 | E3-Frame |
| Front connection/Mixed | 62363464511 | SUB ASS'Y, ADAPTER KIT ASS'Y_F&V/H, AN/AS/AH-E4 | E4-Frame |

# Trip Relay ordering

N type



A type



P type



S type



| N | H | 0 |
|---|---|---|
| Trip Relay Type | Communication & protection | Control voltage & frequency |

**N**

| | |
|---|---|
| 000 | Trip Relay N/A |
| N | Normal |

**H**

| | |
|---|---|
| H | L, S, I, G |

* L/S/I/G configuration as standard
 - with LED indicators
 - without output contacts
* Ground fault system by vector sum

**0**

| | Frequency used | Control power voltage | Comm. |
|---|---|---|---|
| 0 | 60Hz | Self-Power Note1) | NFC |
| 5 | 50Hz | Self-Power Note1) | NFC |

**A**

| | |
|---|---|
| A | Ammeter |

**H**

| | |
|---|---|
| H | L, S, I, G |
| D | L, S, I, G + Comm. |
| J | L, S, I, Gext + LS ZCT + Comm. |
| Y | L, S, I, Gext + Ground wire CT + Comm. |
| O ** | L, S, I, G + Neutral CT + Comm. |

* L,S,I: Long time delay trip, Short time delay trip, Instantaneous trip
* G: Ground fault (Residual earth fault protection)
* Ground fault system by vector sum
* J: External CT - Use ZCT provided by LS ELECTRIC (up to 1600A)
* Y: External CT - Use ZCT chosen by the customer (2000A and above)
* Communication and output contacts DO NOT work under self-power condition
* Gext + Ground wire CT: Source return Type
* Customers must purchase their own Ground wire CT (Secondary output: 5A, accuracy 1%)

** AO provide the function to detect and protect the ground fault current by applying the NCT (Neutral CT) in the neutral wire when 3pole circuit breaker is used in 3-phase 4-wire system.
* Customers must purchase their own Neutral CT (Primary output: same as ACB's Rated Current / Secondary output: 5A, accuracy 1%)

**0**

| | Frequency used | Control power voltage | Comm. |
|---|---|---|---|
| 0 | 60Hz | Self-Power | N/A |
| 1 | 60Hz | AC/DC 100V~250V | N/A |
| 2 | 60Hz | AC/DC 24V~48V | N/A |
| 5 | 50Hz | Self-Power | N/A |
| 6 | 50Hz | AC/DC 100V~250V | N/A |
| 7 | 50Hz | AC/DC 24V~48V | N/A |

* The Self-Power function is to receive power from the main circuit inside the circuit breaker without external power to the STU Communication, ZSI, Remote Reset, DO functions are not available and EVENT is not logged when using Self - Power only.

**P**

Trip unit type

| | |
|---|---|
| P | Power meter |

**S**

Relay function / Communtation (MODBUS)

| | |
|---|---|
| S | L,S,I,G + PTA |
| J | L, S, I, Gext + LS ZCT |
| Y | L,S,I,Gext + Ground wire CT |
| O | L,S,I,G + Neutral CT |

**1**

| | Frequency | Control power voltage | Communication |
|---|---|---|---|
| 1 | 60Hz | AC/DC 100V~250V | N/A |
| 2 | 60Hz | AC/DC 24V~48V | N/A |
| 3 | 60Hz | AC/DC 100V~250V | Bluetooth |
| 4 | 60Hz | AC/DC 24V~48V | Bluetooth |
| 6 | 50Hz | AC/DC 100V~250V | N/A |
| 7 | 50Hz | AC/DC 24V~48V | N/A |
| 8 | 50Hz | AC/DC 100V~250V | Bluetooth |
| 9 | 50Hz | AC/DC 24V~48V | Bluetooth |

**S**

Trip unit type

| | |
|---|---|
| S | Supreme meter |

**S**

Relay function / Communtation fuction(Default)

| | |
|---|---|
| S | L,S,I,G + PTA |
| J | L, S, I, Gext + LS ZCT |
| Y | L,S,I,Gext + Ground wire CT |
| O | L,S,I,G + Neutral CT |

**1**

| | Frequency | Control power voltage | Communication |
|---|---|---|---|
| 1 | 60Hz | AC/DC 100V~250V | Bluetooth, NFC |
| 2 | 60Hz | AC/DC 24V~48V | Bluetooth, NFC |
| 6 | 50Hz | AC/DC 100V~250V | Bluetooth, NFC |
| 7 | 50Hz | AC/DC 24V~48V | Bluetooth, NFC |

* Self-power is basic function (Automatic power supply to the Trip Unit without additional control power)
* L,S,I: Long time delay trip, Short time delay trip, Instantaneous trip
* G: Ground fault (Residual earth fault protection)
* Gext + Ground wire CT: Source return Type * PTA: Pre-trip alarm Function
* Customers must purchase their own Ground wire CT (Secondary output: 5A, accuracy 1%)
* Customers must purchase their own Neutral CT (Primary output: same as ACB's Rated Current / Secondary output: 5A, accuracy 1%)
* The STU acceptable voltage range is 100 to 250V.
* If you want an external VDM, please insert '(-V)' at the end of the full ordering.

| Item | Description | Features | Remark |
|---|---|---|---|
| 72313460708 | TOTAL ASS'Y,VDM(Shield Cable), EXTERNAL, STU | Accessory | Separate purchasing |

* If you want to apply external VDM separately, please order the code above.

## Compact ACB ordering

**AW** — **16** **C** **3** — **10** **A**

| Air circuit breaker |
|---|
| AW |

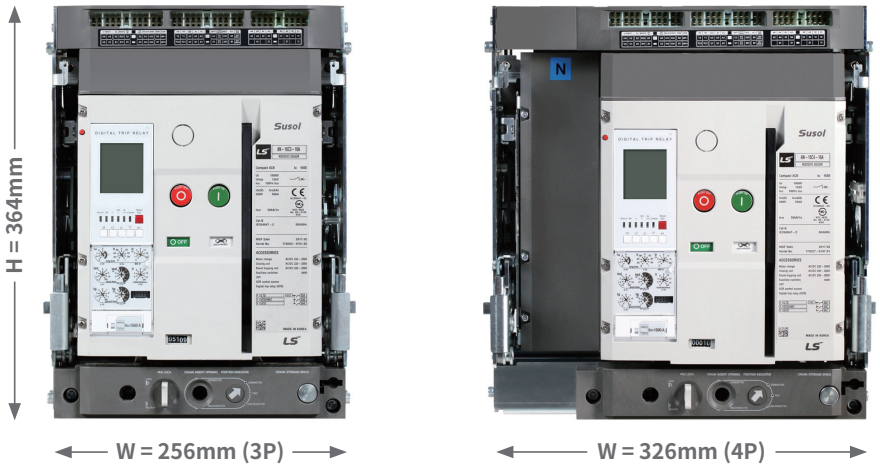
| Ampere frame | |
|---|---|
| 08 | 800AF |
| 16 | 1600AF |

| Frame sizes & phase array | |
|---|---|
| C | Standard (N) RST |
| V | Reverse phase RST (N) |

| Number of poles | |
|---|---|
| 3 | 3P (C) |
| 4 | 4P (C, V) |

| Rated current (CT Spec.) | |
|---|---|
| 00 | Without Trip relay & CT |
| 04 | 400A |
| 06 | 630A |
| 08 | 800A |
| 10 | 1000A |
| 13 | 1250A |
| 16 | 1600A |

| Installation & Connection | |
|---|---|
| withdrawable type | |
| A | Automatic connection |
| Fixed type | |
| H | Horizontal type |
| V | Vertical type |
| M | Upper-Horizontal /Lower-Vertical type |
| N | Upper-Vertical / Lower-Horizontal type |
| P* | Flat type |
| Z** | Flat spread type |
| R*** | Spread type |
| T** | Flat vertical type |
| X** | Cable lug type |




* Installation method is common to all models
** When using Z, T and X type, please purchase adapter kit separately after ordering P type product (Refer to fixed adapter kit table)
*** When using R type, purchase purchase adapter kit separately after ordering H type product (Refer to fixed adapter kit table)

■ **Fixed type Adaptor Kit**

| Number | Part Name | Product Name | How to install | Pole |
|---|---|---|---|---|
| 62363471509 | Terminal Kit Ass'y | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD_FIXED,AN,AH,AR-C3 | Z | 3 |
| 62363471510 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD_FIXED,AN.AH,AR-C4 | Z | 4 |
| 62363471511 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER_FIXED,AN,AH,AR-C3 | T | 3 |
| 62363471512 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER_FIXED,AN,AH,AR-C4 | T | 4 |
| 62363471513 | | SUB ASS'Y,ADAPTER KIT ASS'Y_LUG_FIXED,AN,AH,AR-C3 | X | 3 |
| 62363471514 | | SUB ASS'Y,ADAPTER KIT ASS'Y_LUG_FIXED,AN,AH,AR-C4 | X | 4 |
| 62363471515 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD,AN,AH-C3 | R | 3 |
| 62363471516 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD,AN.AH-C4 | R | 4 |

* Ordering a P type for Fixed type requires a separate order for Arc Screen

■ **Arc Screen Order Code for Fixed type**

| Number | Part Name | Product Name |
|---|---|---|
| 72313471504 | Arc Screen (Fixed P type only) 3P | TOTAL ASS'Y,ARC SCREEN,3P P TYPE,AN,AH,AR-C |
| 72313471506 | Arc Screen (Fixed P type only) 4P | TOTAL ASS'Y,ARC SCREEN,4P P TYPE,AN,AH,AR-C |

**M1 — Motor rated voltage**

| | |
|---|---|
| MA | Without Motor |
| M1 | AC/DC 100V~130V |
| M2 | AC/DC 200V~250V |
| M3 | DC 125V |
| M4 | DC 24V~30V |
| M5 | DC 48V~60V |
| M6 | AC 380V~415V |
| M7 | AC 440V~480V |
| M8 | AC 48V |

**D1 — Closing coil rated voltage**

| | |
|---|---|
| D0 | Without Closing coil |
| D1 | AC/DC 100V~130V |
| D2 | AC/DC 200V~250V |
| D3 | DC 125V |
| D4 | DC 24V~30V |
| D5 | DC 48V~60V |
| D6 | AC 380V~480V |
| D7 | AC 48V |

**D1 — Shunt coil rated voltage**

| | |
|---|---|
| D0 | Without Shunt coil |
| D1 | AC/DC 100V~130V |
| D2 | AC/DC 200V~250V |
| D3 | DC 125V |
| D4 | DC 24V~30V |
| D5 | DC 48V~60V |
| D6 | AC 380V~480V |
| D7 | AC 48V |

**FX — Aux.contact & charging types**

| | |
|---|---|
| FX | Standard OFF-Charge 4C |
| FC | Standard ON-Charge 4C |
| LC | Standard ON-Charge 3C TCS |
| PX | Standard 4C with “OFF” charging type _ low-level contacts |
| PC | Standard 4C with “ON” charging type _ low-level contacts |

* TCS (Trip Circuit Supervision)
* Auxiliary switch for micro load (Order No. 83011176209)

**NGO — Trip relay**

**U1 — UVT**

| | |
|---|---|
| U0 | Without UVT coil |
| U1 | AC/DC 100V~130V |
| U2 | AC/DC 200V~250V |
| U3 | DC 125V |
| U4 | DC 24V~30V |
| U5 | DC 48V~60V |
| U6 | AC 380V~480V |
| U7 | AC 48V |

* UVT Delay module is available over AC / DC 48V

**AL — Accessories**

| Code | Description | Option description |
|---|---|---|
| AL | AL1 + MRB | |
| A1 | AL1 + MRB + RES(AC110~130V) *AC Only | |
| A2 | AL1 + AL2 + MRB | |
| A3 | AL1 + MRB + RES(DC 110~125V) *DC Only | |
| A4 | AL1 + MRB + RES(AC 200~250V) *AC Only | |
| A5 | AL1 + MRB + Auto Reset | |
| A6 | AL1 + AL2 + MRB + Auto Reset | |
| A7 | AL1 + MRB + RES(DC 110~125V) + Auto Reset *DC Only | |
| A8 | AL1 + MRB + RES(AC 200~250V) + Auto Reset *AC Only | |
| A9 | AL1 + MRB + RES(AC 110~130V) + Auto Reset *AC Only | |
| C | C | Counter |
| B | B | On/Off Button lock |
| M | MI | Mechanical interlock |
| D | DI or MOC | Door Interlock or MOC (Mechanism operated cell switch) |
| K | K1 | Key Lock |
| K2 | K2 | Key Interlock Set |
| R | RCS | Ready to Close switch |
| H1 | SHT2 Note 2) | AC/DC 100~130V, Double Shunt coil |
| H2 | | AC/DC 200~250V, Double Shunt coil |
| H3 | | DC 125V, Double Shunt coil |
| H4 | | DC 24~30V, Double Shunt coil |
| H5 | | DC 48~60V, Double Shunt coil |
| H6 | | AC 380~480V, Double Shunt coil |
| H7 | | AC 48V, Double Shunt coil |

Note 1) * If mixed option is more than 5, it is separated by mixed option code.
2) UVT & SHT2 can be not applicable together.

| | |
|---|---|
| E01 | A4 (AL1 + MRB + RES(AC200~250V))+C(Counter)+B(ON/OFF Button Lock) +K(Key Lock)+R(Ready to close switch)+M(Mechanicl Interlock) |
| E02 | AL (AL1 + MRB)+K(Key Lock(OFF Lock))+R(Ready to close switch)+D(Door Interlock or MOC)+H1(AC/DC 100V ~ 130V, Double Shunt Coil) |
| E03 | C(Counter)+B(ON/OFF Button Lock)+K2(Key Interlock Set) +R(Ready to close switch) |
| E04 | A4(AL1 + MRB + RES(AC200~250V))+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+M(Mechanical Interlock) |
| E05 | A1(AL1+MRB+RES110~130V)+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+R(Ready to close switch)+M(Mechanical Interlock) |
| E06 | A2(AL1+AL2+MRB)+C(Counter)+K(Key Lock(OFF Lock))+R(Ready to close switch) |

## ACB Cradle ordering

| AL | — | H16C | 3 | — | A | H | E | S |
|---|---|---|---|---|---|---|---|---|

**Air circuit breaker**

| | |
|---|---|
| Susol ACB Cradle | |
| AL | Bottom operating cradle |

**Type & Ampare frame**

| | |
|---|---|
| H16C | 400~1600A |

**Number of poles**

| | |
|---|---|
| 3 | 3P |
| 4 | 4P |

**Secondary connection type**

| | |
|---|---|
| A | Auto connection |

**Installation & Connection**

| | |
|---|---|
| H | Horizontal type |
| V | Vertical type |
| M | Upper-Horizontal /Lower-Vertical type |
| N | Upper-Vertical / Lower-Horizontal type |
| P** | Flat type |
| Z** | Flat spread type |
| R*** | Spread type |
| T** | Flat vertical type |
| X** | Cable lug type |

**Arc cover**

| | |
|---|---|
| S | with arc cover |

**Shtter**

| | |
|---|---|
| E | without shutter |
| F | with shutter |

Note) AV, AW type ACB use AH type cradle in common.

** When using P, Z, T and X type, please purchase adapter kit separately after ordering P type product (Refer to fixed adapter kit table)

*** When using R type, purchase purchase adapter kit separately after ordering H type product (Refer to fixed adapter kit table)

**2. Draw-out type Adaptor Kit (Cradle)**

| Number | Part Name | Product Name | How to install | Pole |
|---|---|---|---|---|
| 62363471501 | Terminal Kit Ass'y | SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT,AN,AH-C3 | P | 3 |
| 62363471502 | | SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT,AN,AH-C4 | P | 4 |
| 62363471503 | | SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT_SPREAD,AN,AH-C3 | Z | 3 |
| 62363471504 | | SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT_SPREAD,AN.AH-C4 | Z | 4 |
| 62363471505 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER,AN,AH-C3 | T | 3 |
| 62363471506 | | SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER,AN,AH-C4 | T | 4 |
| 62363471507 | | SUB ASS'Y,ADAPTER KIT ASS'Y_LUG,AN,AH-C3 | X | 3 |
| 62363471508 | | SUB ASS'Y,ADAPTER KIT ASS'Y_LUG,AN,AH-C4 | X | 4 |

### Various installation methods

| Type | H | V | M | N | P |
|---|---|---|---|---|---|
| Installation type |  |  |  |  |  |
| **Type** | **Z** | **R** | **T** | **X** | |
| Installation type |  |  |  |  | |

# Compact ACB Trip unit ordering









| N | Trip relay type |
|---|---|
| 0 | Without trip relay |
| N | Normal |

| N | Trip relay type |
|---|---|
| A | Ammeter |

| N | Trip relay type |
|---|---|
| P | Power meter |

| N | Trip relay type |
|---|---|
| S | Supreme meter |

| G | Communication & protection |
|---|---|
| G | Ground fault |

* L/S/I/G configuration as standard
  - with LED indicators
  - without output contacts
* Ground fault system by vector sum

| G | Communication & protection |
|---|---|
| G | Ground fault |
| Z | Earth Leakage(External CT, Earth Leakage below 30A) |
| E | Earth Leakage(External CT, Earth Leakage over 30A) |
| C | Ground fault + Comm. |
| K | Earth Leakage(External CT, Earth Leakage below 30A) + Comm. |
| X | Earth Leakage(External CT, Earth Leakage over 30A) + Comm. |
| N ** | Ground fault (External NCT) + Comm. |

* L/S/I/G(or EL) configuration as standard
  (Only. Unable to select ground fault and earth leakage, simultaneously)
* Ground fault system by vector sum(G,C)
* Earth leakage system
  - Z,K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - E,X: External CT - Private ZCT applied(faullt current >30A, 2000AF)
* Comm. And output contacts DO NOT work under self-power condition.(Only checking LED available)

| C | Communication & protection |
|---|---|
| C | Ground fault + Comm. |
| K | Earth Leakage(External CT, Earth Leakage below 30A) + Comm. |
| X | Earth Leakage(External CT, Earth Leakage over 30A) + Comm. |
| A | Pre-Trip Alram + Comm. |
| N ** | Ground fault (External NCT) + Comm. |

* L/S/I/G(or EL) configuration as standard
  (Only. Unable to select ground fault and earth leakage, simultaneously)
* Ground fault system by vector sum
* Earth leakage system
  - K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - X: External CT - Private ZCT applied(faullt current >30A, 2000AF)
* Applicable to generator protection purpose
* Comm. And output contacts DO NOT work under self-power condition.(Only checking LED available)

| C | Communication & protection |
|---|---|
| C | Ground fault + Comm. |
| K | Earth Leakage(External CT, Earth Leakage below 30A) + Comm. |
| X | Earth Leakage(External CT, Earth Leakage over 30A) + Comm. |
| A | Pre-Trip Alram + Comm. |
| N ** | Ground fault (External NCT) + Comm. |

* L/S/I/G(or EL) configuration as standard
  (Only. Unable to select ground fault and earth leakage, simultaneously)
* Ground fault system by vector sum
* Earth leakage system
  - K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - X: External CT - Private ZCT applied(faullt current >30A, 2000AF)
* Applicable to generator protection purpose
* Comm. And output contacts DO NOT work under self-power condition.(Only checking LED available)

| 0 | Control voltage & frequency | |
|---|---|---|
| 0 | Self-Power Note1) | 60Hz |
| 5 | Self-Power Note1) | 50Hz |

| 0 | Control voltage & frequency | |
|---|---|---|
| 0 | Self-Power | 60Hz |
| 1 | AC/DC 100V~250V | 60Hz |
| 2 | DC 15V~60V | 60Hz |
| 5 | Self-Power | 50Hz |
| 6 | AC/DC 100V~250V | 50Hz |
| 7 | DC 15V~60V | 50Hz |

| 1 | Control voltage & frequency | |
|---|---|---|
| 1 | AC/DC 100V~250V | 60Hz |
| 2 | DC 15V~60V | 60Hz |
| 6 | AC/DC 100V~250V | 50Hz |
| 7 | DC 15V~60V | 50Hz |

| 1 | Control voltage & frequency | |
|---|---|---|
| 1 | AC/DC 100V~250V | 60Hz |
| 2 | DC 15V~60V | 60Hz |
| 6 | AC/DC 100V~250V | 50Hz |
| 7 | DC 15V~60V | 50Hz |

** AN, PN, SN provide the function to detect and protect the ground fault current by applying the NCT (Neutral CT) in the neutral wire when 3pole circuit breaker is used in 3-phase 4-wire system. Please use NCT with the secondary output of 5A rating. (NCT is not provided)

Note) 1. L/S/I/G(or EL) configuration as standard (Only. Unable to select ground fault and earth leakage, simultaneously)
2. Ground fault, earth leakage and pre-trip alarm functions are alternative.
3. The functions like Metering, Communication, ZSI, Remote reset and Digital output are NOT available only under Self-power condition.
4. Voltage module should be required for P and S types purchased separately

## Susol ACB up to 1150Vac

| Characteristics | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of poles | | | (P) | 3 / 4 | | | | | | |
| Rated operational voltage (Ue) | | | (Vac) | ~ 1150 | | | | | | |
| Rated insulation voltage (Ui) | | | (V) | 1250 | | | | | | |
| Rated impulse withstand voltage (Uimp) | | | (kV) | 12kV | | | | | | |
| Version | | | | Fixed / Withdrawable | | | | | | |
| Suitability for isolation | | | |  | | | | | | |
| Degree of pollution | IEC60661-1 | | | 3 | | | | | | |
| Certification | | | | CB certification according to IEC 60947-2 | | | | | | |

| Brand name | | | | Susol AV-D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | | | | AV-06D | AV-08D | AV-10D | AV-13D | AV-16D | AV-20D |
| Ampere Frame | | | (AF) | 630 | 800 | 1000 | 1250 | 1600 | 2000 |
| Rated current (In max) | | | (A) | 200<br>400<br>630 | 400<br>630<br>800 | 630<br>800<br>1000 | 630<br>800<br>1000<br>1250 | 800<br>1000<br>1250<br>1600 | 1000<br>1250<br>1600<br>2000 |
| Rated ultimate breaking capacity (Icu) | 1150V | | (kA) | 30 | | | | | |
| | 1000V | | (kA) | 42 | | | | | |
| | 900V | | (kA) | 50 | | | | | |
| | 800V | | (kA) | 50 | | | | | |
| Rated serivce breaking capacity (Ics) | | | (% Icu) | 100 | | | | | |
| Rated short-timewithstand current (Icw) | 1150V | | (kA/1s) | 30 | | | | | |
| | 1000V | | (kA/1s) | 42 | | | | | |
| | 900V | | (kA/1s) | 50 | | | | | |
| | 800V | | (kA/1s) | 50 | | | | | |
| Rated making capacity (Icm) | | | (kA) | 63 | | | | | |
| Selectivity category (according to IEC 60947-2) | | | | B | | | | | |
| Operation time (ms) | Total Breaking time | < Icw | | max. 75 | | | | | |
| | | ≥ Icw | | max. 25 | | | | | |
| | Closing time | | | max. 80 | | | | | |
| **Mechanical and Electrical Life cycle** | | | | | | | | | |
| Endurance (times) (Without maintenance) | Mechanical | | | 20,000 | | | | | |
| | Electrical | | | 1,000 | | | | | |
| **Dimension and Weight** | | | | | | | | | |
| Weight (3P/4P) | Draw-out | Without cradle | (kg) | 37/45 | | | | | |
| | | With cradle | (kg) | 70/85 | | | | | |
| | Fixed | | (kg) | 34/44 | | | | | |
| External Dimensions (H×W×D) | Draw-out | 3P(4P) | (mm) | 430×334(419)×375 | | | | | |
| | Fixed | 3P(4P) | (mm) | 300×300(385)×295 | | | | | |

* AV type can be applied to IT system up to 1000Vac.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 / 4 | | | | | | | | | | | |
| | ~ 1150 | | | | | | | | | | | |
| | 1250 | | | | | | | | | | | |
| | 12kV | | | | | | | | | | | |
| | Fixed / Withdrawable | | | | | | | | | | | |
| |  | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | CB certification according to IEC 60947-2 | | | | | | | | | | | |
| | **Susol AV-E** | | | | | | | | | **Susol AV-G** | | |
| | **AV-06E** | **AV-08E** | **AV-10E** | **AV-13E** | **AV-16E** | **AV-20E** | **AV-25E** | **AV-32E** | **AV-40E** | **AV-40G** | **AV-50G** | **AV-63G** |
| | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3200 | 4000 | 4000 | 5000 | 6300 |
| | 400<br>630 | 400<br>630<br>800 | 630<br>800<br>1000 | 630<br>800<br>1000<br>1250 | 800<br>1000<br>1250<br>1600 | 1000<br>1250<br>1600<br>2000 | 1250<br>1600<br>2000<br>2500 | 1600<br>2000<br>2500<br>3200 | 2000<br>2500<br>3200<br>4000 | 2000<br>2500<br>3200<br>4000 | 2500<br>3200<br>4000<br>5000 | 3200<br>4000<br>5000<br>6300 |
| | 50 | | | | | | | | | 65 | | |
| | 65 | | | | | | | | | 85 | | |
| | 75 | | | | | | | | | 85 | | |
| | 75 | | | | | | | | | 85 | | |
| | 100 | | | | | | | | | 100 | | |
| | 50 | | | | | | | | | 65 | | |
| | 65 | | | | | | | | | 85 | | |
| | 75 | | | | | | | | | 85 | | |
| | 75 | | | | | | | | | 85 | | |
| | 105 | | | | | | | | | 143(1150V) / 187(below 1000V) | | |
| | B | | | | | | | | | B | | |
| | max. 75 | | | | | | | | | max. 75 | | |
| | max. 25 | | | | | | | | | max. 25 | | |
| | max. 80 | | | | | | | | | max. 90 | | |
| | | | | | | | | | | | | |
| | 20,000 | | | | | | | | | 10,000 | | |
| | 1,000 | | | | | | | | | 500 | | |
| | | | | | | | | | | | | |
| | 44/49 | | | | | | | | | 84/106 | | |
| | 88/104 | | | | | | | | | 181/223 | | |
| | 45/56 | | | | | | | | | 98/123 | | |
| | 430×412(527)×375 | | | | | | | | | 430×785(1015)×375 | | |
| | 300×378(493)×295 | | | | | | | | | 300×751(981)×295 | | |

## Susol ACB up to 900Vac

| Characteristics | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of poles (P) | 3 / 4 | | | | | | | | | | | | | | | | | | | |
| Rated operational voltage (Ue) (Vac) | ~ 900 | | | | | | | | | | | | | | | | | | | |
| Rated insulation voltage (Ui) (V) | 1000 | | | | | | | | | | | | | | | | | | | |
| Rated impulse withstand voltage (Uimp) (kV) | 12kV | | | | | | | | | | | | | | | | | | | |
| Version | Fixed / Withdrawable | | | | | | | | | | | | | | | | | | | |
| Suitability for isolation |  | | | | | | | | | | | | | | | | | | | |
| Degree of pollution IEC60661-1 | 3 | | | | | | | | | | | | | | | | | | | |
| Certification | CB certification according to IEC 60947-2 | | | | | | | | | | | | | | | | | | | |

| Brand name | | | | Susol AW-D/AW-E/AW-G | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | | | | AW-06D | AW-08D | AW-10D | AW-13D | AW-16D | AW-20D | AW-06E | AW-08E | AW-10E | AW-13E | AW-16E | AW-20E | AW-25E | AW-32E | AW-40E | AW-40G | AW-50G | AW-63G |
| Ampere Frame (AF) | | | | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3200 | 4000 | 4000 | 5000 | 6300 |
| Rated current (In max) (A) | | | | 200<br>400<br>630 | 400<br>630<br>800 | 630<br>800<br>1000 | 630<br>800<br>1000<br>1250 | 800<br>1000<br>1250<br>1600 | 1000<br>1250<br>1600<br>2000 | 400<br>630 | 400<br>630<br>800 | 630<br>800<br>1000 | 630<br>800<br>1000<br>1250 | 800<br>1000<br>1250<br>1600 | 1000<br>1250<br>1600<br>2000 | 1250<br>1600<br>2000<br>2500 | 1600<br>2000<br>2500<br>3200 | 2000<br>2500<br>3200<br>4000 | 2000<br>2500<br>3200<br>4000 | 2500<br>3200<br>4000<br>5000 | 3200<br>4000<br>5000<br>6300 |
| Rated ultimate breaking capacity (Icu) | 900V (kA) | | | 42 | | | | | | 50 | | | | | | | | | 85 | | |
| | 800V (kA) | | | 50 | | | | | | 65 | | | | | | | | | 85 | | |
| Rated serivce breaking capacity (Ics) (% Icu) | | | | 100 | | | | | | | | | | | | | | | 100 | | |
| Rated short-time withstand current (Icw) | 900V (kA/1s) | | | 42 | | | | | | 50 | | | | | | | | | 85 | | |
| | 800V (kA/1s) | | | 50 | | | | | | 65 | | | | | | | | | 85 | | |
| Rated making capacity (Icm) (kA) | | | | 88.2 | | | | | | 105 | | | | | | | | | 187 | | |
| Selectivity category (according to IEC 60947-2) | | | | B | | | | | | | | | | | | | | | B | | |
| Operation time (ms) | Total Breaking time | < Icw | | max. 75 | | | | | | | | | | | | | | | max. 75 | | |
| | | ≥ Icw | | max. 25 | | | | | | | | | | | | | | | max. 25 | | |
| | Closing time | | | max. 80 | | | | | | | | | | | | | | | max. 90 | | |
| **Mechanical and Electrical Life cycle** | | | | | | | | | | | | | | | | | | | | |
| Endurance (times) (Without maintenance) | Mechanical | | | 20,000 | | | | | | 15,000 | | | | | | | | | 10,000 | | |
| | Electrical | | | 1,000 | | | | | | | | | | | | | | | 1,000 | | |
| **Dimension and Weight** | | | | | | | | | | | | | | | | | | | | |
| Weight (3P/4P) | Draw-out | Without cradle (kg) | | 37/45 | | | | | | 44/49 | | | | | | | | | 84/106 | | |
| | | With cradle (kg) | | 70/85 | | | | | | 88/104 | | | | | | | | | 181/223 | | |
| | Fixed (kg) | | | 34/44 | | | | | | 45/56 | | | | | | | | | 98/123 | | |
| External Dimensions (H×W×D) | Draw-out | 3P(4P) (mm) | | 430×334(419)×375 | | | | | | 430×412(527)×375 | | | | | | | | | 430×785(1015)×375 | | |
| | Fixed | 3P(4P) (mm) | | 300×300(385)×295 | | | | | | 300×378(493)×295 | | | | | | | | | 300×751(981)×295 | | |

# Susol Compact ACB up to 800Vac

| Characteristics | | | | |
|---|---|---|---|---|
| Number of poles | | | (P) | 3 / 4 |
| Rated operational voltage (Ue) | | | (Vac) | ~ 800 |
| Rated insulation voltage (Ui) | | | (V) | 1000 |
| Rated impulse withstand voltage (Uimp) | | | (kV) | 12kV |
| Version | | | | Fixed / Withdrawable |
| Suitability for isolation | | | |  |
| Degree of pollution | IEC60661-1 | | | 3 |
| Certification | | | | CB certification according to IEC 60947-2 |

| Brand name | | | | Susol AW-C | |
|---|---|---|---|---|---|
| Model | | | | **AW-08C** | **AW-16C** |
| Ampere Frame | | | (AF) | 800 | 1600 |
| Rated current (In max) | | | (A) | 400<br>630<br>800 | 800<br>1000<br>1250<br>1600 |
| Rated ultimate breaking capacity (Icu) | 800V | | (kA) | 40 | |
| Rated serivce breaking capacity (Ics) | | | (% Icu) | 100 | |
| Rated short-timewithstand current (Icw) | 1s | | (kA) | 40 | |
| | 3s | | (kA) | 40 | |
| Rated making capacity (Icm) | | | (%) | 84 | |
| Selectivity category (according to IEC 60947-2) | | | | B | |
| Operation time (ms) | Total Breaking time | < Icw | | max. 75 | |
| | | ≥ Icw | | max. 25 | |
| | Closing time | | | max. 80 | |
| **Mechanical and Electrical Life cycle** | | | | | |
| Endurance (times) (Without maintenance) | Mechanical | | | 12,500 | |
| | Electrical | | | 500 | |
| **Dimension and Weight** | | | | | |
| Weight | Draw-out (3P/4P) | | (kg) | 22/26 | |
| | Fixed (3P/4P) | | (kg) | 16/19.5 | |
| External Dimensions (H×W×D) | Draw-out | 3P | (mm) | W: 256 D: 274.5 [1] H: 364.3 | |
| | | 4P | (mm) | W: 326 D: 274.5 [1] H: 364.3 | |
| | Fixed | 3P | (mm) | W: 272.4 D: 198.5 [1] H: 322 | |
| | | 4P | (mm) | W: 342.4 D: 198.5 [1] H: 322 | |

1) Exclude terminal length
* AW-08/16C are applicable for IT system

# **Trip Relay** (STU : Smart Trip Unit)

## Advanced trip relay!

With the world's best measurement accuracy and increased relay elements, the relay operation stability is enhanced, and the self-diagnosis function prevents mis-trips and ensures the stability of abnormal conditions through alarms.
NFC and Bluetooth built-in and Smart add-on modules can be configured. Monitoring and monitoring is possible through service access anytime, anywhere by securing a Smart LV solution through ICT convergence technology.

## Trip Relay series for function




### N type

- Device operation through self-power
- Current relay function
- Supports USB communication
- Available NFC communication




### A type

- Device operation through self-power
- Current relay function
- Segment LCD Display
- DO output
- Supports USB communication
- Supports RS485 communication




### P type

- Device operation through self-power
- Current/voltage/frequency/power relay function
- 3.5” touch screen
- DO output
- Supports USB communication
- Supports RS485 communication
- Available BLE communication




### S type

- Device operation through self-power
- Current/voltage/frequency/power relay function
- 3.5” touch screen
- DO output
- Relay setting group A/B available
- Supports USB communication
- Supports RS485 communication
- NFC/BLE communication support



## Types of STU

| | | N-Type | A-Type | P-Type | S-Type |
|---|---|---|---|---|---|
| Externals | |  |  |  |  |
| Current relay | | • L, S, I, G | • L(N), S, I, G, PTA, Gext | • L(N), S1, I, G, PTA, Gext<br>• D, S(V)1, IU | • P type Current relay<br>• S(V)2 |
| Voltage relay | | - | - | • UV1, OV1, RV, VU | • P type Voltage relay<br>• UV2, OV2 |
| Frequency relay | | - | - | • UF1, OF1, ROCOF | • P type Frequency relay<br>• UF2, OF2 |
| Power relay | | - | - | • RP, RQ1, OP, OQ, UP | • P type Power relay<br>• RP, RQ1, RQ2 |
| Group control | | - | - | - | • A,B (Control by DI and communication) |
| Relay fine tuning | | - | - | • Possible (Adjust knob and freely set operating value current) | • Possible (Freely set operating value current) |
| ERMS | | - | • Control by DI and Communication | • Control by DI and Communication | • Control by DI and Communication |
| IDMTL Support | | - | • L relay element (Thermal, DT, SIT, VIT, EIT, EIT50) | • L relay element (Thermal, DT, SIT, VIT, EIT, EIT50) | • L relay element (Thermal,DT,SIT,VIT, EIT,EIT50) |
| Trip information Maintenance LED | | • L, S, I, G<br>• SP : Self protection | • L, S, I, G/Gext/PTA, SP | • L, S, I, G/Gext/PTA, SP | • L, S, I, G/Gext/PTA, SP |
| Incident record | Screen | - | • Display of 32 incident events (Incident phase/current/time) | • Display of 127 incident events (Incident phase/current/time) | • Display of 127 incident events (Incident phase/current/time) |
| | Memory | - | • Saves 127 incident events<br>• Saves 6 incident waveforms (In case of operation by Self Power, incident waveform is not saved) | • Saves 127 incident events<br>• Saves 6 incident waveforms (In case of operation by Self Power, incident waveform is not saved) | • Saves 127 incident events<br>• Saves 6 incident waveforms (In case of operation by Self Power, incident waveform is not saved) |

# Compact Trip Unit

The trip relay of Compact ACB provides the additional protection functions for voltage, frequency, unbalance, and others in addition to main protection functions for over current, short-circuit, ground fault. It supports the advanced measurement functions for voltage, current, power, electric energy, harmonics, communication function, and others.
Analog trip function interlocked with mechanism enhanced a durability of devices as well as the breaking capacity of ACB.
Zone selective interlocking function makes the protective coordination more simple and thermal memory can be applied to various loads.

*Trip Relay is for C Frame



## Trip relay types

| Classification | N type | A type | P type | S type |
|---|---|---|---|---|
| Externals |  |  |  |  |
| Current protection | • L/S/I/G/Thermal | • L/S/I/G/Thermal<br>• ZSI (Protective coordination) | • L/S/I/G<br>• ZSI (Protective coordination)<br>• Thermal (Linear Hot Start) | • L/S/I/G<br>• ZSI (Protective coordination)<br>• Thermal (Linear Hot Start) |
| Other protection | - | • Earth leakage (Option) | • Earth leakage (Option)<br>• Over/Under voltage<br>• Over/Under frequency<br>• Unbalance (Voltage/Current<br>• Reverse power | • Earth leakage (Option)<br>• Over/Under voltage<br>• Over/Under frequency<br>• Unbalance (Voltage/Current<br>• Reverse power |
| Measurement function | - | • Current (R/S/T/N) | • 3 Phase Voltage/Current RMS/Vector<br>• Power (P, Q, S), PF (3-Phase)<br>• Energy (Positive/Negative)<br>• Frequency, Demand | • 3 Phase Voltage/Current RMS/Vector<br>• Power (P, Q, S), PF (3-Phase)<br>• Energy (Positive/Negative)<br>• Frequency, Demand<br>• Voltage/Current harmonics (1st~63th)<br>• 3 Phase Waveforms<br>• THD, TDD, K-Factor |
| Fine adjustment | - | - | • Fine adjustment for long/short time delay/instantaneous/ ground | • Fine adjustment for long/short time delay/instantaneous/ ground |
| Digital Output | | • 3DO (Fixed)<br>• L, S/I, G Alarm | • 3DO (Programmable)<br>• Trip, Alarm, General | • 3DO (Programmable)<br>• Trip, Alarm, General |
| IDMTL setting | - | - | • Compliance with IEC60255-3: SIT, VIT, EIT, DT | • Compliance with IEC60255-3: SIT, VIT, EIT, DT |
| Communication | - | • Modbus/RS-485<br>• Profibus-DP | • Modbus/RS-485<br>• Profibus-DP | • Modbus/RS-485<br>• Profibus-DP |
| Power supply | • Self Power<br>– Power source worksover 20% of load current. | • Self Power<br>– Power source worksover 20% of load current.<br>– External power source are required for comm.<br>• AC/DC 100~250V<br>• DC 24~60V | • AC/DC 100~250V<br>• DC 24~60V<br>• Basic protection function (L/S/I/G) is still under normal operation without control power. | • AC/DC 100~250V<br>• DC 24~60V<br>• Basic protection function (L/S/I/G) is still under normal operation without control power. |
| RTC Timer | • Available | • Available | • Available | • Available |
| LED for trip info. | • Long time delay<br>• Short time delay/Instantaneous<br>• Ground fault | • Long time delay<br>• Short time delay/Instantaneous<br>• Ground fault | • Long time delay<br>• Short time delay/Instantaneous<br>• Ground fault | • Long time delay<br>• Short time delay/Instantaneous<br>• Ground fault |
| Fault recording | - | • 10 records (Fault/Current/Date and Time) | • 256 records | • 256 records<br>• Last fault wave form recording (3 Phase) |
| Event recording | - | - | • 256 records (Content, Status, Date) | • 256 records (Content, Status, Date) |
| Operating button | • Reset button | • Reset, Menu Up/Down, Left/Right, Enter | • Reset, Menu Up/Down, Left/Right, Enter | • Reset, Menu Up/Down, Left/Right, Enter |

Each Trip Relay type has Battery in itself.

1. Battery lifespan
   1) When turned off: 14~28years
   2) When using 1 LED consecutively or turned off: 7~14days

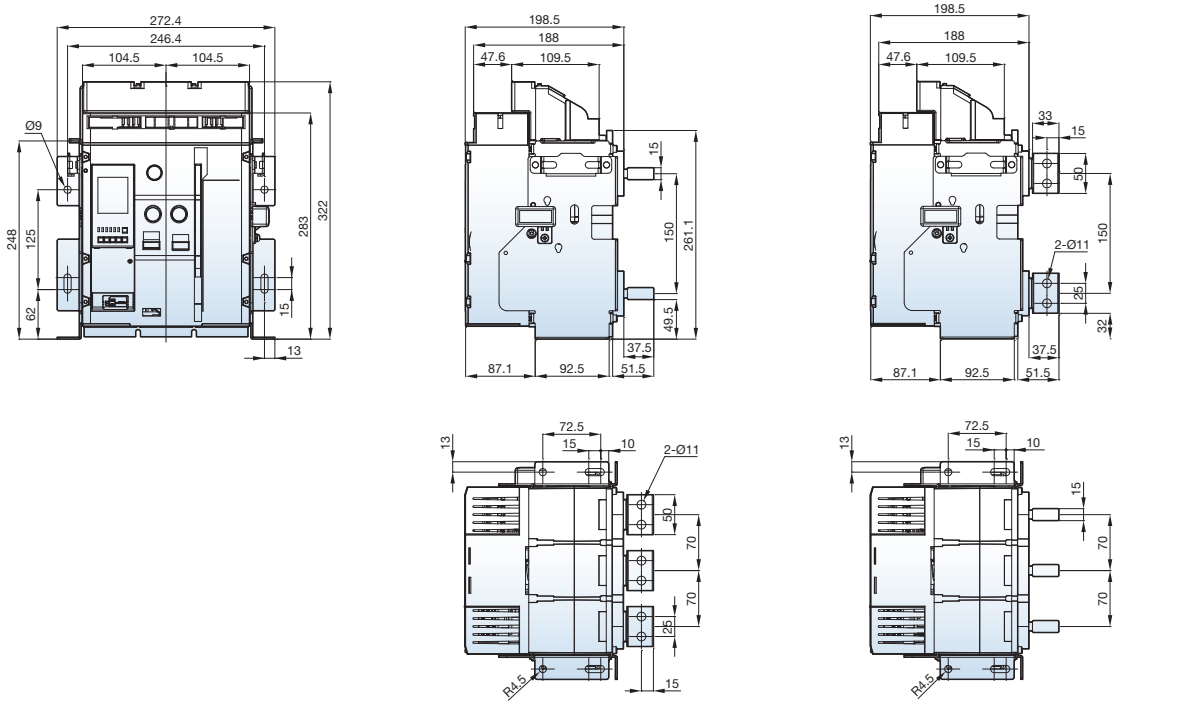
2. The recognizable range of Trip Relay current
   1) 1Ø: When more 20% than rated current(In) (ratio to In regardless of Iu and Ir)
   2) 3Ø: When more 12% than rated current(In)

# Dimensions

## 800/1600AF (400~1600A : AW-08/16C)

• 3P [Fixed H: Horizontal type / V: Vertical type]

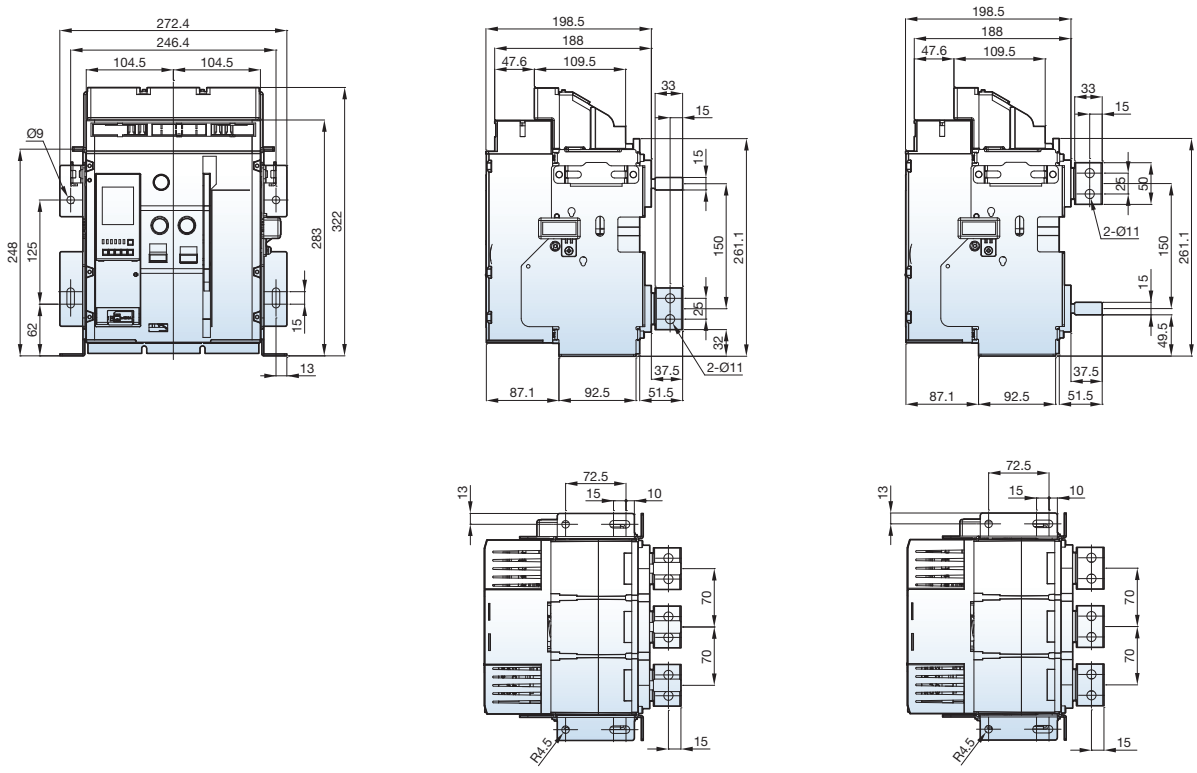
(Unit : mm)




**H Type** (Horizontal type)

**V Type** (Vertical type)

• 3P [Fixed M: Upper-Horizontal type, Lower-Vertical type / N: Upper-Vertical type, Lower-Horizontal type]



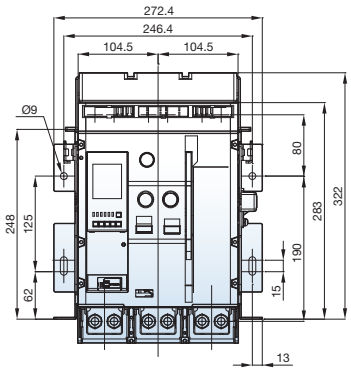

**M Type**
(Upper-Horizontal type, Lower-Vertical type)

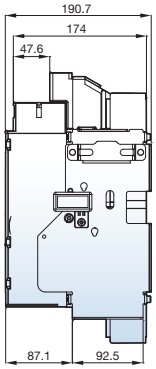
**N Type**
(Upper-Vertical type, Lower-Horizontal type)

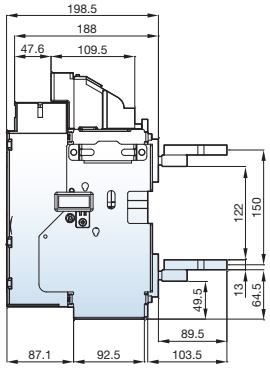
# 800/1600AF (400~1600A : AW-08/16C)

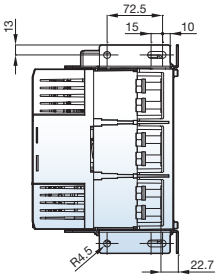
• 3P [Fixed P: Plane type / R: Spread type]

(Unit : mm)

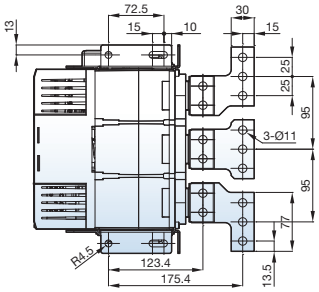


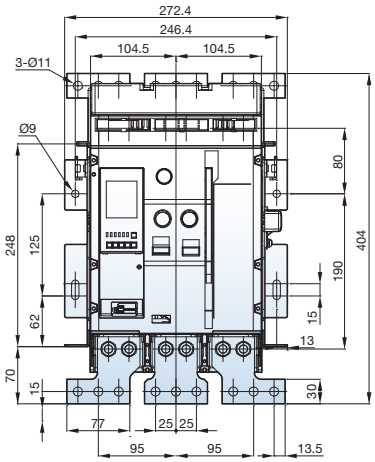



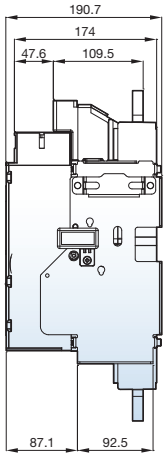

**P Type** (Plane type)

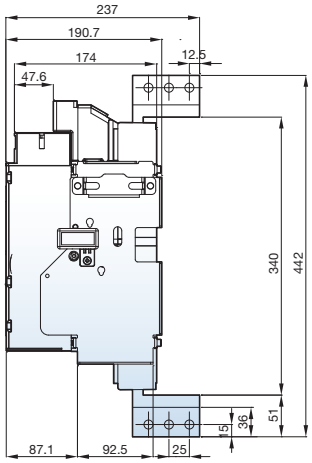


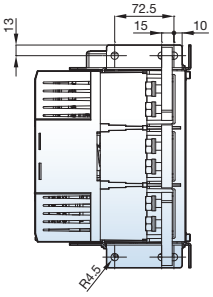

**R Type** (Spread type)

• 3P [Fixed Z: Plane spread type / T: Plane vertical type]

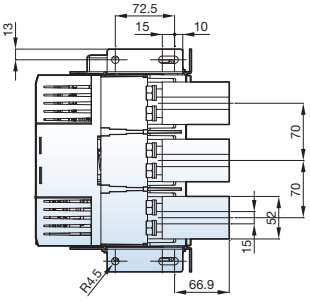



**Z Type** (Plane spread type)



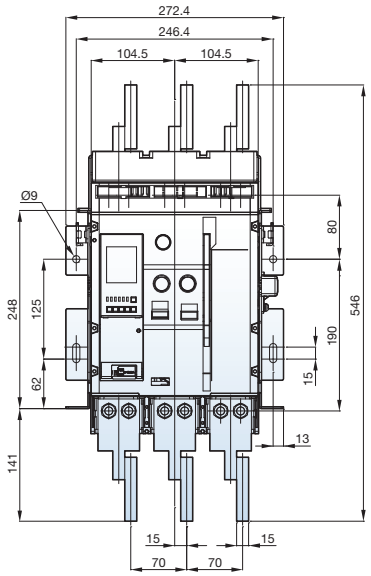

**T Type** (Plane vertical type)

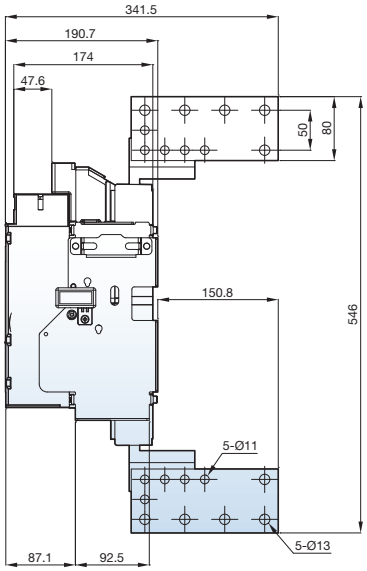
# Dimensions

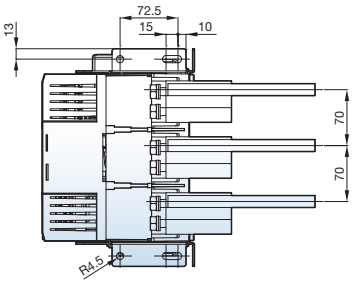
## 800/1600AF (400~1600A : AW-08/16C)

• 3P [Fixed X: Cable lug type]

(Unit : mm)



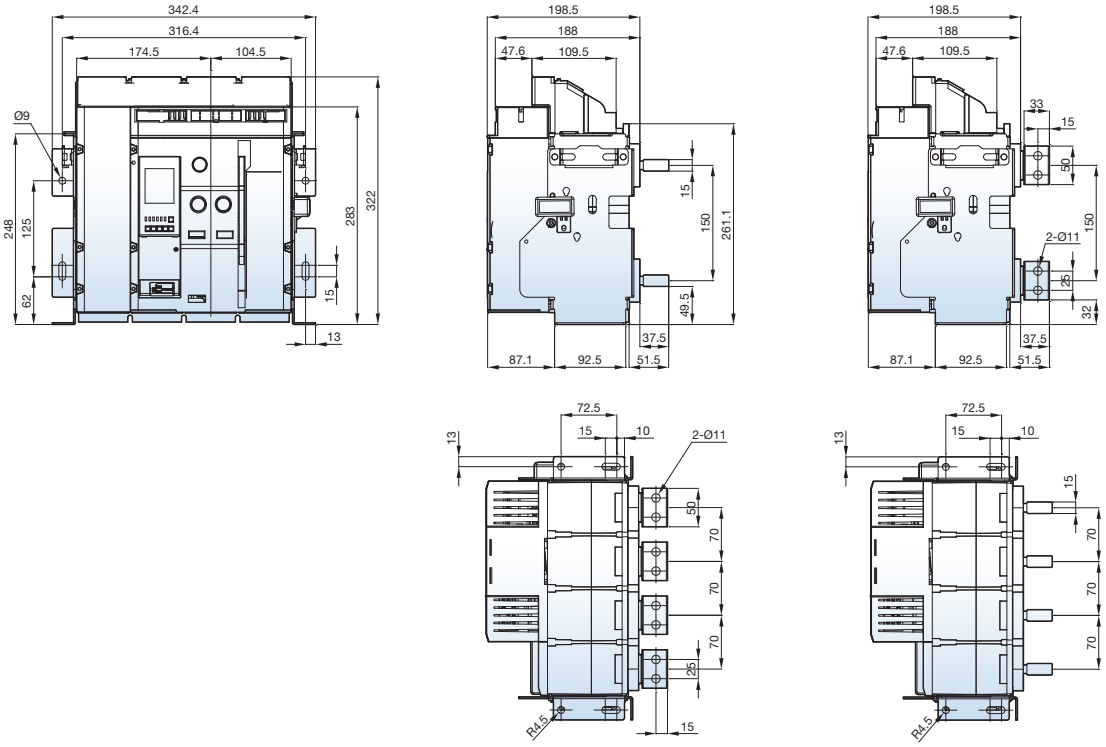




**X Type** (Cable lug type)

# 800/1600AF (400~1600A : AW-08/16C)

• 4P [Fixed H: Horizontal type / V: Vertical type]

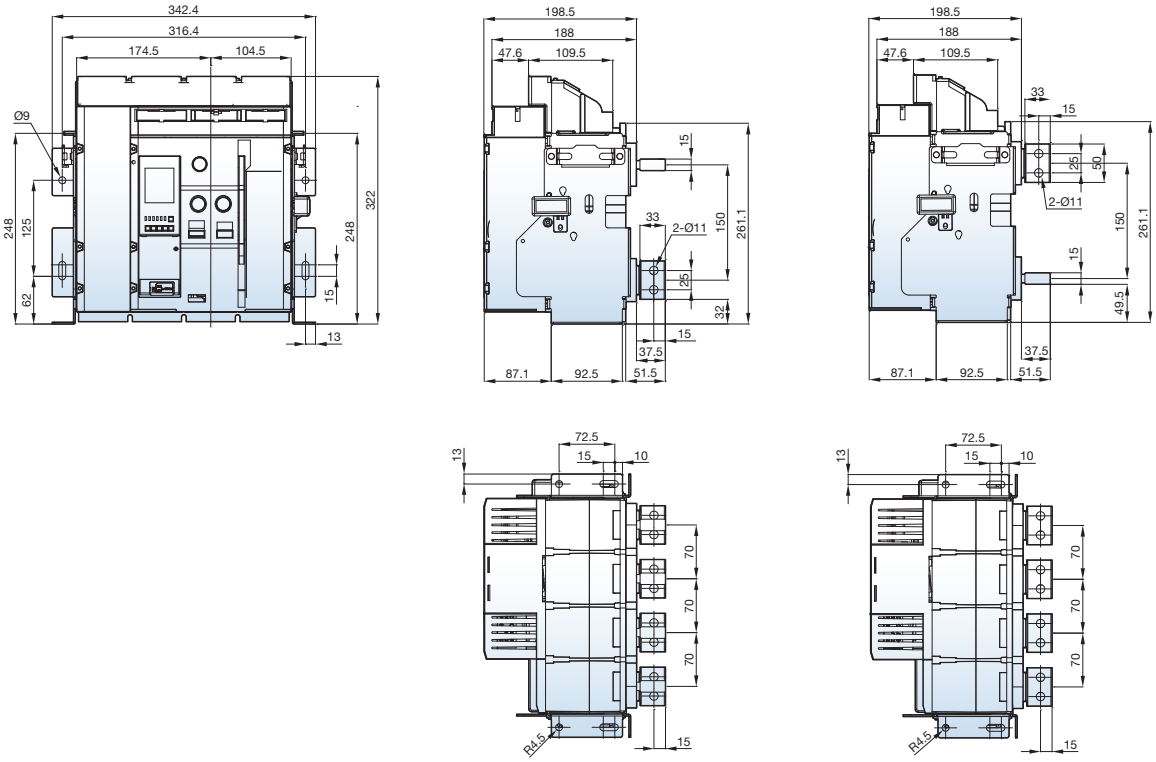
(Unit : mm)




**H Type** (Horizontal type)

**V Type** (Vertical type)

• 4P [Fixed M: Upper-Horizontal type, Lower-Vertical type / N: Upper-Vertical type, Lower-Horizontal type]




**M Type**
(Upper-Horizontal type, Lower-Vertical type)

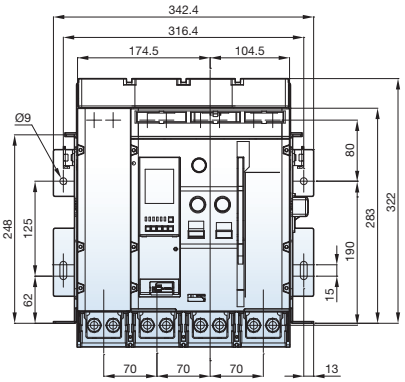
**N Type**
(Upper-Vertical type, Lower-Horizontal type)

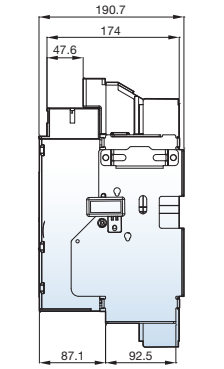
# Dimensions

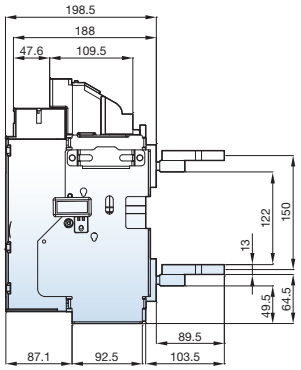
## 800/1600AF (400~1600A : AW-08/16C)

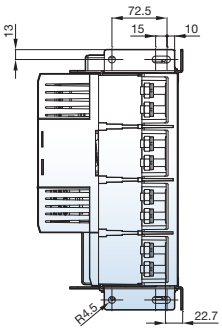
• 4P [Fixed P: Plane type / R: Spread type]

(Unit : mm)

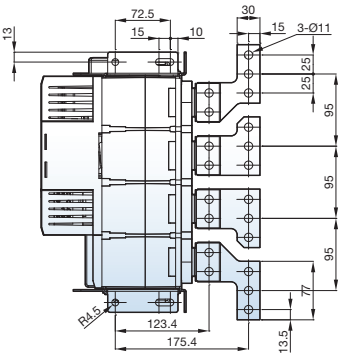


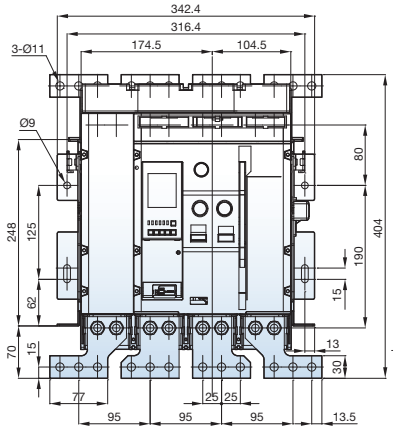



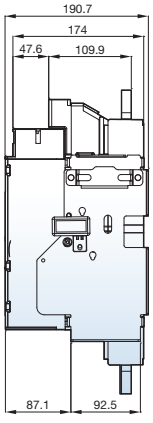

**P Type** (Plane type)

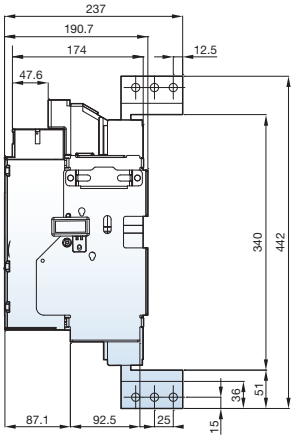


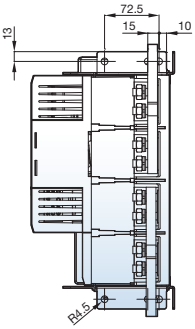

**R Type** (Spread type)

• 4P [Fixed Z: Plane spread type / T: Plane vertical type]

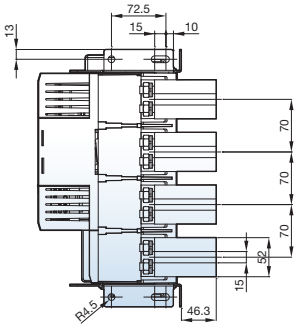



**Z Type** (Plane spread type)

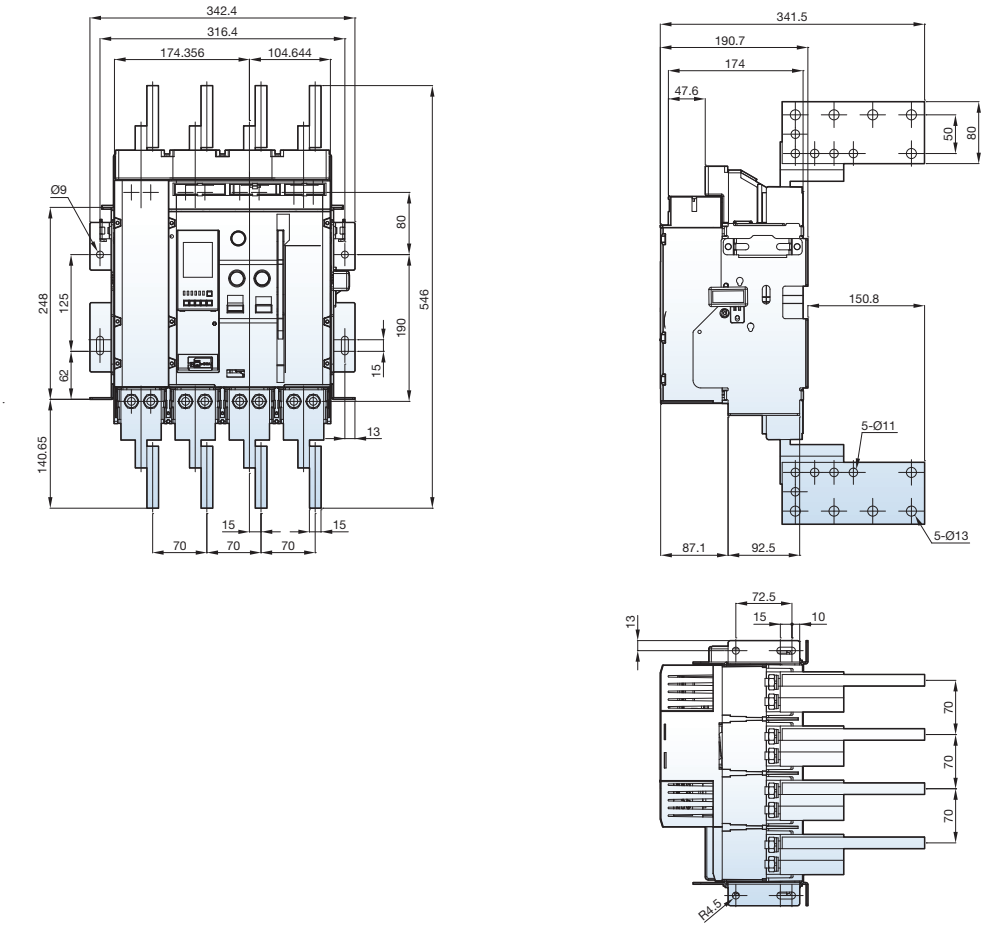



**T Type** (Plane vertical type)

# 800/1600AF (400~1600A : AW-08/16C)

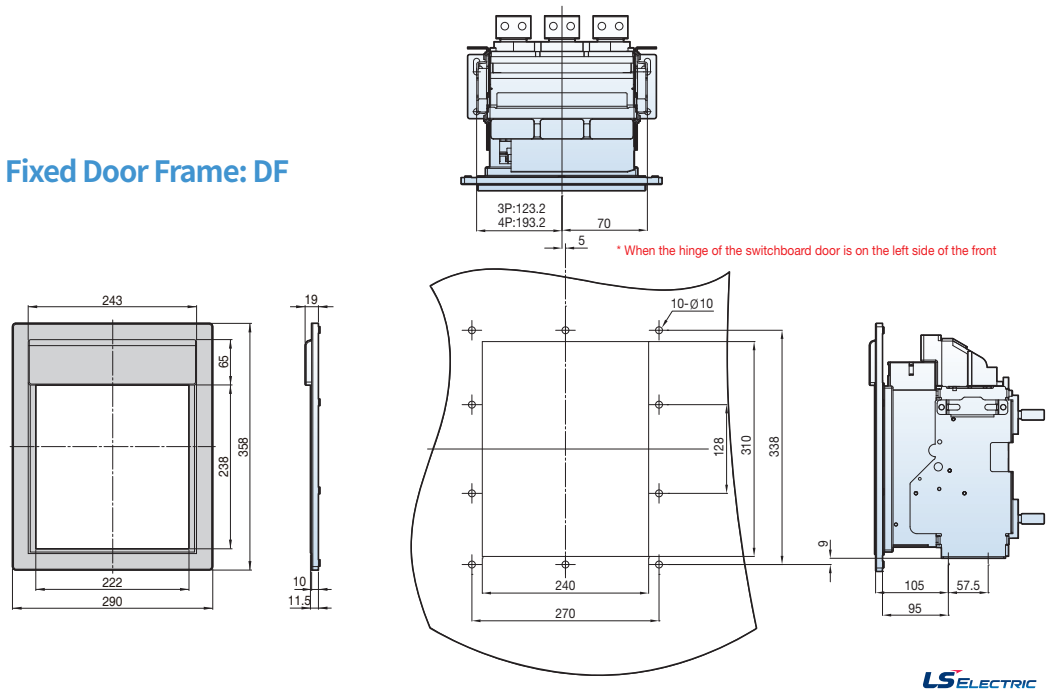
• 4P [Fixed X: Cable lug type]

(Unit : mm)




**X Type** (Cable lug type)

## Fixed Door Frame: DF

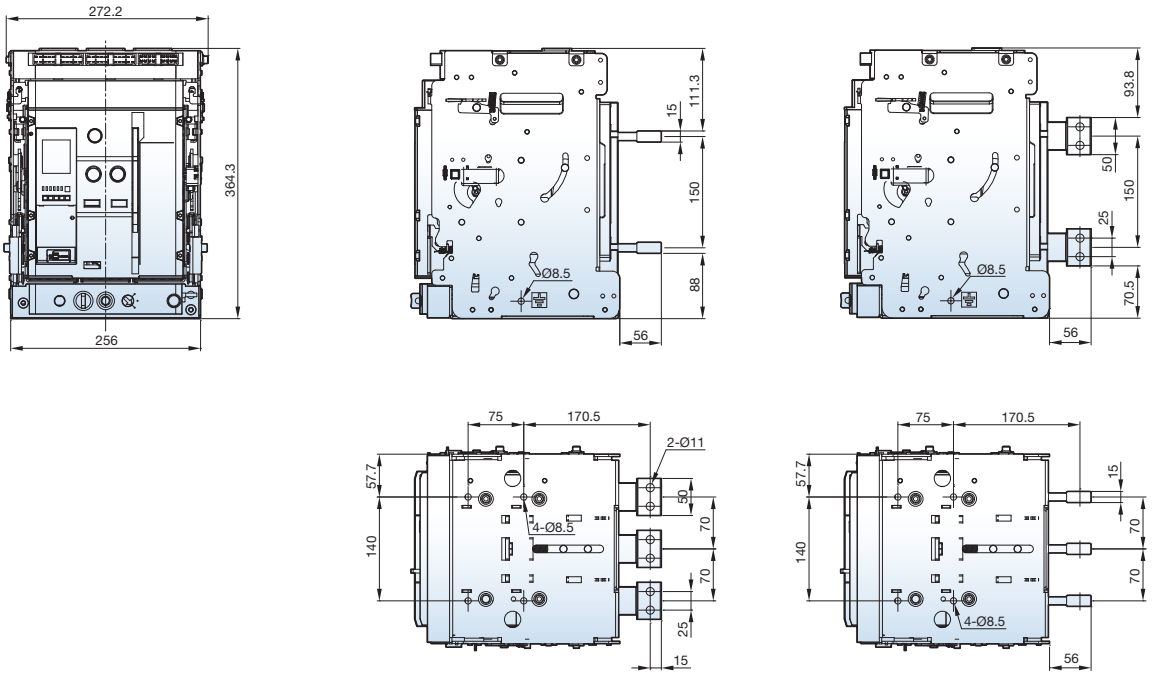


# Dimensions

## 800/1600AF (400~1600A : AW-08/16C)

• 3P [Draw-out H: Horizontal type / V: Vertical type]

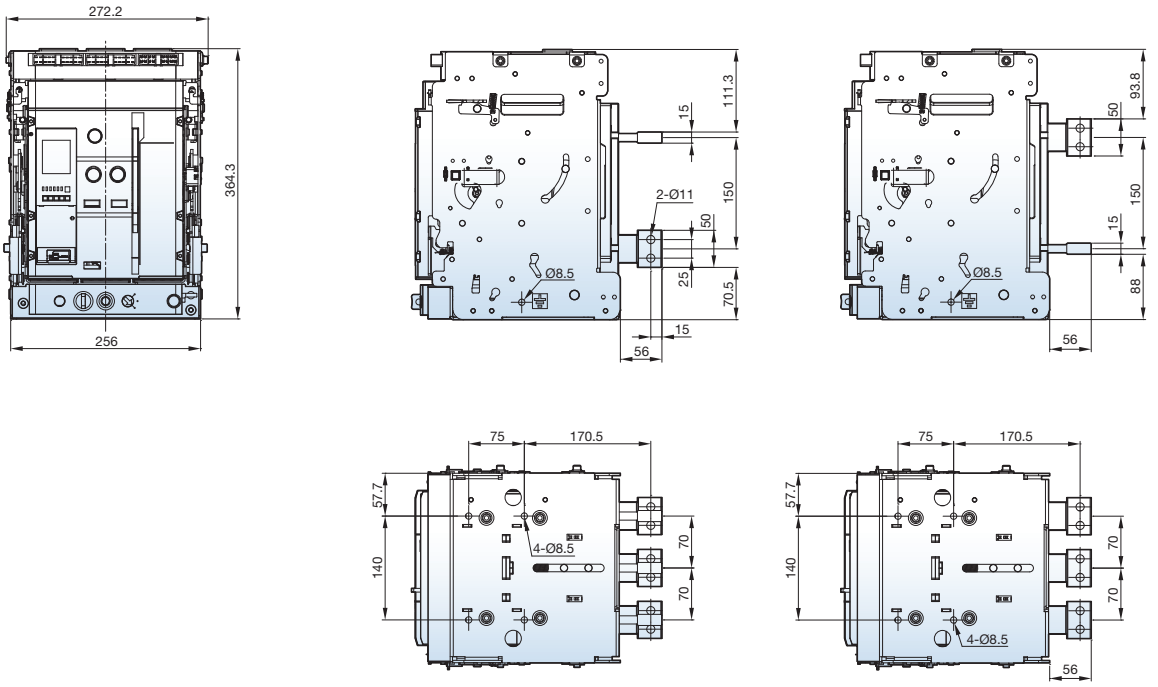
(Unit : mm)




**H Type** (Horizontal type)

**V Type** (Vertical type)

• 3P [Draw-out M: Upper-Horizontal type, Lower-Vertical type / N: Upper-Vertical type, Lower-Horizontal type]



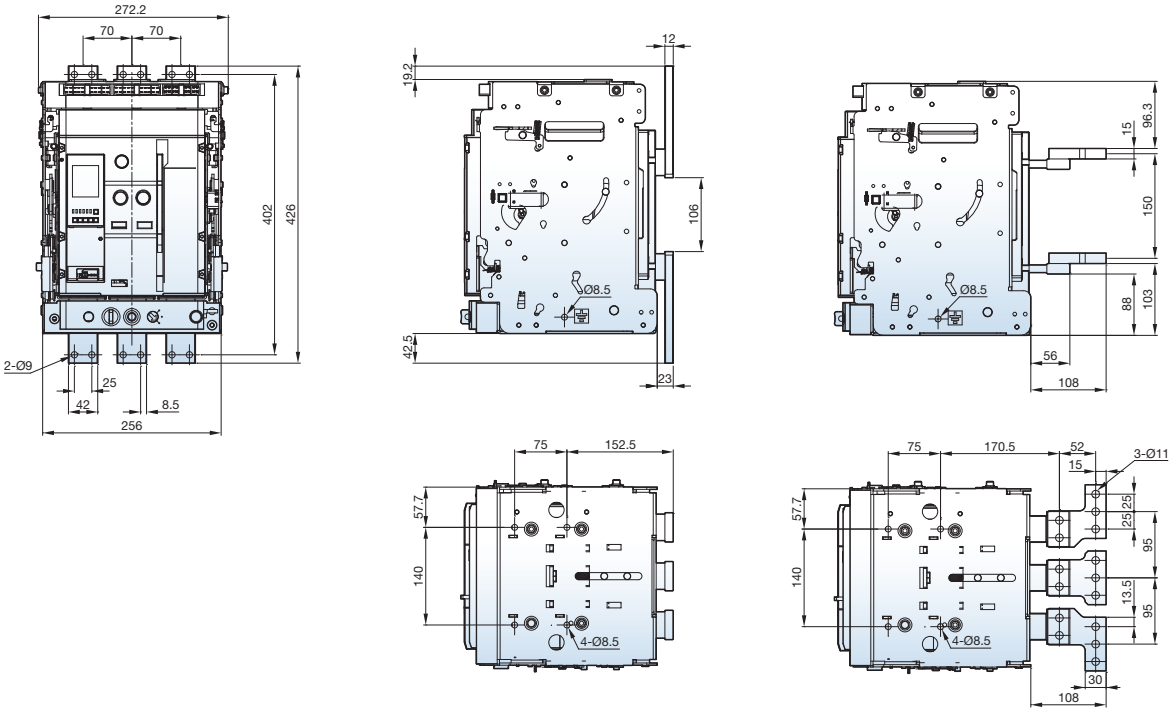

**M Type**
(Upper-Horizontal type, Lower-Vertical type)

**N Type**
(Upper-Vertical type, Lower-Horizontal type)

# 800/1600AF (400~1600A : AW-08/16C)

• 3P [Draw-out P: Plane type / R: Spread type]

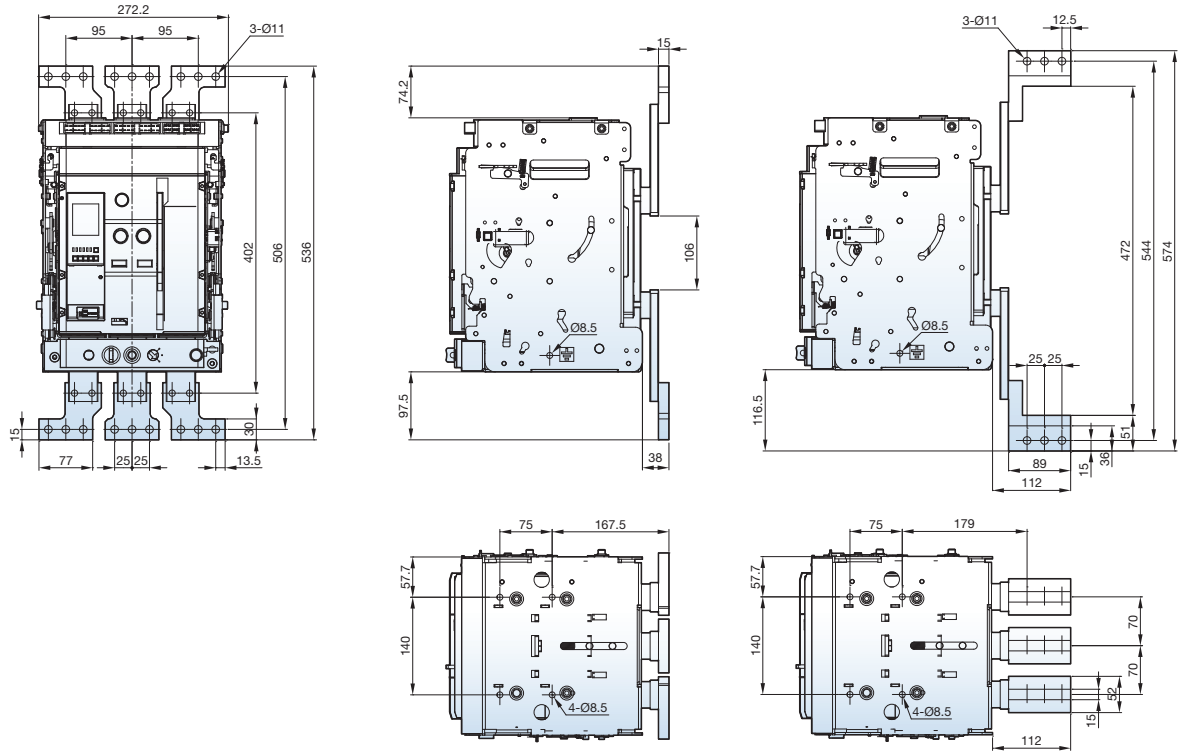
(Unit : mm)




**P Type** (Plane type)

**R Type** (Spread type)

• 3P [Draw-out Z: Plane spread type / T: Plane vertical type]




**Z Type** (Plane spread type)

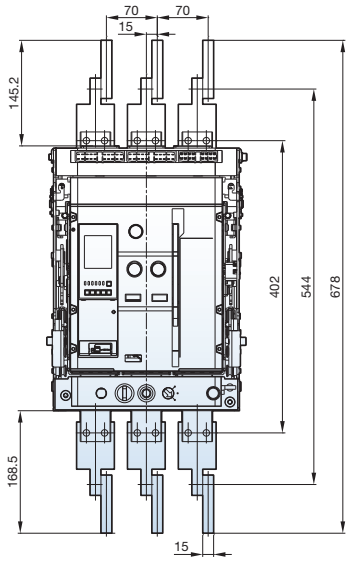
**T Type** (Plane vertical type)

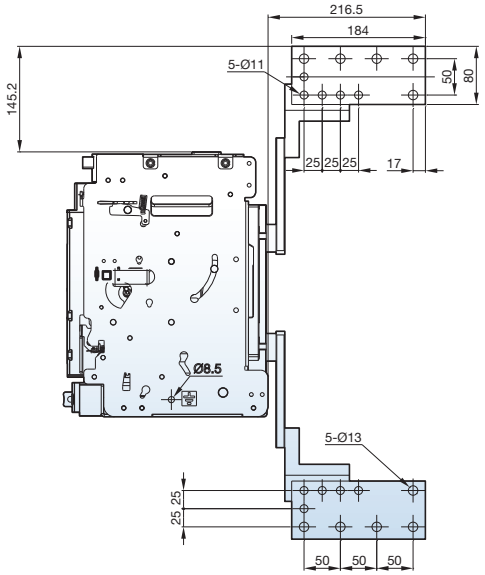
# Dimensions

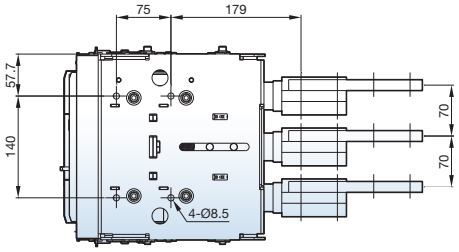
## 800/1600AF (400~1600A : AW-08/16C)

• 3P [Draw-out X: Cable lug type]

(Unit : mm)



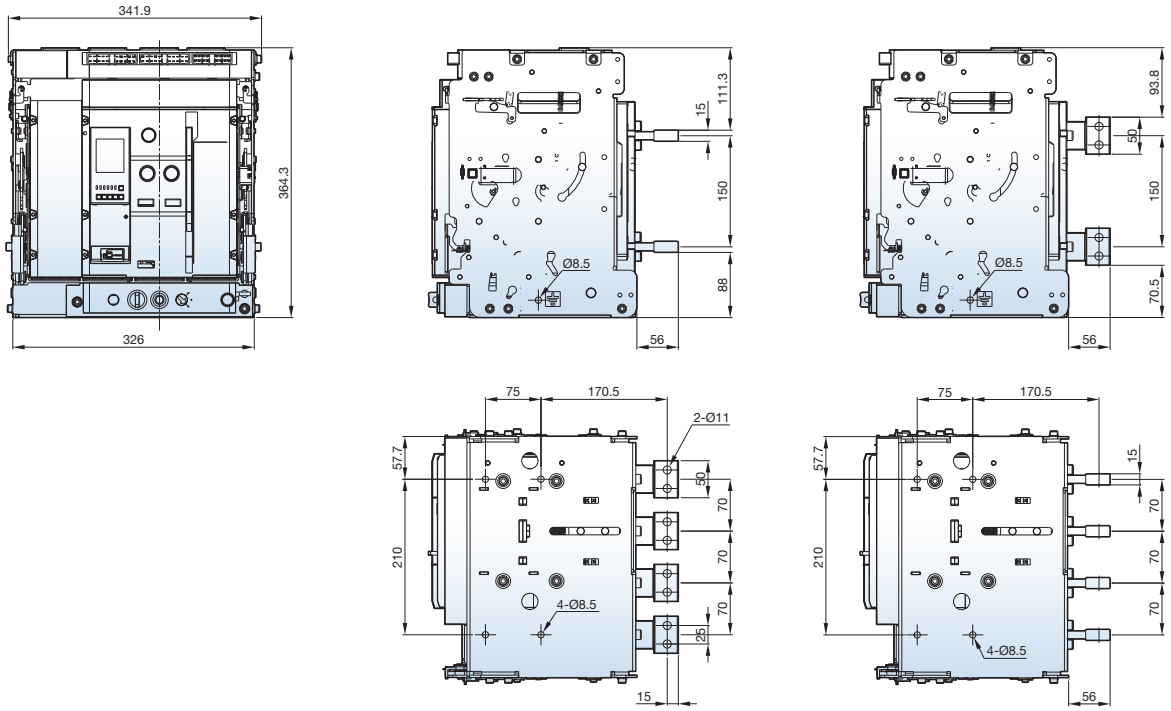




**X Type** (Cable lug type)

# 800/1600AF (400~1600A : AW-08/16C)

• 4P [Draw-out H: Horizontal type / V: Vertical type]

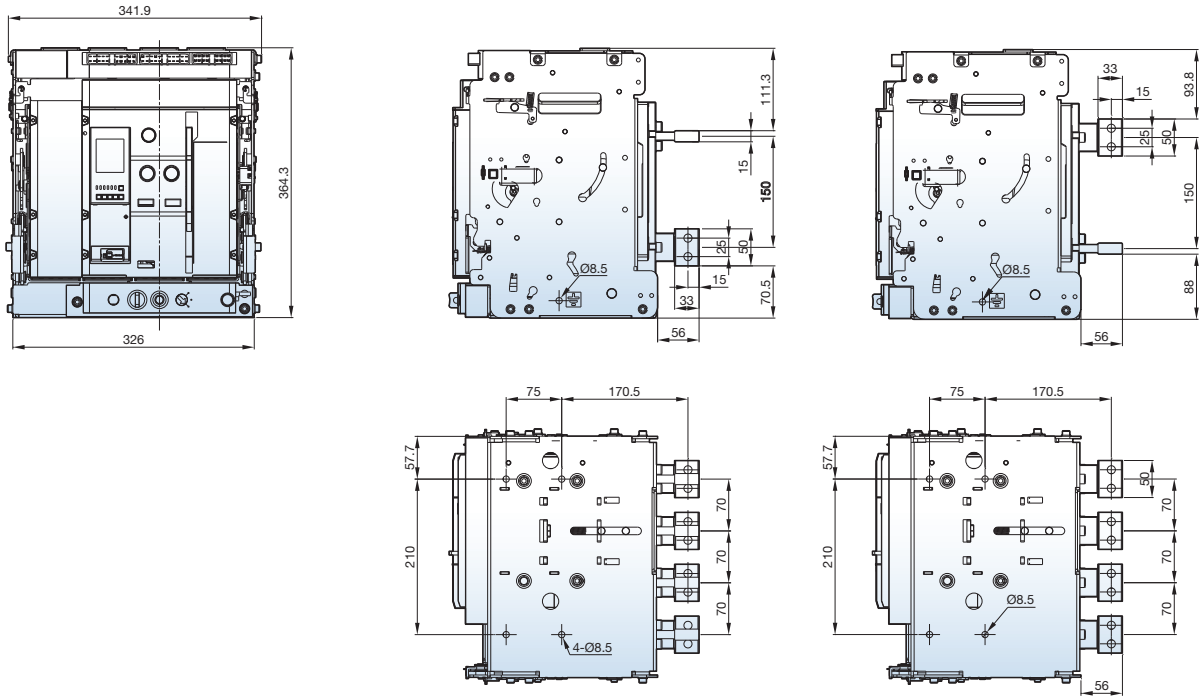
(Unit : mm)




**H Type** (Horizontal type)

**V Type** (Vertical type)

• 4P [Draw-out M: Upper-Horizontal type, Lower-Vertical type / N: Upper-Vertical type, Lower-Horizontal type]




**M Type**
(Upper-Horizontal type, Lower-Vertical type)

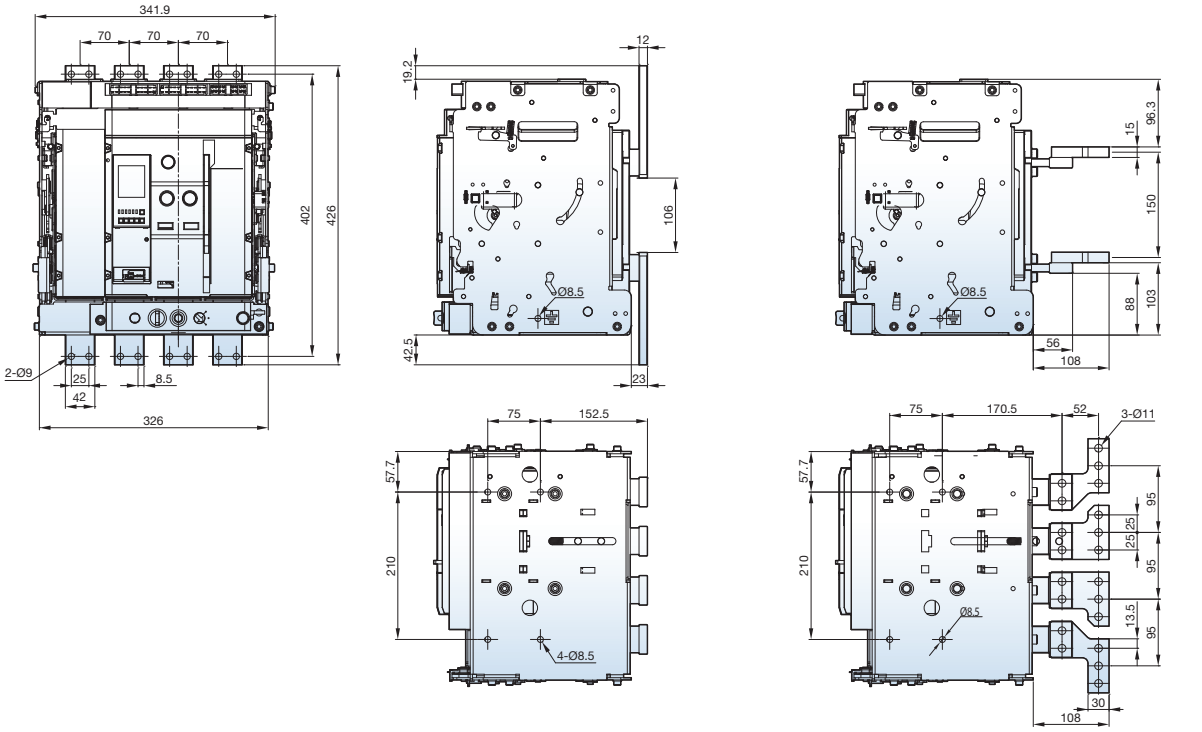
**N Type**
(Upper-Vertical type, Lower-Horizontal type)

# Dimensions

## 800/1600AF (400~1600A : AW-08/16C)

• 4P [Draw-out P: Plane type / R: Spread type]

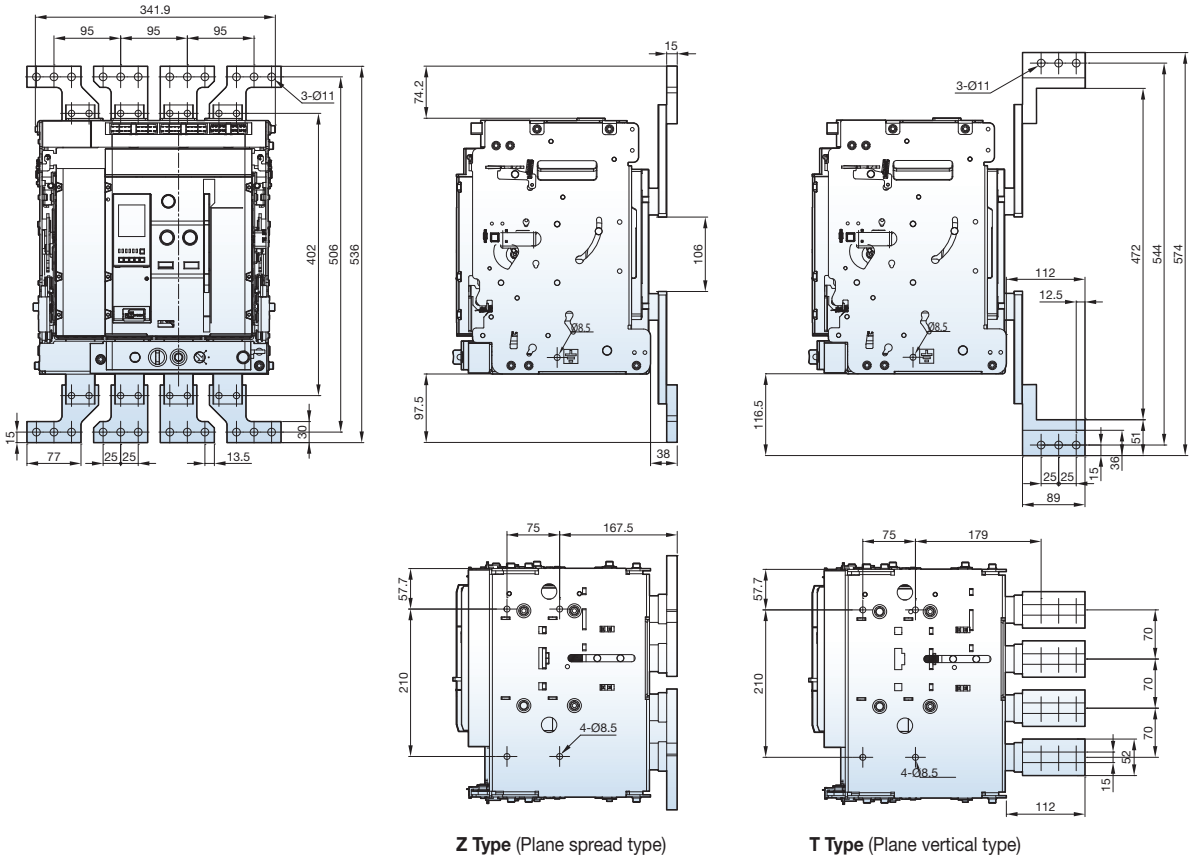
(Unit : mm)




**P Type** (Plane type)

**R Type** (Spread type)

• 4P [Draw-out Z: Plane spread type / T: Plane vertical type]



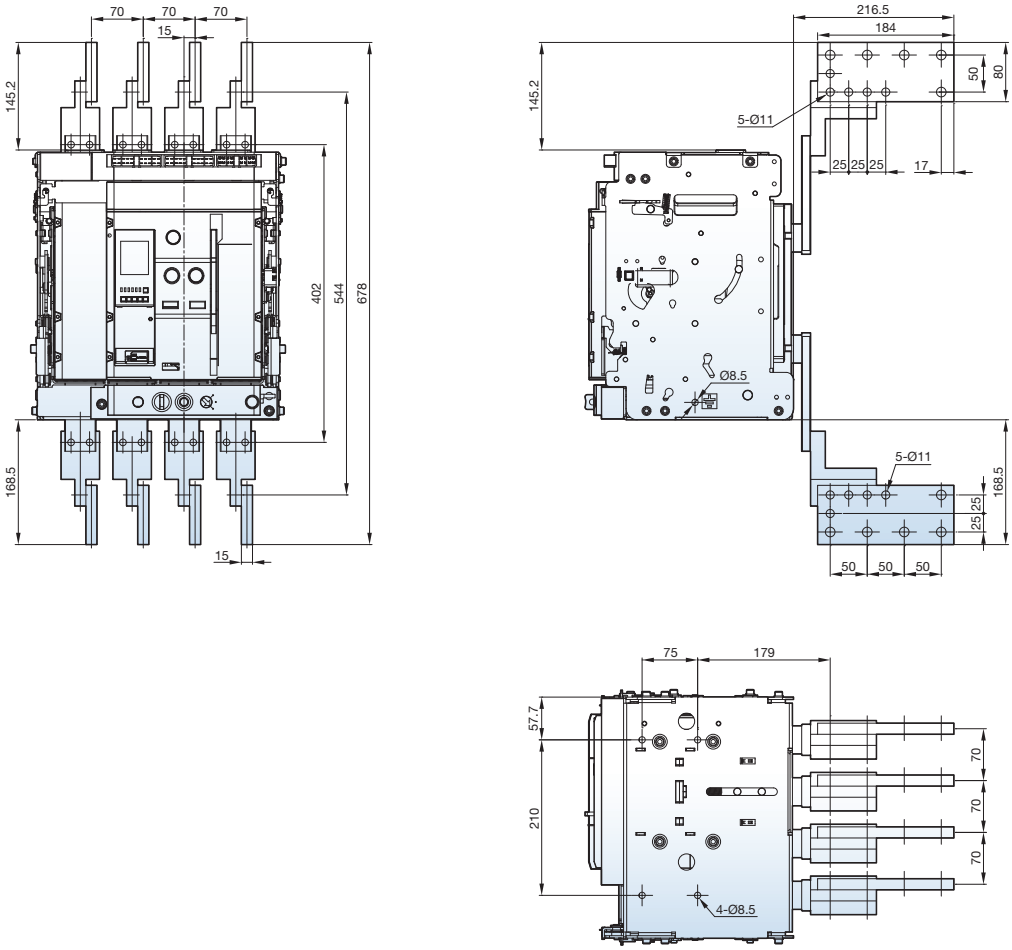

**Z Type** (Plane spread type)

**T Type** (Plane vertical type)

# 800/1600AF (400~1600A : AW-08/16C)

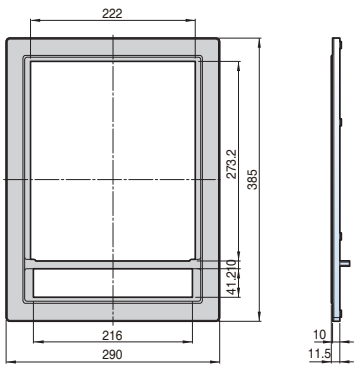
• 4P [Draw-out X: Cable lug type]

(Unit : mm)




**X Type** (Cable lug type)

## Draw-out Door Frame: DF

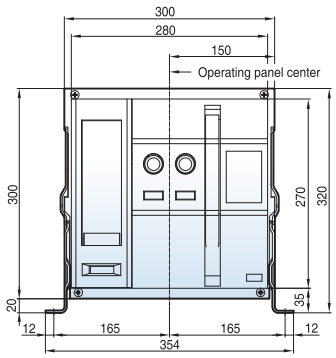


# Dimensions

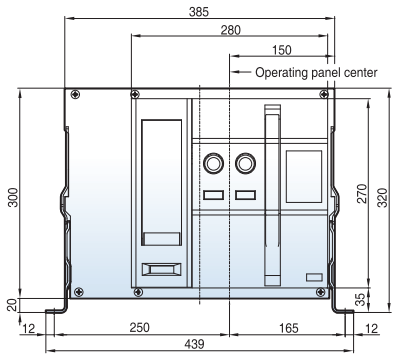
## 1600AF Fixed type (200~1600A : AV/AW-06~16D)

(Unit : mm)

### Front view

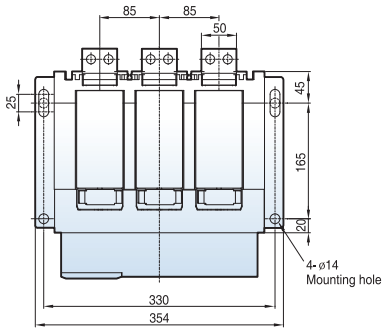



3P

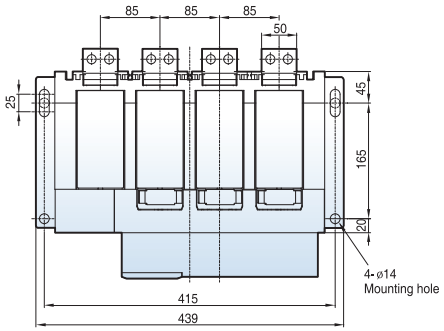



4P

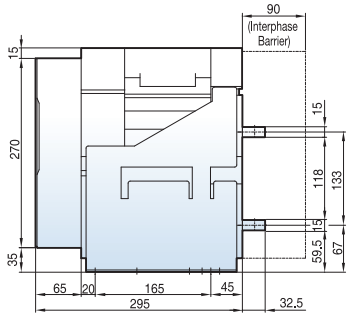
### Horizontal type

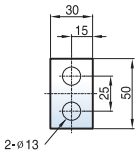



3P



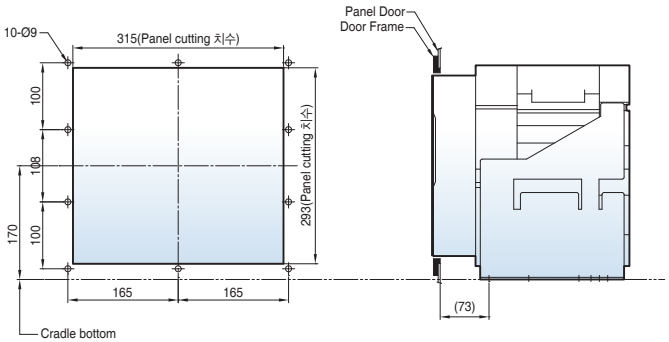

4P




<Conductor>

### Door Frame: DF (AH-D/E)

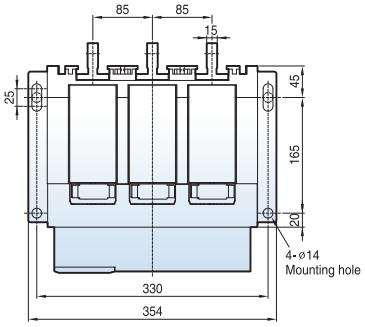



Note) The dimensions are for fixed type.

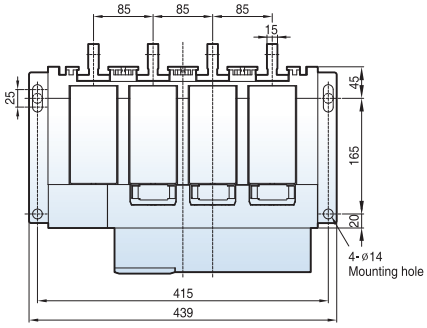
# 1600AF Fixed type (200~1600A : AV/AW-06~16D)

(Unit : mm)

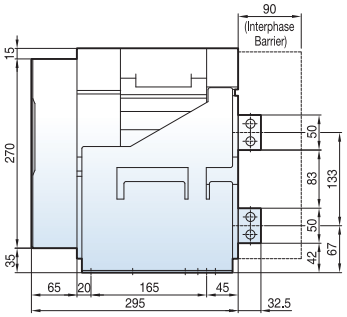
## Vertical type

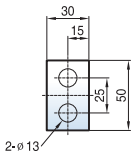



3P



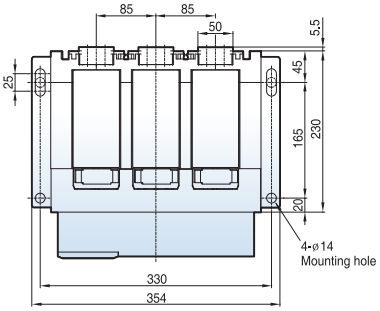

4P



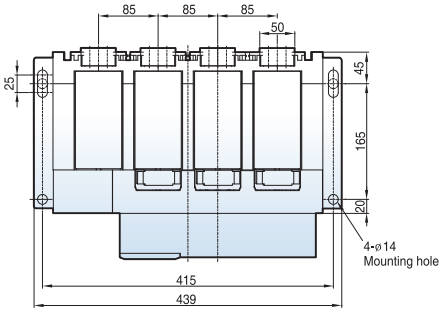




<Conductor>

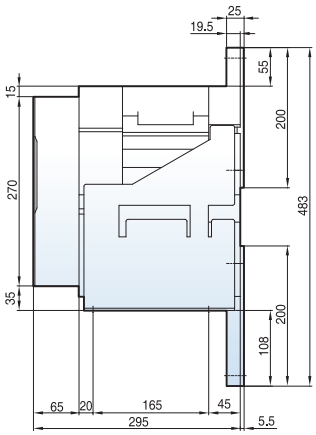
## Front connection type

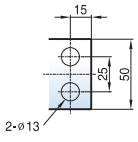



3P




4P



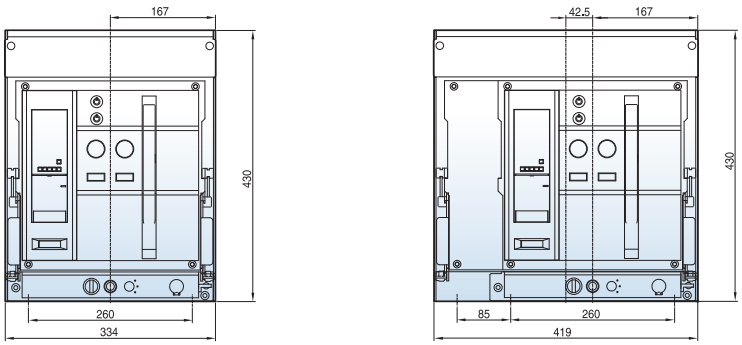

<Conductor>

# Dimensions

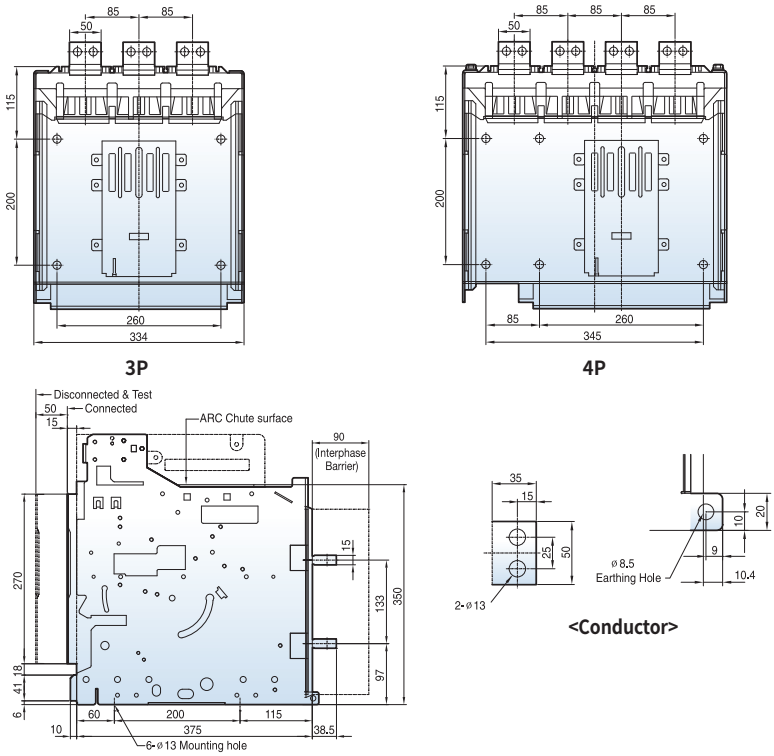
## 1600AF Draw-out type (200~1600A : AV/AW-06~16D)

(Unit : mm)

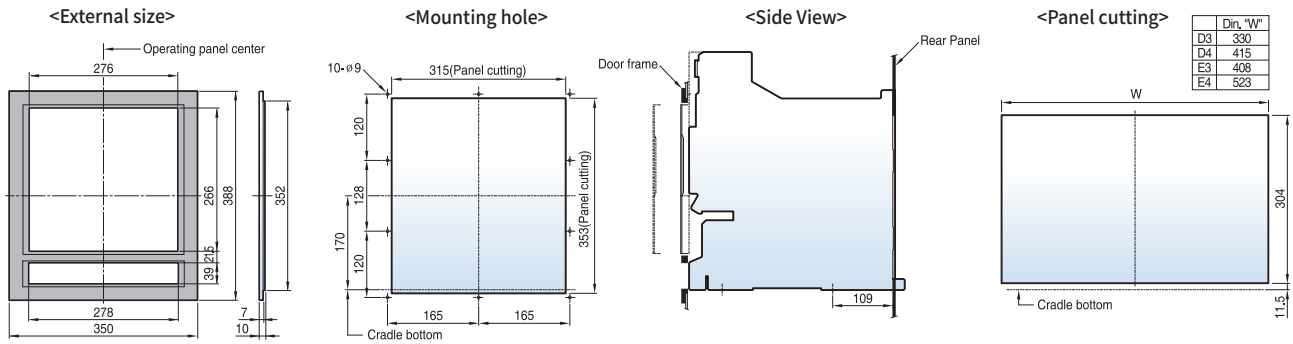
### Front view




### Horizontal type




### Door Frame: DF (AV-D/E)

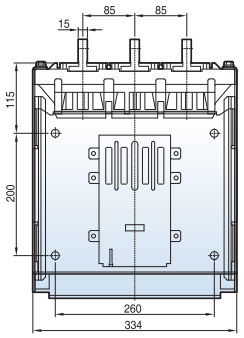



Note) The dimensions are for drawout type.

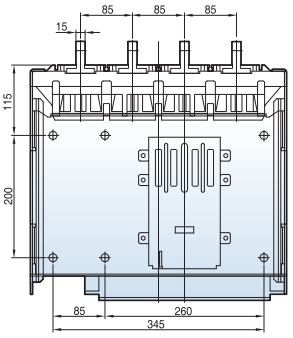
# 1600AF Draw-out type (200~1600A : AV/AW-06~16D)

(Unit : mm)

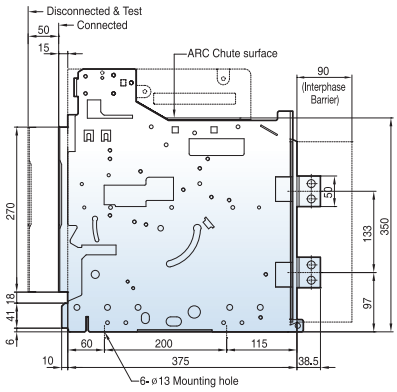
## Vertical type

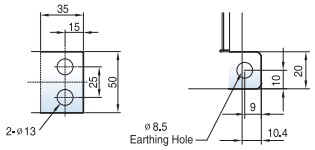



3P



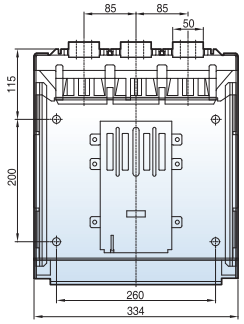

4P



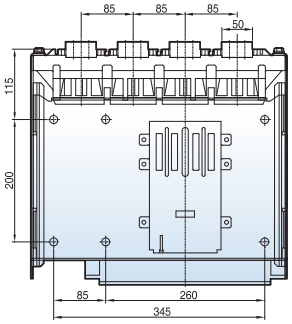




<Conductor>

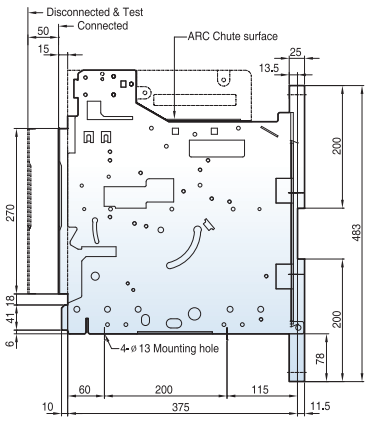
## Front connection type

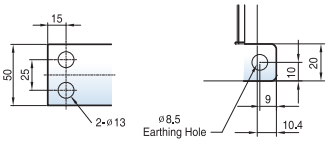



3P




4P



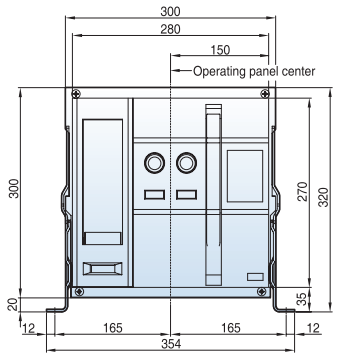

<Conductor>

# Dimensions

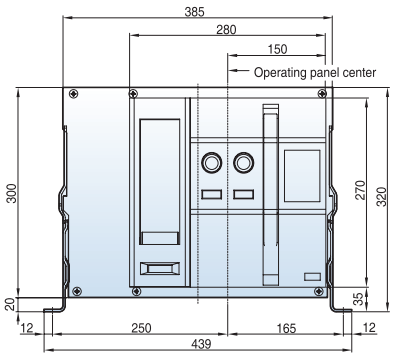
## Fixed type 2000AF (2000A: AV/AW-20D)

(Unit : mm)

### Front view

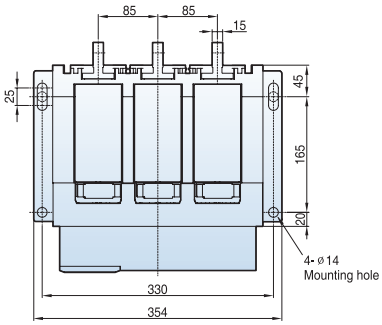



3P

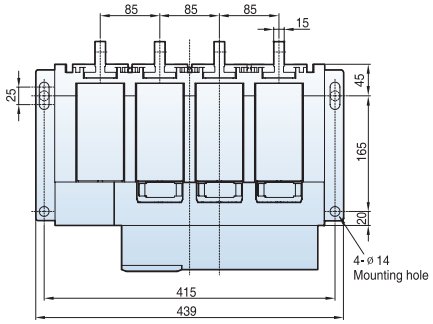



4P

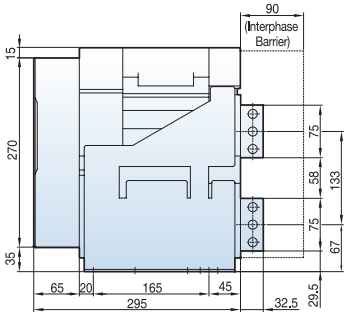
### Vertical type

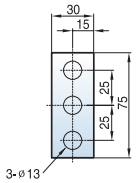



3P




4P



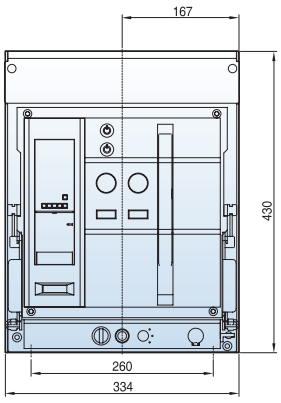




<Conductor>

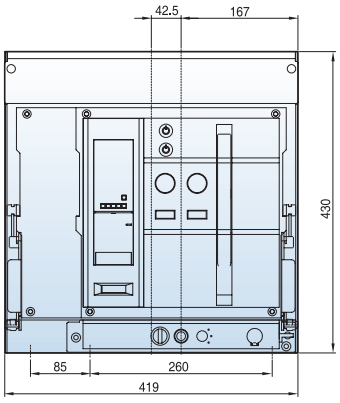
# Draw-out type 2000AF (2000A: AV/AW-20D)

(Unit : mm)

## Front view

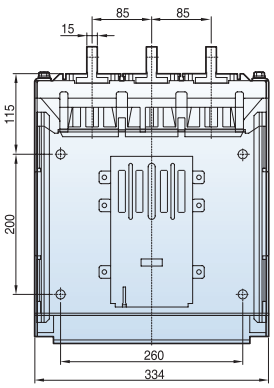



3P

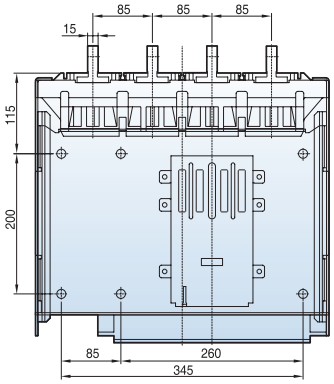



4P

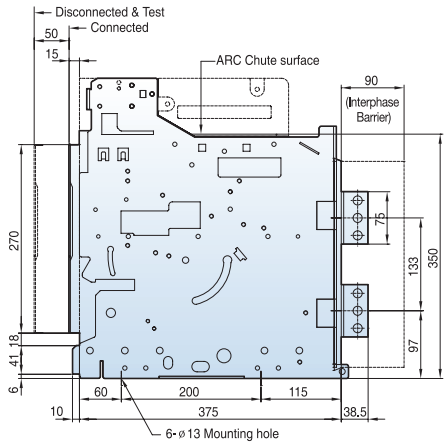
## Vertical type

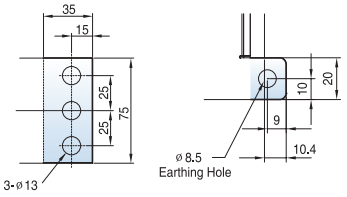



3P




4P



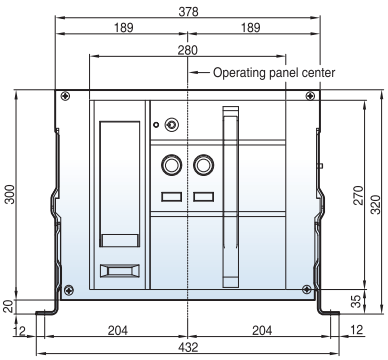

<Conductor>

# Dimensions

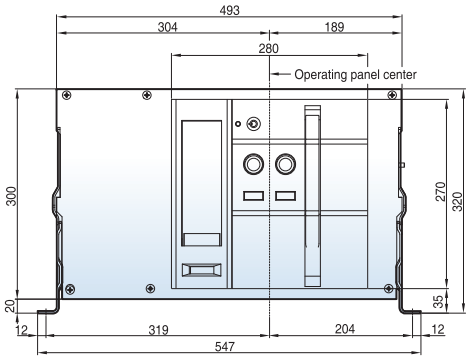
## 3200AF Fixed type (400~3200A : AV/AW-06~32E)

(Unit : mm)

### Front view

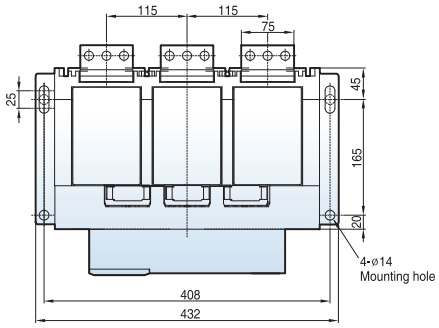



3P

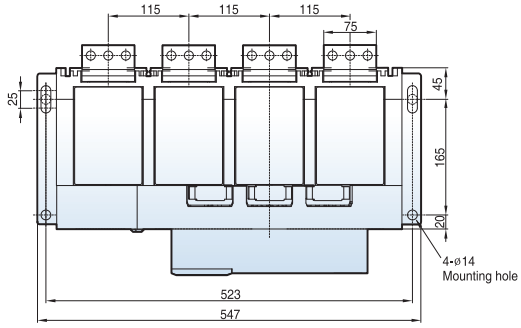



4P

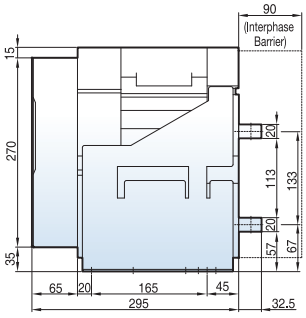
### Horizontal type

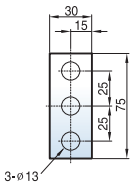



3P




4P



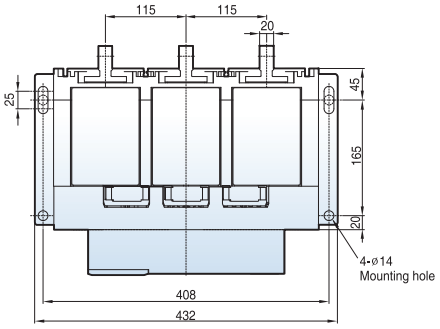




<Conductor>

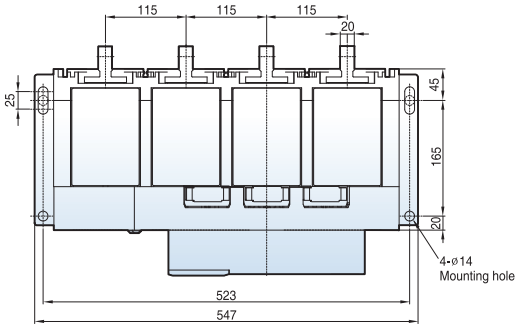
# 3200AF Fixed type (400~3200A : AV/AW-06~32E)

(Unit : mm)

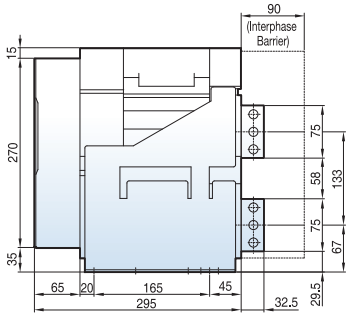
## Vertical type

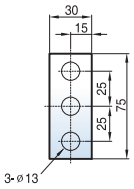



3P



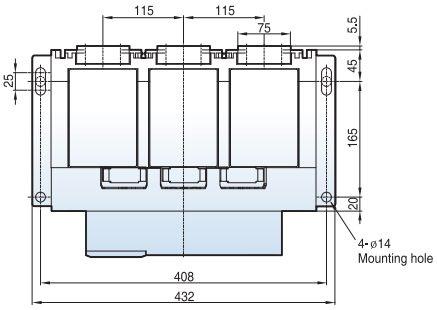

4P



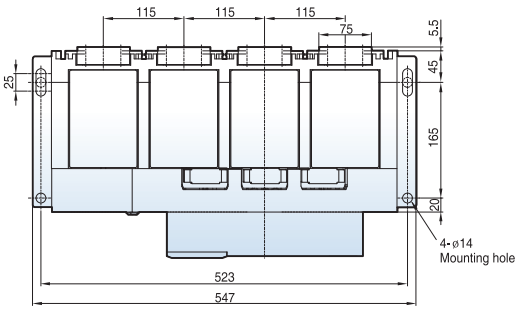




<Conductor>

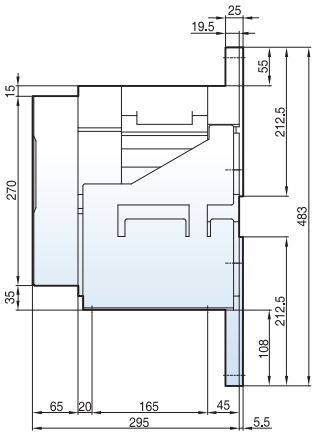
## Front connection type

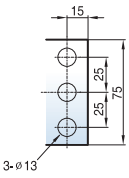



3P




4P



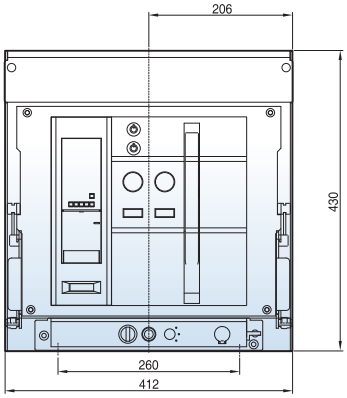

<Conductor>

# Dimensions

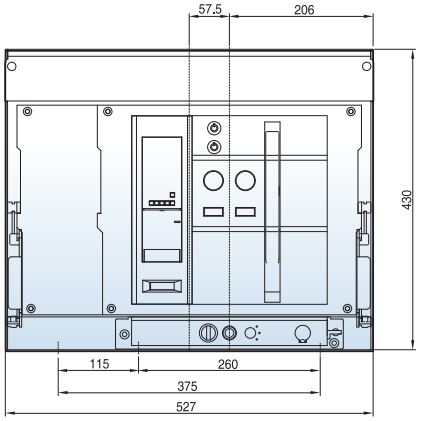
## 3200AF Draw-out type (400~3200A : AV/AW-06~32E)

(Unit : mm)

### Front view

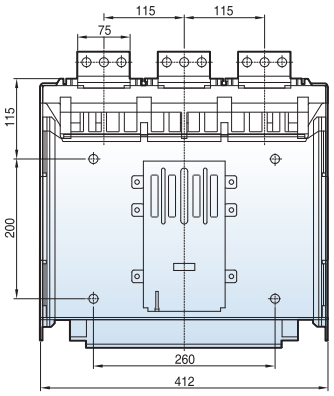



3P

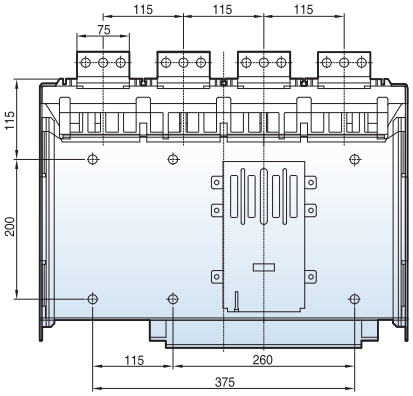



4P

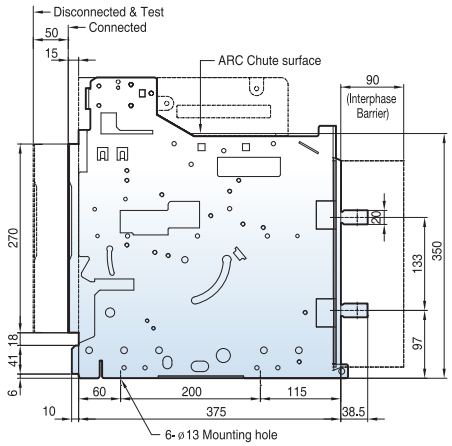
### Horizontal type

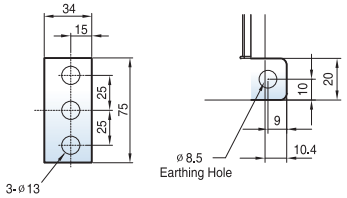



3P




4P



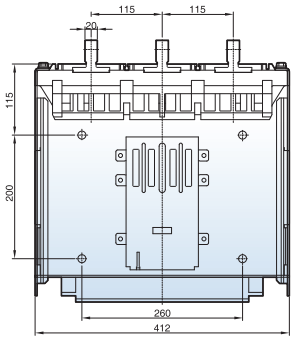




<Conductor>

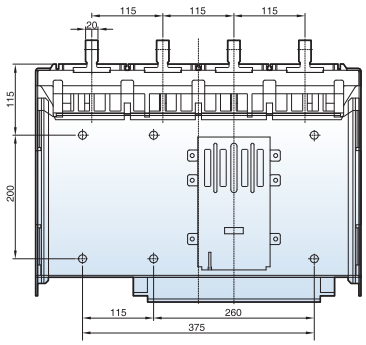
# 3200AF Draw-out type (400~3200A : AV/AW-06~32E)

(Unit : mm)

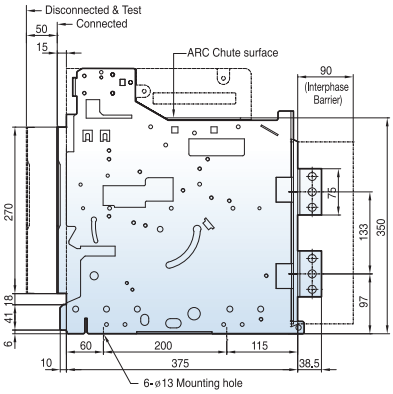
## Vertical type

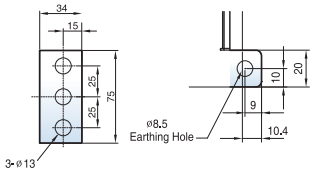



3P



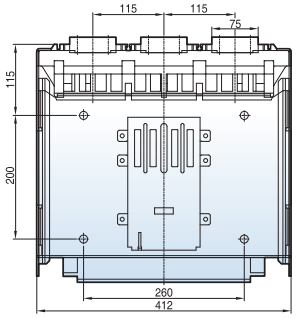

4P



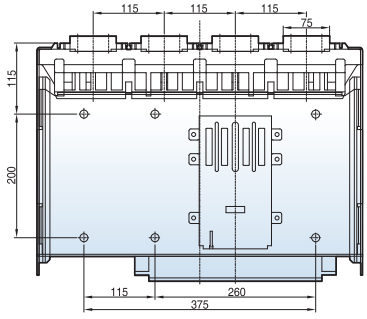




<Conductor>

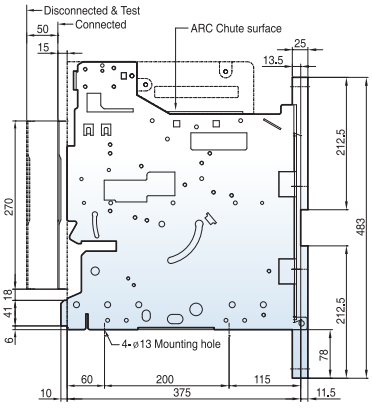
## Front connection type

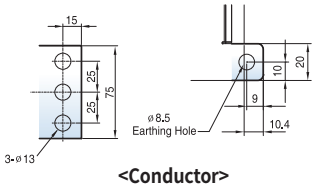



3P




4P



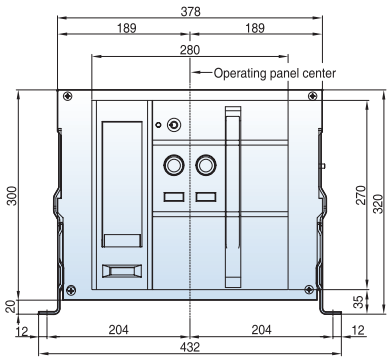

<Conductor>

# Dimensions

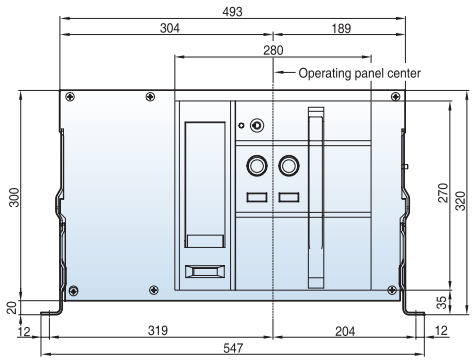
## Fixed type 4000AF (4000A: AV/AW-40E)

(Unit : mm)

### Front view

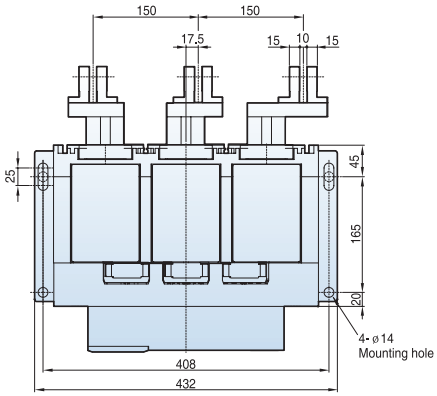



3P

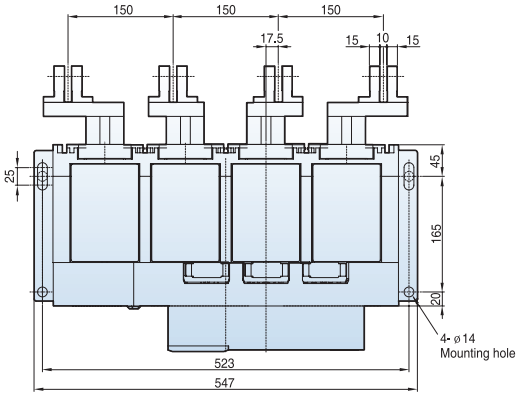



4P

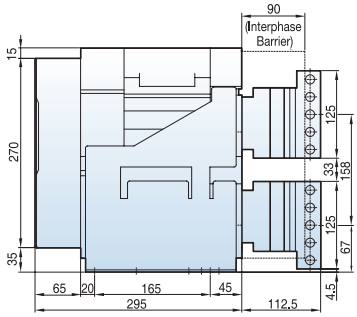
### Vertical type

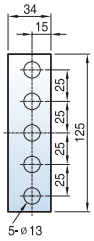



3P




4P



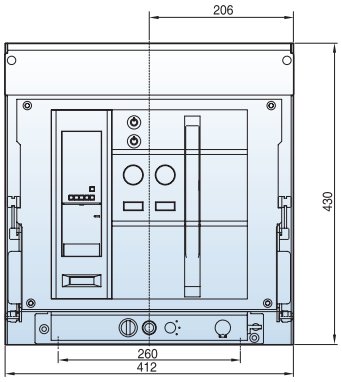




<Conductor>

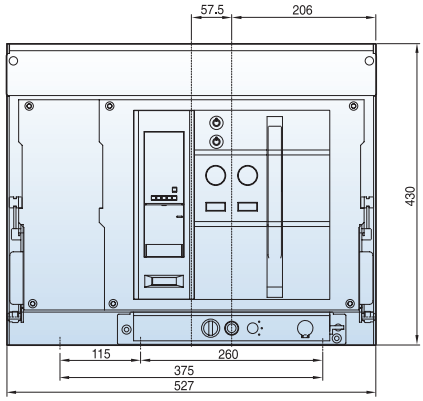
# Draw-out type 4000AF (4000A: AV/AW-40E)

(Unit : mm)

## Front view

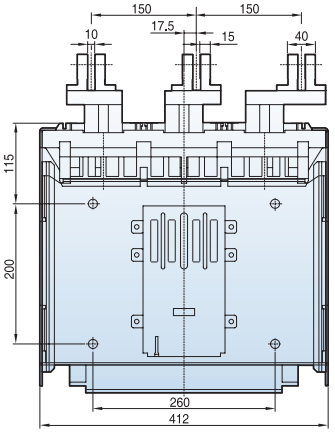



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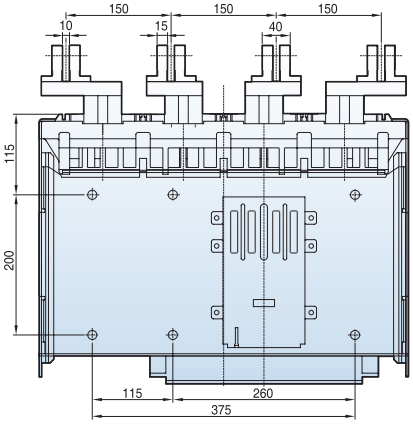



4P

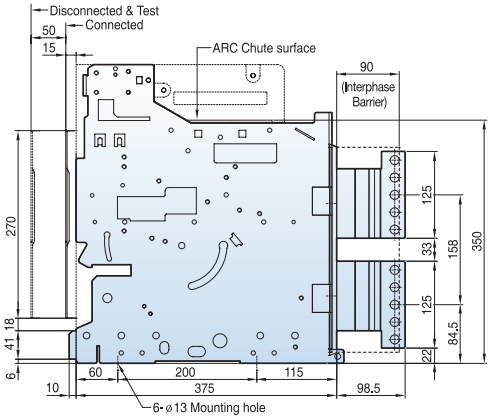
## Vertical type

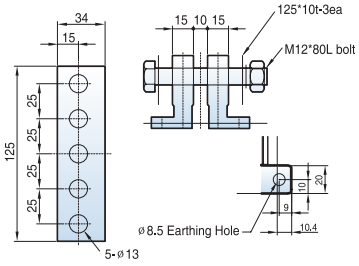



3P




4P



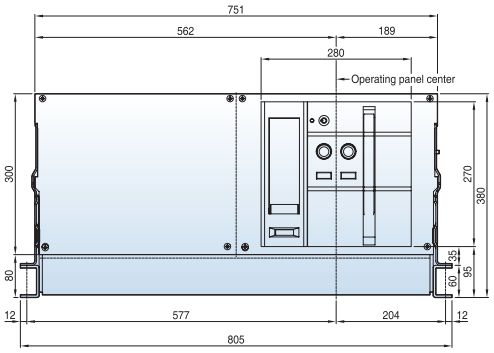

<Conductor>

# Dimensions

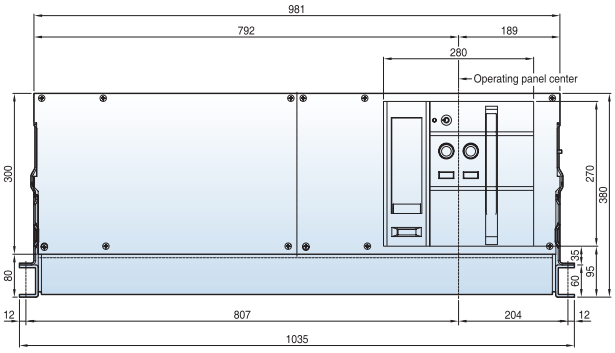
## Fixed type 6300AF (4000A~5000A: AV/AW-40~50G)

### Front view

[Unit: mm]

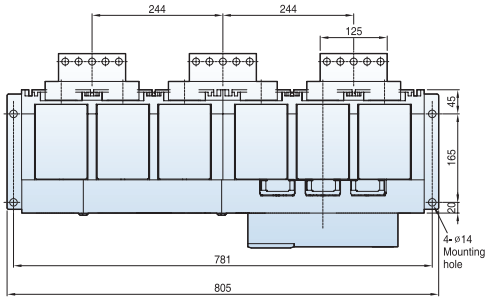



3P

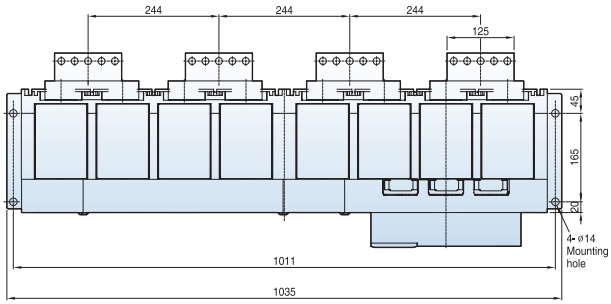



4P

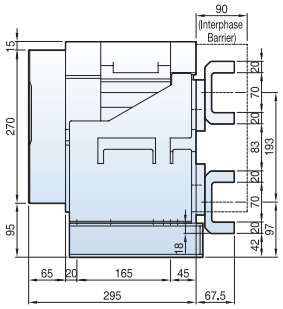
### Horizontal type

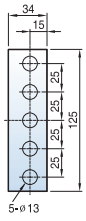



3P




4P



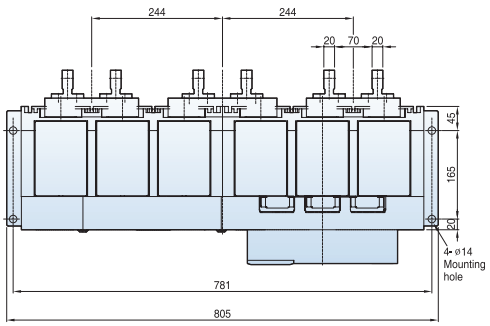




<Conductor>

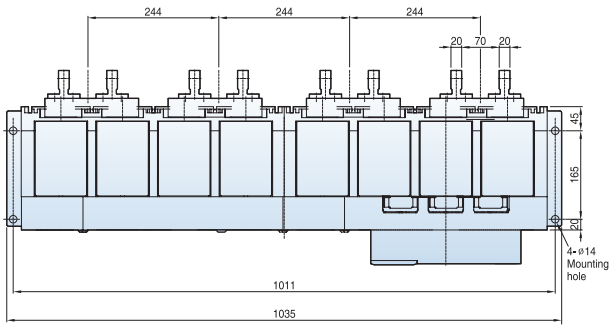
* Side View: Horizontal type same as 3-pole type

## Vertical type

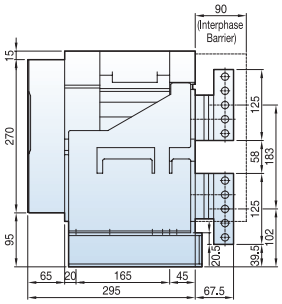
[Unit: mm]

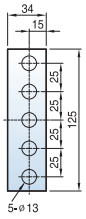



3P




4P



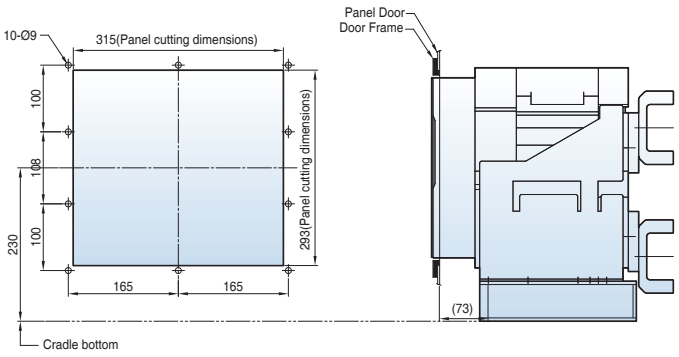

<Conductor>

* Side View: Vertical type same as 3-pole type

## Door Frame: DF (AH-G)

<Attachment hole>

<Side View>



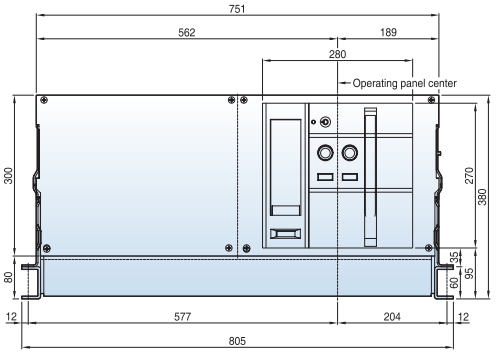

Note) The above Door Frame dimensions are applicable only to the fixed type.

# Dimensions

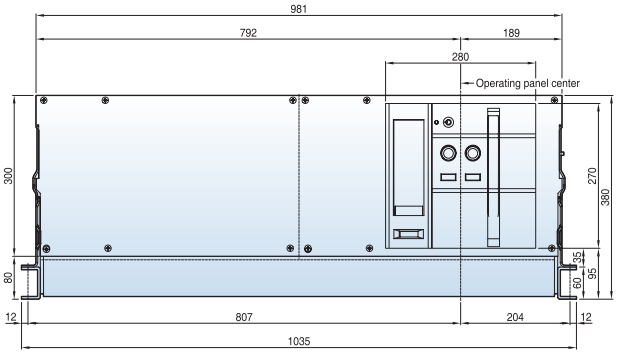
## Fixed type 6300AF (6300A: AV/AW-63G)

### Front view

[Unit: mm]

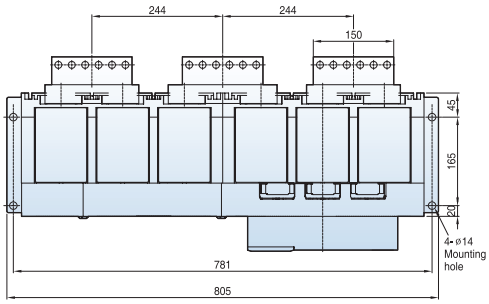



3P

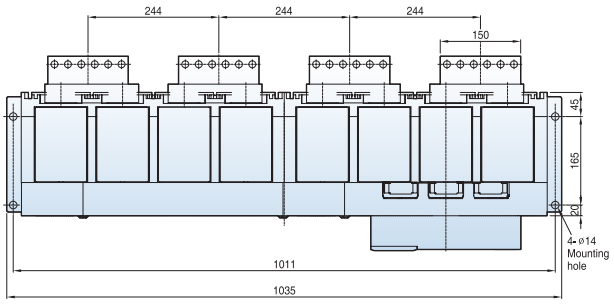



4P

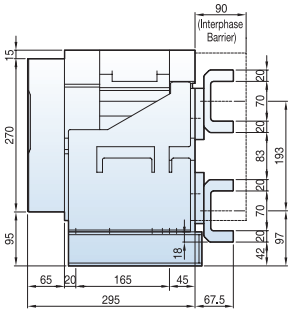
### Horizontal type

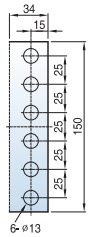



3P




4P



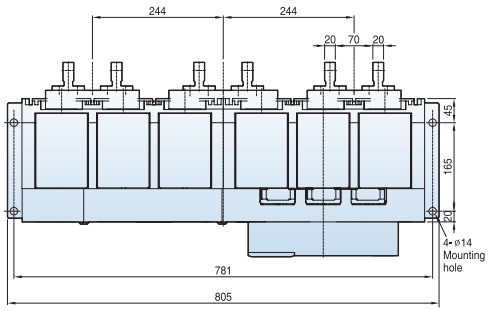




<Conductor>

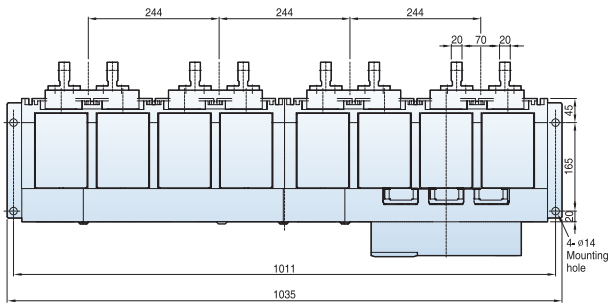
* Side View: Horizontal type same as 3-pole type

## Vertical type

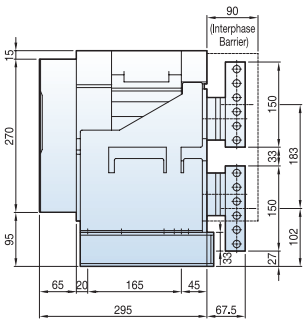
[Unit: mm]

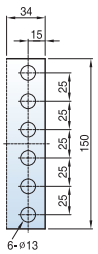



3P




4P




<Conductor>

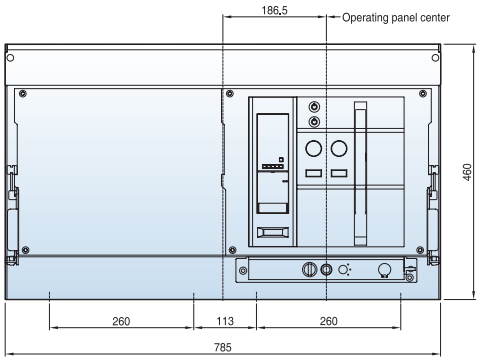
* Side View: Vertical type same as 3-pole type

# Dimensions

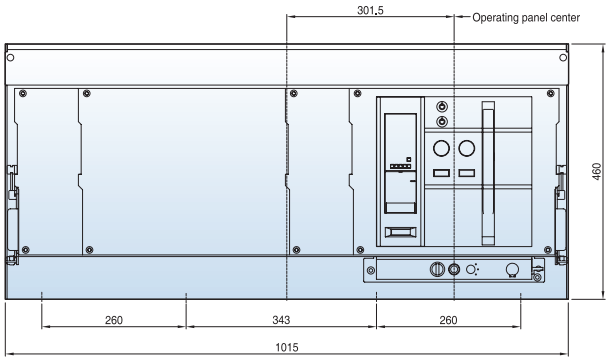
## Draw-out type 6300AF (4000A~5000A: AV/AW-40~50G)

### Front view

[Unit: mm]

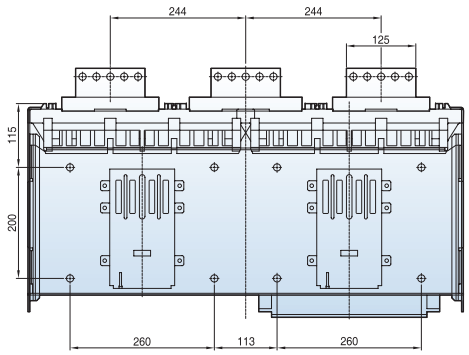



3P

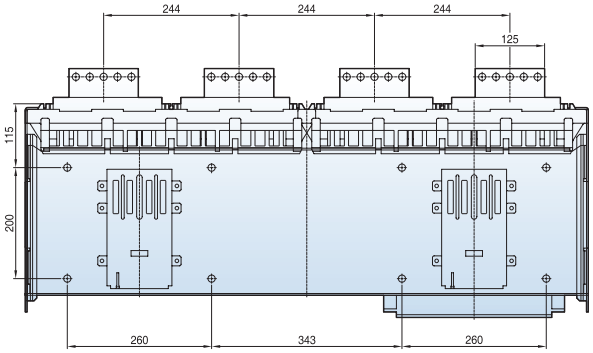



4P

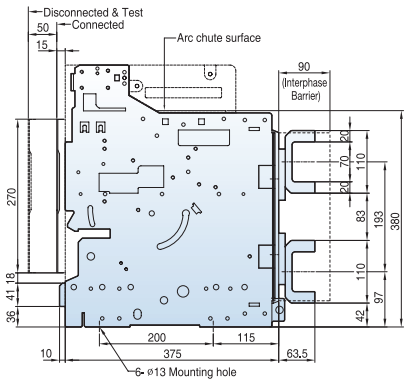
### Horizontal type

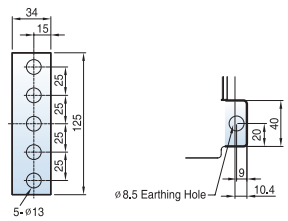



3P




4P



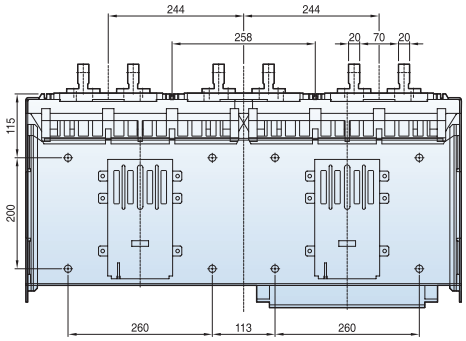




<Conductor>

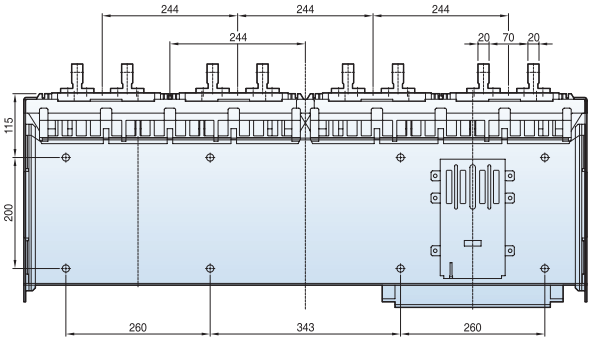
* Side View: Horizontal type same as 3-pole type

## Vertical type

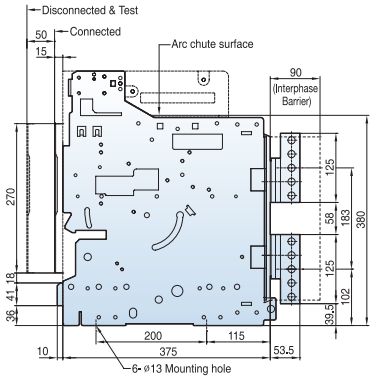
[Unit: mm]

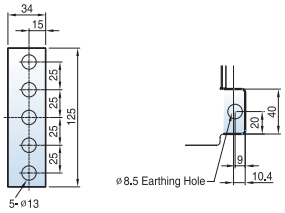



3P




4P



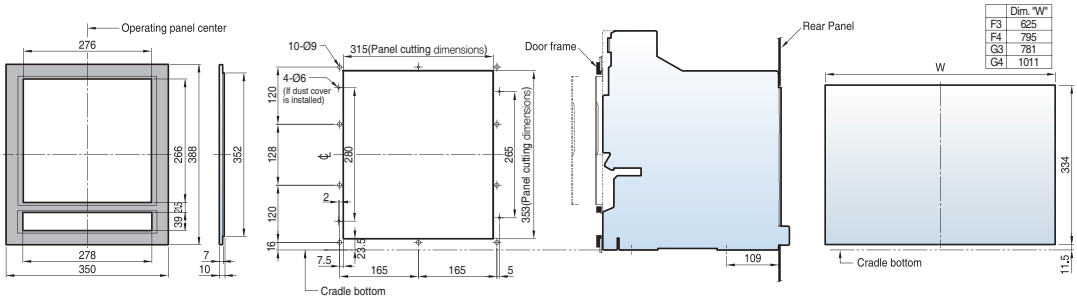




<Conductor>

* Side View: Vertical type same as 3-pole type

## Door Frame: DF (AH-G)

<External size> <Attachment hole> <Side View> <Panel cut dimensions>




| | Dim. "W" |
|---|---|
| F3 | 625 |
| F4 | 795 |
| G3 | 781 |
| G4 | 1011 |

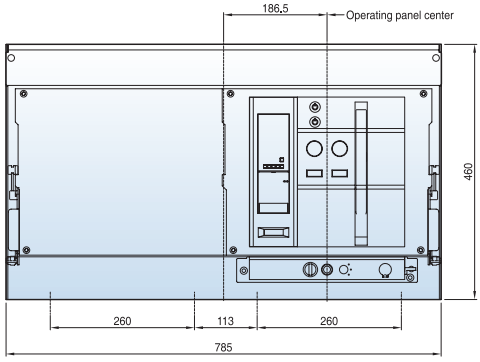
Note) The above Door Frame dimensions are applicable only to the pull-out type.

# Dimensions

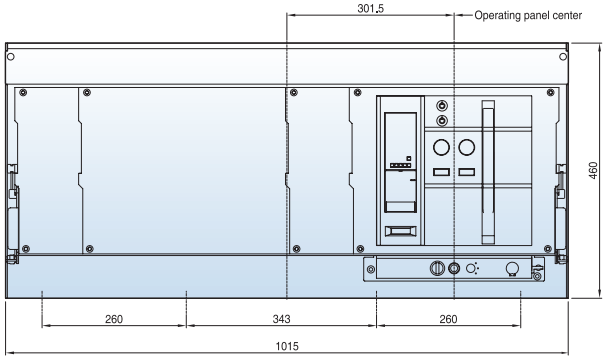
## Draw-out type 6300AF (6300A: AV/AW-63G)

### Front view

[Unit: mm]

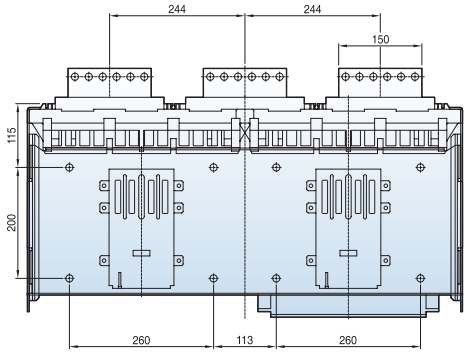



3P

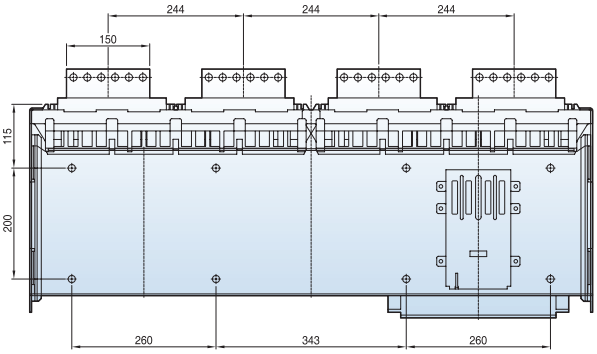



4P

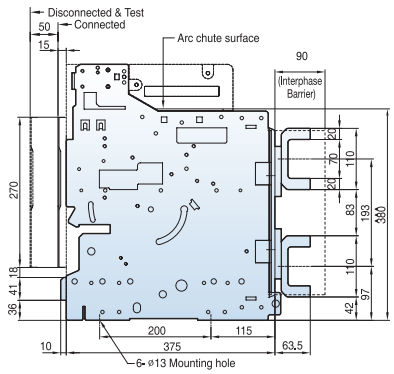
### Horizontal type

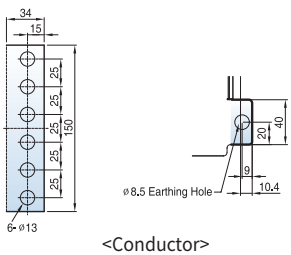



3P




4P



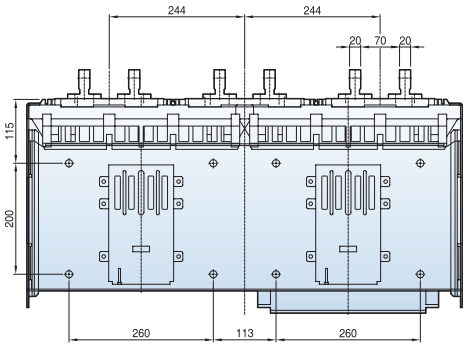




<Conductor>

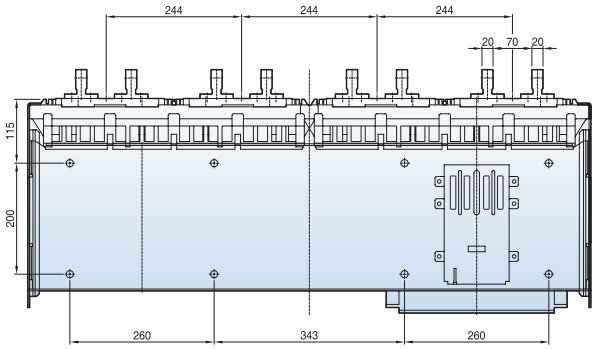
* Side View: Horizontal type same as 3-pole type

## Vertical type

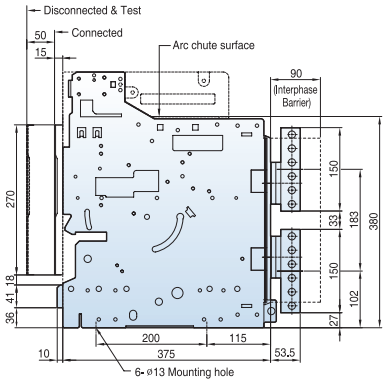
[Unit: mm]

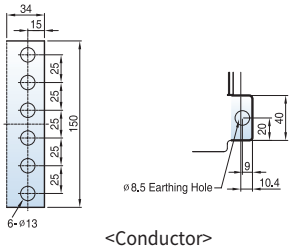



3P




4P




<Conductor>

* Side View: Vertical type same as 3-pole type

## Temperature derating

| Frame | Rated current | ACB terminal | Applicable busbar size |  | | | | | | |  | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Horizontal type | | | | | | | Vertical type | | | | | | |
| | | | | 40℃ | 45℃ | 50℃ | 55℃ | 60℃ | 65℃ | 70℃ | 40℃ | 45℃ | 50℃ | 55℃ | 60℃ | 65℃ | 70℃ |
| 1600AF AH-D | 800A | 15t×50×1EA | 6t×50×2EA | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A |
| | | | 10t×60×1EA | | | | | | | | | | | | | | |
| | 1000A | | 8t×50×2EA | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A |
| | 1250A | | 6t×75×2EA | - | - | - | - | - | - | - | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A |
| | | | 8t×60×2EA | 1250A | 1250A | 1250A | 1250A | 1250A | 1200A | 1140A | | | | | | | |
| | | | 10t×50×2EA | - | - | - | - | - | - | - | | | | | | | |
| | 1600A | | 6t×75×3EA | - | - | - | - | - | - | - | 1600A | 1600A | 1580A | 1550A | 1500A | 1320A | 1260A |
| | | | 10t×60×2EA | 1600A | 1600A | 1520A | 1480A | 1420A | 1240A | 1180A | | | | | | | |
| | | | 8t×60×3EA | | | | | | | | | | | | | | |
| 2000AF AH-D | 2000A | 15t×75×1EA | 8t×75×3EA | - | - | - | - | - | - | - | 2000A | 2000A | 1940A | 1860A | 1780A | 1650A | 1580A |
| | | | 10t×100×2EA | | | | | | | | | | | | | | |
| 3200AF AH-E | 630A | 20t×75×1EA | 5t×50×2EA | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A | 630A |
| | | | 10t×60×1EA | | | | | | | | | | | | | | |
| | 800A | | 6t×50×2EA | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A | 800A |
| | | | 10t×60×1EA | | | | | | | | | | | | | | |
| | 1000A | | 8t×50×2EA | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A | 1000A |
| | 1250A | | 6t×75×2EA | - | - | - | - | - | - | - | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A |
| | | | 8t×60×2EA | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A | 1250A | | | | | | | |
| | | | 10t×50×2EA | | | | | | | | | | | | | | |
| | 1600A | | 6t×75×3EA | - | - | - | - | - | - | - | 1600A | 1600A | 1600A | 1600A | 1600A | 1600A | 1600A |
| | | | 10t×60×2EA | 1600A | 1600A | 1600A | 1600A | 1600A | 1600A | 1520A | | | | | | | |
| | | | 8t×60×3EA | | | | | | | | | | | | | | |
| | 2000A | | 8t×75×3EA | 2000A | 2000A | 2000A | 2000A | 2000A | 1900A | 1800A | 2000A | 2000A | 2000A | 2000A | 2000A | 2000A | 2000A |
| | | | 10t×100×2EA | - | - | - | - | - | - | - | | | | | | | |
| | 2500A | | 10t×75×3EA | 2500A | 2500A | 2500A | 2400A | 2300A | 2220A | 2140A | 2500A | 2500A | 2500A | 2500A | 2400A | 2320A | 2240A |
| | | | 8t×75×4EA | | | | | | | | | | | | | | |
| | 3200A | | 10t×100×3EA | - | - | - | - | - | - | - | 3200A | 3200A | 3120A | 3050A | 2950A | 2650A | 2530A |
| | | | 10t×75×4EA | 3200A | 3200A | 3100A | 3000A | 2900A | 2600A | 2460A | | | | | | | |
| 4000AF AH-E | 4000A | 10t×100×3EA | 10t×100×4EA | - | - | - | - | - | - | - | 4000A | 4000A | 3950A | 3800A | 3680A | 3310A | 3160A |
| | | | 10t×75×5EA | | | | | | | | | | | | | | |
| 6300AF AH-G | 4000A | 20t×125×2EA | 10t×100×4EA | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A | 4000A |
| | 5000A | | 10t×125×4EA | 5000A | 5000A | 4900A | 4820A | 4750A | 4690A | 4490A | 5000A | 5000A | 4950A | 4870A | 4850A | 4830A | 4630A |
| | 6300A | 20t×150×2EA | 10t×150×4EA | 6300A | 6300A | 6170A | 6040A | 5900A | 5020A | 4780A | 6300A | 6300A | 6220A | 6160A | 6100A | 5220A | 4980A |

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