

ABOUT CHINT



CHINT A leading global provider of smart energy solutions

CHINT was established 38 years ago in 1984 and built from the capital of approximately 8,000 US dollars. With our rapid development these years, CHINT has become the world's leading intelligent energy solutions provider for the whole industrial chain with the most complete product ranges. In 2021, our annual sales revenue exceeded 16.1 billion dollars and total assets of more than 16.2 billion.

Over two decades of global expansion, our business network covers more than 140 countries and regions worldwide in business industries of low-voltage electric, power transmission and distribution, smart technology, energy instruments and meters, green energy, solar and more. CHINT has more than 40,000 employees worldwide, creating more than 200,000 jobs in the industrial chains.

As the market localization progresses steadily, CHINT Global further establishes its supply chain through business integration and industrial upgrade. Optimizing the service system and project financing, providing innovatively integrated technical services for the global energy market, and a flexible working business model, energy, intelligent manufacturing and digital technology, CHINT has adopted "One Cloud & Two Nets" as the business strategy, takes "CHINT Cloud" as the carrier of intelligent technology and data application, and takes the lead in building the energy Internet of things (EIoT) and industrial Internet of things platforms (IIoT).

Focusing on the energy system of supply, storage, transmission, distribution and consumption, CHINT has core businesses of clean energy, energy distribution, big data and energy value-added services. Furthermore, CHINT's pillar businesses include photovoltaic equipment, energy storage, power transmission & distribution, low-voltage apparatuses, intelligent terminals, software development and control automation. By developing into a platform-based enterprise, CHINT provides a package of energy solutions for public institutions, industrial & commercial users and end-users, by building a regional smart energy operation ecosphere.

Main Businesses



Clean Energy



Low-voltage Apparatus



Power Transmission and Distribution



Instrumentation and Apparatus



Smart Home



Intelligent Building



Intelligent Manufacturing



Industry Automation



Smart Heating



Smart Water



Home Electrical Apparatus



Energy Efficiency Management

ABOUT CHINT LOW VOLTAGE

Zhejiang CHINT Electrics Co., Ltd. is a wholly owned subsidiary of CHINT Group. Cultivating R&D, manufacturing and sales of low-voltage products, we provide system solutions for building, power supply, hoisting, HVAC, telecommunication and other industrial customers. For nearly 40 years since its founding, CHINT Electrics has provided reliable products and services to over 140 countries and regions. Today, CHINT has grown to be one of the world's renowned low-voltage brands.

CHINT Honors

2022

- "AAAAA" standardized good behavior certificate
- "Global Partnership" and "Countries along the Belt and Road" in the "2021 Best Practices for Realizing the Sustainable Development Goals".
- CSR Impact Leading Enterprise

2021

- No. 1 in "China's Top 100 Private Enterprises with Social Responsibility" in 2021
- For 8 consecutive years, CHINT has won the sales champion of Tmall double 11 in electrical and hardware industry
- No. 92 in "2021 China's Top 500 Private Enterprises".
- No. 244 in "2021 Top 500 Chinese Enterprises"
- The intelligent manufacturing factory of low-voltage electrical appliances was selected as the national "2021 Intelligent Manufacturing Demonstration Factory".

2020

- CHINT was selected in the 2020 Zhejiang Province "Future Factory" recognized list, and was rated as the leading "Leading Goose Factory".
- The key inverter technology of CHINT won the second prize of China Electric Power Science and Technology.
- CHINT Astrometry was selected as the smart PV demonstration enterprise list of the Ministry of Industry and Information Technology and won the honor of "Influential PV cell/module brand", "Influential PV EPC / End User", "Influential PV power station operation and maintenance brand".

2019

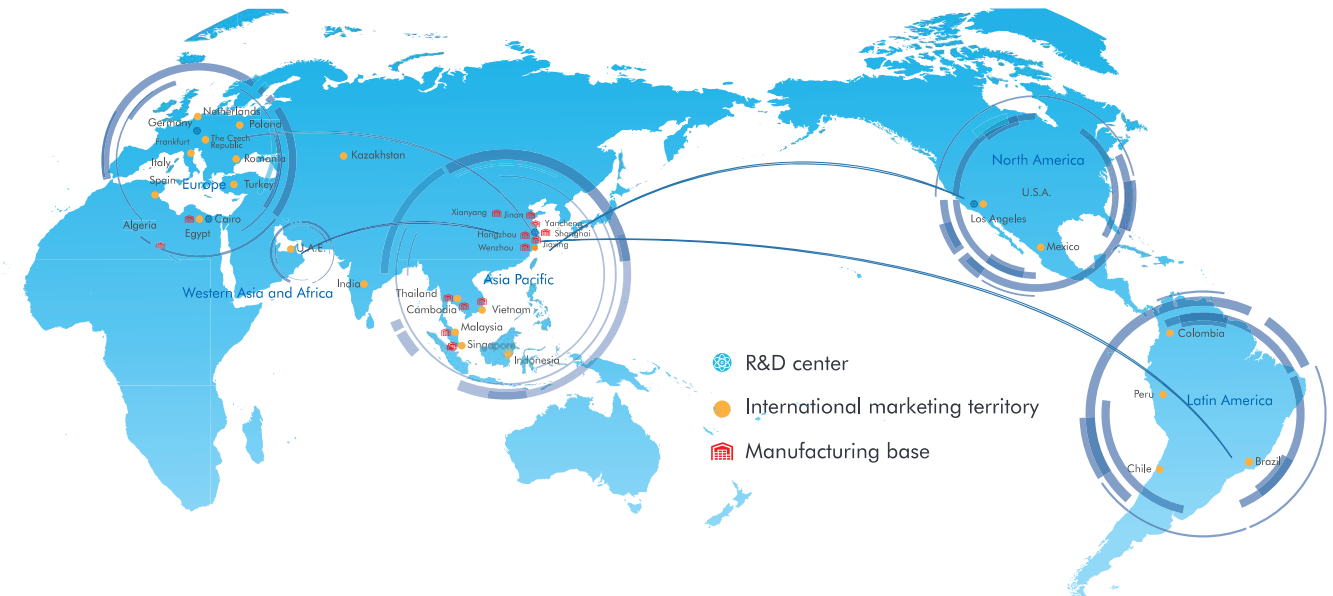
- National Green Factory
- National Industrial Design Center of the MIIT
- Global Top 20 PV Enterprise
- China's Top 10 Successful PV Enterprise
- Top 100 Innovative Enterprises in Zhejiang Province
- Technology innovation system was awarded the 2018 Science and Technology Progress Award in Zhejiang

Qualification Certification

The products have been accredited through China Compulsory Certification (CCC) as well as UL of US, CE of EU, VDE and TÜV of Germany, KEMA of Netherlands, RCM of Australia, RCC of South Africa and other international product certifications.



GLOBAL FOOTPRINT



4 National R&D Centers: North America, Europe, Asia Pacific, North Africa

6 International Marketing Territories: Asia Pacific, Western Asia and Africa, Europe, Latin America, North America, China

14 Manufacturing Bases: China (Wenzhou, Hangzhou, Shanghai, Jiaxing, Xianyang, Jinan, Yancheng), Thailand, Singapore, Vietnam, Malaysia, Egypt, Algeria and Cambodia

20+ International Logistics Centers

2300+ Sales Companies

GLOBAL CAPACITY LAYOUT

The industrial manufacturing bases are mainly located in Wenzhou, Hangzhou, Shanghai, Jiaxing, Xianyang and Yancheng. Additionally, CHINT has set up factories in Thailand, Singapore, Vietnam, Malaysia, Egypt, Cambodia etc.



R&D, QUALITY, SALES, LOGISTICS

Main Advantages

Global R&D System

CHINT has established national R&D centers in North America, Europe, Asia Pacific, North Africa and other areas. We have explored the mode of Industry-University Research Institute Collaboration and Integration together with the universities and research institutions worldwide so as to integrate the global innovation resources and promote corporate R&D innovation and talent cultivation.



24 research institutes



The average annual R&D investment accounts for 4-12% of the revenue



Over 6000 patents in total

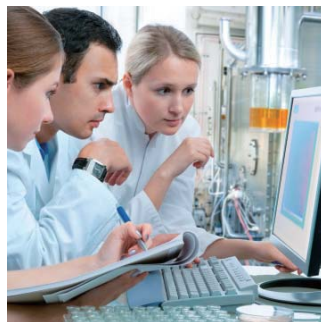
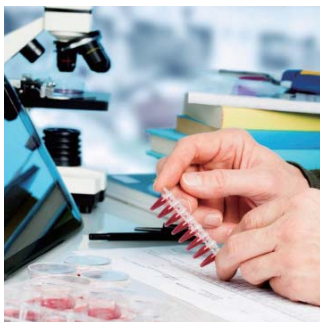
Global Certification

The products have passed the standards and specifications in various regions around the world and obtained numerous international certifications



Honors

- No. 1 in China's Top 100 Private Enterprises with Social Responsibility in 2021
- No. 92 in 2021 China's Top 500 Private Enterprises
- No. 244 in 2021 Top 500 Chinese Enterprises
- The intelligent manufacturing factory of low-voltage electrical appliances was selected as the national 2021 Intelligent Manufacturing Demonstration Factory



Integrated Vertical R&D

By gathering the global industry elites to Provide safe and stable energy-saving green and advanced electric products.

Great Quality System

Ensuring flaw-free and trouble-free products, the multi-dimensional and multilevel control is conducted through procurement, inspection, quality control and certification.

One-stop Services

CHINT's concept is that it is not difficult to fulfill a high-quality logistics distribution at one time, while it is difficult to stay as accurate and prompt as the first-time. High-efficiency and high-precision accuracy are our requirement.

48-Hour Response

Providing end-to-end one-stop services for customers with complains, business consulting and technical support by solving problems immediately and including any possible problems in advance.

5%

At least 5% of revenue is invested in research and development



Air Circuit Breaker

ACB



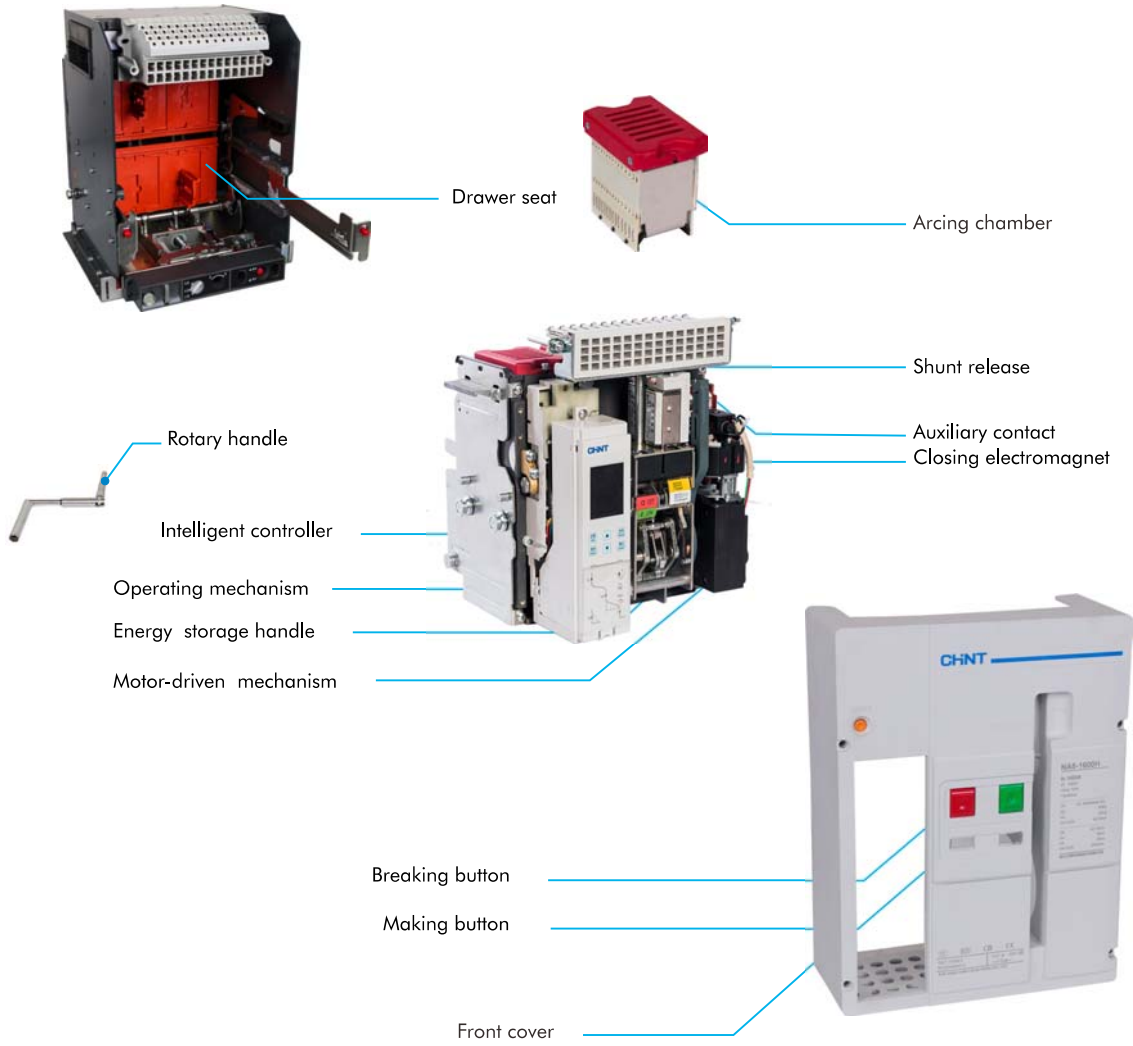
NA8



NA1

NA8 Air Circuit Breaker

Structural Features of Circuit Breaker

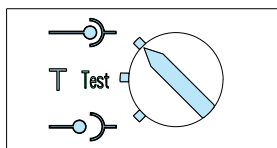


Identification of Circuit Breaker Panel

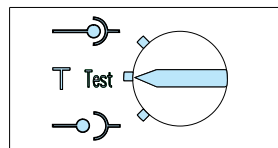


- 1 Trademark
- 2 Secondary wiring terminal
- 3 Breaking button
- 4 Energy- storage handle
- 5 Making button
- 6 Name plate
- 7 Energy-storage/release indicator
- 8 Breaking/Making indicator

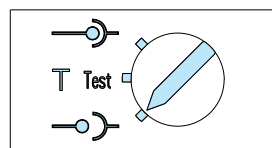
- 9 Draw-out plate
- 10 Three-position locking device
- 11 Drawer padlock
- 12 Racking- handle entry
- 13 Position indicator
- 14 Rotary handle storage hole
- 15 Intelligent controller
- 16 Fault-breaking indicator reset button



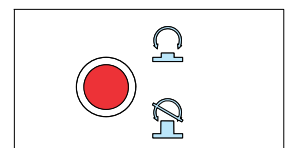
—○— : "Connected" position, main circuit and secondary circuit are both connected



T Test : "Test" position, main circuit disconnected and isolated with safety barrier, only secondary circuit is connected



—○— : "Disconnected" position, main circuit and secondary circuit are both disconnected



☑ : Button does not pop up, and handle is free to rotate;
☒ : Button pops up, and handle can not be rotated until button is reset manually.



Circuit Breaker

- Frame size (A): 1600, 2500, 4000, 7500
- Two kinds of breaking capacity: N, H (for 7500)
- Rated voltage U_e (VAC): 380/400/415, 690, 800, 1000/1150
- Number of poles: 3 or 4 poles
- Mounting mode: draw-out type or fixed type
- Mode of connection: horizontal connection, vertical connection, mixed connection

Operating Conditions and Environmental

Suitability

- NA8 products can operate normally at the following temperature.

Electric and mechanical characteristic applicable for ambient temperature $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (certified), and also peripheral ambient temperature $-45^{\circ}\text{C} \sim +70^{\circ}\text{C}$ (M type), $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$ (H type).

- For specific derating factor, see P23.

Storage conditions: Applicable for $-45^{\circ}\text{C} \sim +70^{\circ}\text{C}$.

- NA8 may resist against the following electromagnetic interference:

EMI-generated overvoltage;

Overvoltage caused by environmental disturbance or distribution system;

Radio wave (radio, interphone, radar, etc.)

Static discharge of terminal users

- NA8 circuit breakers have successfully accredited through the EMC test specified in the following standards:

IEC/ EN 60947-2

The above tests may ensure:

no false tripping fault, tripping time not interrupted.

- Protection grade

Front IP20, other sides IP00



Intelligent Controller

- M type (basic type)
 - Basic functions: current measurement and display, protection function (L, S, I&G)
- H type (communication type)
 - Including all protection functions of M Type
 - LCD display
 - Communication function
- H type +optional functions
 - Including all protection and measurement functions of H type
 - (optional) voltage, power and other measurement functions
 - (optional) advanced protection function
 - (optional) harmonic measurement and analysis
 - (optional) multiple auxiliary functions

Connection

- Rear connection
 - Horizontal connection, vertical connection, mixed connection are optional, and horizontal connection is of standard configuration
- Optional accessories
 - Interphase insulating barrier, NA8-1600 expansion busbar

Lock

- Key lock
- Drawer position padlock (to lock the circuit breaker at the disconnected position)
- Drawer shutters padlock
- Breaking/Making button padlock
- Door interlock

Indication Contacts

- Standard contacts
 - Breaking/Making indication contact
 - Fault tripping indication contact
 - Spring energy storage indication contact
- Options
 - Drawer seat position indication contact
 - The ready to close contact may be added (There is no such function for 1600A frame).



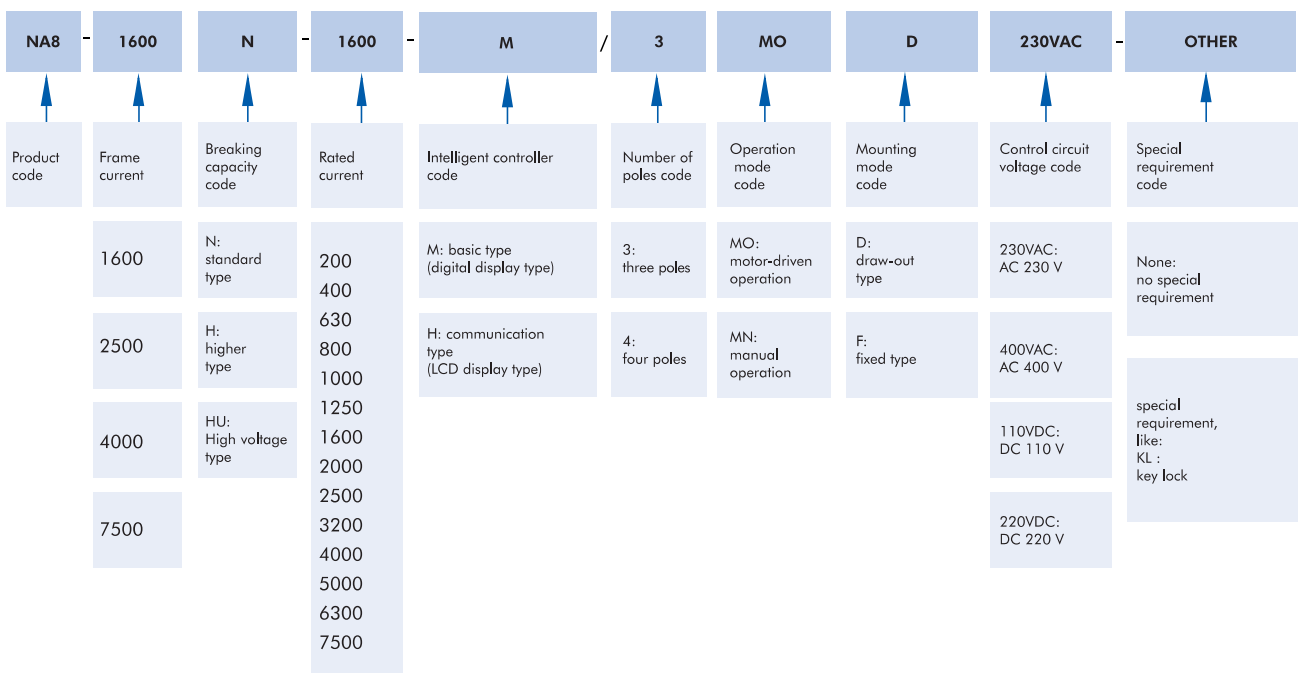
Remote Operation

- Standard accessories
 - Motor-driven mechanism: MO
 - Closing electromagnet: CC
 - Shunt release: ST
- Options
 - Undervoltage time delay release: UVTD
 - Undervoltage instantaneous release: UVT
 - Under-voltage delay release-zero:UVTZ

NA8 Air Circuit Breaker

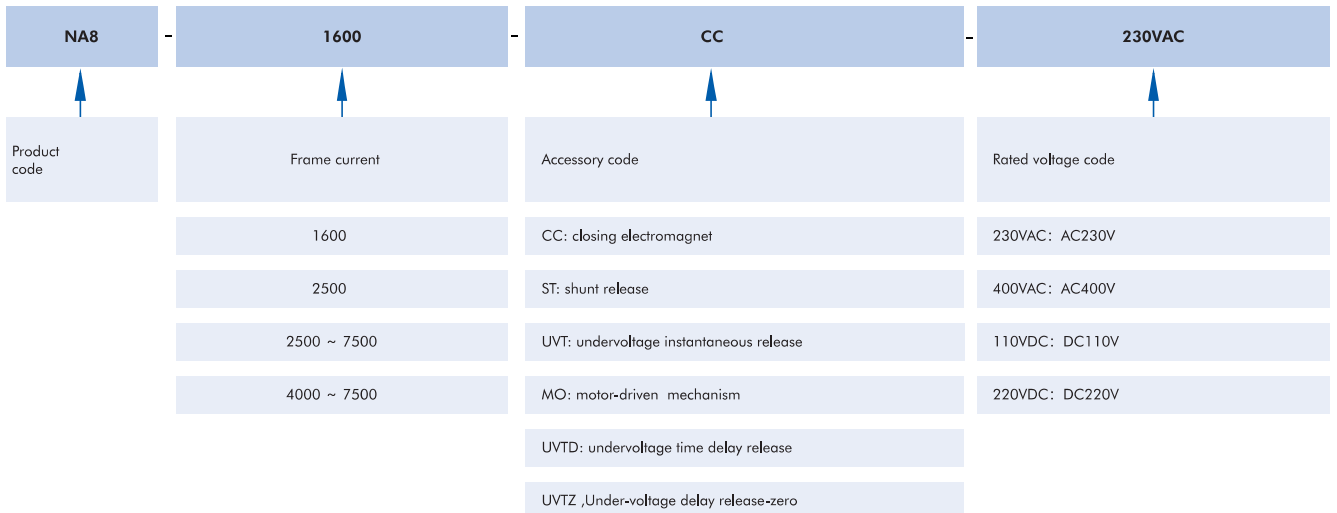
| Product model | Breaking capacity | Rated current | | | | | | | | | | | | | |
|---------------|-------------------|---------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|
| | | 200 | 400 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3200 | 4000 | 5000 | 6300 | 7500 |
| NA8-1600 | N | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| NA8-2500 | N, H, HU | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | |
| NA8-4000 | N, H, HU | | | | | | | | ■ | ■ | ■ | ■ | | | |
| NA8-7500 | N, H | | | | | | | | | | | ■ | ■ | ■ | ■ |

NA8 Product Model Definition and Explanations



Notes: 1) "N" needs not be indicated for type N breaking capacity of NA8-7500, and may be omitted; if type H breaking capacity is selected, "H" needs to be indicated.
 2) Manual operation: excluding motor-driven mechanism and closing electromagnet, shunt release, motor-driven operation; including all remote operation standard accessories.
 3) Code instance: NA8-2500H-2000M/3MO-D AC230V: 2500A frame H type breaking capacity, rated current 2000A, M type intelligent controller, 3poles, motor-driven operation, draw-out type, control voltage AC230V

NA8 Accessory Model Definition and Explanations (1)



NA8 Accessory Model Definition and Explanations (2)

| NA8 | | 1600 | OF | C04 |
|--------------|---------------|---|------------------------------|-----|
| Product code | Frame current | Accessory code | Accessory specification | |
| | 1600 | OF: auxiliary contact | C04: four groups of contacts | |
| | 2500 | | | |
| | 4000 | | | |
| | 7500 | | | |
| | 2500 ~ 7500 | | | |
| | 4000 ~ 7500 | | | |
| | | KL: key lock | 1S1S: one lock one key | |
| | | | 2S1S: two locks one key | |
| | | | 3S2S: three locks two keys | |
| | | FCDP: fixed door frame | | |
| | | DCDP: draw-out type door frame | | |
| | | FD3: fixed three-pole interphase insulating barrier | | |
| | | FD4: fixed four-pole interphase insulating barrier | | |
| | | DD3: draw-out type three-pole interphase insulating barrier | | |
| | | DD4 : draw-out type four-pole interphase insulating barrier | | |
| | | CE-CD-CT: drawer seat three-position signal | | |
| | | ILK2: draw-out type two wire rope mechanical interlock | | |
| | | ILK2F: fixed two wire rope mechanical interlock | | |
| | | ILK3: mechanical interlock (3 in 2) | | |
| | | ILK4 :mechanical interlock (3 in 1) | | |



Main Technical Parameters of Circuit Breaker

Characteristics



| | | |
|--|--------------------------------|------------|
| Number of poles | 3/4 | |
| Rated operational voltage U_e (V) | 380/400/415、690、800、1000/1150V | |
| Rated insulation voltage U_i (V) | 1000、1250、1500 | |
| Rated impulse withstand voltage U_{imp} (kV) | 12 | |
| Rated frequency (Hz) | 50/60 | |
| Flashover distance (mm) | 0 | |
| Suitability for isolation | IEC/EN 60947-2 | Applicable |
| Pollution grade | IEC 60664-1 | N:3 |

Frame size

Rated current (A)

Rated current of the N pole (A)

Type of the circuit breaker

Rated ultimate short-circuit breaking capacity (kA rms) VAC 50/60Hz I_{cu} 380/400/415V、690V、800V、1000/1150V

Rated service short-circuit breaking capacity (kA rms) VAC 50/60Hz I_{cs} 380/400/415V、690V、800V、1000/1150V

Utilization category

Rated short- time withstand current (kA rms) VAC 50/60Hz I_{cw} 1s 380/400/415V、690V、800V、1000/1150V

I_{cw} 3s 380/400/415V、690V

Rated short-circuit making capacity (kA peak) VAC 50/60Hz I_{cm} 380/400/415V、690V、800V、1000/1150V

Making current tripping protection function (MCR kA rms)

Breaking time (ms)

Closing time (ms)

Mounting, connection and service life

| | | |
|------------------------|------------|----------------|
| Service life C/O cycle | Mechanical | No maintenance |
| | Electrical | No maintenance |

Connection Horizontal、 Vertical、 Mixed

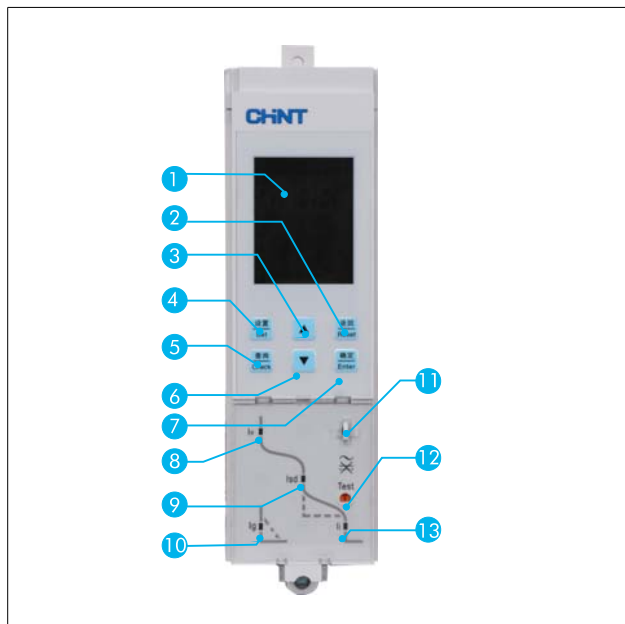
| | | |
|--------------|------------|----|
| Size (H×W×D) | Fixed type | 3P |
| | | 4P |

| | |
|---------------|----|
| Draw-out type | 3P |
| | 4P |

| NA8-1600 | | | | | | | | NA8-2500 | | | | | | | |
|-------------|-----|----------|-----|-------------|------|------|--|---------------|-----|----------|-------------|-----------|------|------------------|--|
| 200 | 400 | 630 | 800 | 1000 | 1250 | 1600 | | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | |
| 200 | 400 | 630 | 800 | 1000 | 1250 | 1600 | | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | |
| N (415V) | | N (690V) | | | | | | N (415V) | | N (690V) | | HU (800V) | | HU (1000V/1150V) | |
| 65 | | 36 | | | | | | 66 | 55 | 65 | | 55 | | | |
| 50 | | 36 | | | | | | 66 | 55 | 65 | | 55 | | | |
| B | | | | | | | | | | | | | | | |
| 50 | | | | | | | | 66 | 55 | 65 | | 55 | | | |
| 30 | | 30 | | | | | | - | - | - | | - | | | |
| 143 | | 76 | | | | | | 145 | 121 | 143 | | 121 | | | |
| 10 | | | | | | | | 16 | | | | | | | |
| 20 ~ 30 | | | | | | | | 20 ~ 30 | | | | | | | |
| 30 ~ 40 | | | | | | | | 30 ~ 40 | | | | | | | |
| 20000 | | | | | | | | 20000 | | | | | | | |
| 8000 (415V) | | | | 3000 (690V) | | | | 8000 (415V) | | | 4000 (690V) | | | | |
| ■ | | | | | | | | ■ | | | | | | | |
| 320×254×250 | | | | | | | | 396×370×367 | | | | | | | |
| 320×324×250 | | | | | | | | 396×465×367 | | | | | | | |
| 351×282×350 | | | | | | | | 431.5×375×476 | | | | | | | |
| 351×352×350 | | | | | | | | 431.5×470×476 | | | | | | | |

| NA8-4000 | | | | | NA8-7500 | | | | | | | |
|-------------|----------|-----------|-----------------|------|--------------|----------|----------|------------|---------|----------|----------|----------|
| 1600 | 2000 | 2500 | 3200 | 4000 | 4000 | 5000 | 6300 | 7500 | | | | |
| 1600 | 2000 | 2500 | 3200 | 4000 | 4000 | 5000 | 6300 | 3750 | | | | |
| N (415V) | N (690V) | HU (800V) | HU (1000/1150V) | | N (440V) | N (690V) | H (440V) | H (690V) | N(440V) | N (690V) | H (440V) | H (690V) |
| 85 | 75 | 75 | 65 | | 135 | 100 | 150 | 100 | 135 | 100 | 150 | 100 |
| 85 | 75 | 75 | 65 | | 135 | 100 | 135 | 100 | 135 | 100 | 150 | 100 |
| B | | | | | | | | | | | | |
| 85 | 75 | 75 | 65 | | 135 | 100 | 135 | 100 | 135 | 100 | 135 | 100 |
| - | - | - | - | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 187 | 165 | 165 | 143 | | 297 | 220 | 330 | 220 | 297 | 220 | 330 | 220 |
| 26 | | | | | | | | | | | | |
| 20 ~ 30 | | 20 ~ 30 | | | | | | | | | | |
| 30 ~ 40 | | 30 ~ 45 | | | | | | | | | | |
| 10000 | | | | | 1000 | | | | | | | |
| 6000 (415V) | | | 3000 (690V) | | 1500 (440v) | | | 1000(690v) | | | | |
| ■ | | | | | ■ | | | | | | | |
| 396×422×341 | | | | | | | | | | | | |
| 396×547×341 | | | | | | | | | | | | |
| 431×435×449 | | | | | 472×786×464 | | | | | | | |
| 431×550×449 | | | | | 472×1016×464 | | | | | | | |

Function Overview of Intelligent Controller



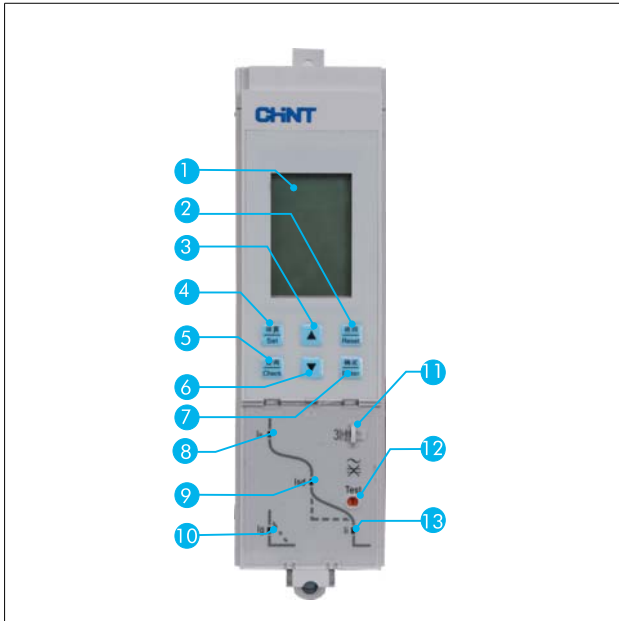
- 1 Display window: display the current value, setting parameter, fault current, tripping time, etc.
- 2 Return button: exit from current menu and enter the upper-level menu, or cancel current setting parameter value.
- 3 Up button: move up the check box submenu at the current menu, or realize "+" parameter setting in parameter setting.
- 4 Set button: switch to the default setting menu.
- 5 Check button: switch to the default query menu.
- 6 Down button: move down the check box submenu at the current menu, or realize "-" parameter setting in parameter setting.
- 7 Enter button: enter the next-level menu of current selected box, or save current parameter setting.
- 8 Ir indicator for overload long-time-delay tripping.
- 9 Isd indicator for short circuit short-time-delay tripping.
- 10 Ig indicator for earth fault tripping.
- 11 Cover lock hole
- 12 Button for tripping test
- 13 Ii indicator for short-circuit instantaneous tripping.

M Type intelligent controller (basic type)

Protection

All protective threshold values and time delays are set using buttons.

- Overload protection
 - True RMS long time delay protection.
 - Thermal memory: heat accumulation before and after tripping.
- Short circuit protection
 - Short time delay (RMS) and instantaneous protection
 - 4 definite time-delay options in terms of time delay
- Earth fault protection
 - 4 definite time-delay options in terms of time delay
- Test function
 - Simulate δI_k test current for tripping test.
- Tripping recording function
 - Tripping reason display function
- Ammeter
 - M Type intelligent controller measures the current true effective value (RMS) from 40% to 150% with an accuracy of 2%.



- 1 Display window: display the current value, setting parameter, fault current, tripping time, etc.
- 2 Return button: exit from current menu and enter the upper 3-level menu, or cancel current setting parameter value.
- 3 Up button: move up the check box submenu at the current menu, or realize "+" parameter setting in parameter setting.
- 4 Set button: switch to the default setting menu.
- 5 Check button: switch to the default query menu
- 6 Down button: move down the check box submenu at the current menu, or realize "-" parameter setting in parameter setting.
- 7 Enter button: enter the next-level menu of current selected box, or save current parameter setting.
- 8 Ir indicator for overload long-time-delay tripping.
- 9 Isd indicator for short circuit short-time-delay tripping .
- 10 Ig indicator for earth fault tripping.
- 11 Cover lock hole
- 12 Test button for tripping test
- 13 Li indicator for overload long-time-delay tripping.

H Type Intelligent Controller (communication type)

Protection

All protective threshold values and time delays are set using buttons.

Contain all protection functions of M type control unit.

Communication function

Modbus - RTU communication protocol

Leakage protection function (optional)

Special external transformer is equipped.

Advanced protection function (optional)

Voltage unbalance protection

Overvoltage and undervoltage protection

Overfrequency and under-frequency protection

Phase sequence protection

Reverse power protection function

Demand value protection function

Expanded functions

Intelligent controller self-diagnostics

Operation times/fault tripping/alarm/ deflection recording

function: providing the record of the latest 10 times.

Main contact abrasion display function: evaluate the contact

abrasion degree according to the mechanical life, electric life and

breaking capacity of different frames.

Internal clock function.

Button Trip-test function.

Electric energy meter (optional)

Voltage measurement

Frequency measurement

Demand value measurement

Power (active power, reactive power, apparent power) measurement

Electric energy (active power, reactive power, apparent power)

measurement

Power factor measurement

Load monitoring function (optional)

Zone selectivity interlock (optional)

Input/output function (optional)

3DO, 4DO or 2DI, 2DO

DI signal: AC230 V (standard, other optional); DC110V;

DO requires the power module (24VDC output) and relay module.

Harmonic analysis function (optional)

Measuring the fundamental wave current, fundamental wave line

voltage, fundamental wave phase voltage, fundamental wave power

and each 3-31 odd harmonic current ratio (HR_{ih}), harmonic voltage

ratio (HR_{Uh}), total harmonic current distortion [THD_i, thd_i], total

harmonic voltage distortion [THD_u, thd_u].

Harmonic wave ratio (HR):

the ratio of the RMS value of the hth of harmonic component

contained in the cyclic AC quantity to the RMS value of fundamental

wave component (in percentage).

Protective Characteristics of Intelligent Controller

Protective characteristics of intelligent controller consist of inverse time-delay and definite time-delay.

When the fault current exceeds the inverse time-delay

setting, the controller provides time delay protection according to the definite time-delay.

The inverse time-delay current conforms to the characteristic curve I^2t .

Overload long-time-delay protection characteristics

Overload long-time-delay protection acting by threshold value.

| Setting parameter | Setting range | Error | | | | | | | | |
|---------------------------------------|--|-------|----|-----|-----|-----|-----|-----|-----|--|
| Long time-delay setting current I_r | (0.4-1 .0) I_n +OFF | ± 15% | | | | | | | | |
| Long time-delay setting step size | 1A (1600-2500 Frame size) ; 2A(4000-7500 Frame size) | | | | | | | | | |
| Long time-delay setting time t_r | (1-2- 4-8 -12-16-20 -24 -30)s | ± 10% | | | | | | | | |
| Anti-time-limit characteristic curve | $t = (\frac{6}{N})^2 \times t_r$ | | | | | | | | | |
| Fault current | Action time | | | | | | | | | |
| $I < 0.85I_i$ | No action | | | | | | | | | |
| $I > 1.15I_i$ | Action | | | | | | | | | |
| 1.5 I_r | 16 | 32 | 64 | 128 | 192 | 256 | 320 | 384 | 480 | |
| 2.0 I_r | 9 | 18 | 36 | 72 | 108 | 144 | 180 | 216 | 270 | |
| 6.0 I_r | 1 | 2 | 4 | 8 | 12 | 16 | 20 | 24 | 30 | |

Notes: N --- the multiple of fault current divided by set current I/I_r

t --- fault operating delay time

t_k --- long time delay set value

Operating time permissible error ± 15%

Conventional factory setting: overload long time delay current 1.0 I_n ;

Conventional factory setting: overload 6 I_r ; operating time 2s

Example: Given that overload long time delay current 1.0 I_n , delay time 2s (at 6 I_r), now line current $I = 1.8I_n$, actual fault operating delay time t may be calculated:

$$N = 1.8I_n / 1.0I_n = 1.8$$

$$t = (6/1.8)^2 \times 2 = 22.2s$$

Short circuit short-time-delay protection characteristics

Short circuit short time delay protection acting by threshold value.

| Setting parameter | Setting range | Error |
|---|---|--|
| Short time-delay setting current I_{sd} | (1.5-10) I_n +OFF | ± 10% |
| Short time-delay setting step size | 1A (1600-2500 Frame size) ; 2A(4000-7500 Frame size) | |
| Short time-delay setting time t_{sd} | Definite-time-limit: 0.11、 0.21、 0.31、 0.41; Anti-time-limit: 0.1、 0.2、 0.3、 0.4 | ± 15% or inherent 40ms (take the maximum) |
| Fault current | Action time | |
| $I < 0.9I_{sd}$ | No action | |
| $I > 1.15I_{sd}$ | Time-delay action | |
| $I_{sd} < I \leq 10I$ | Anti-time-limit | Action characteristics $I^2t = (10I_r)^2 t_{sd}$ |
| | | Setting times 0.1、 0.2、 0.3、 0.4 |
| $I \geq 1.1I_{sd}$ | Definite-time-limit | Setting times 0.11、 0.21、 0.31、 0.41 |
| | | Min.s 0.06、 0.16、 0.255、 0.34 |
| | | Max.s 0.14、 0.24、 0.345、 0.46 |
| | Return time | 0.05、 0.14、 0.25、 0.33 |

Notes: I_{sd} --- short time delay current set value

I --- fault current

I_r --- long time delay set value

t --- fault operating delay time

t_{sd} --- short time delay inverse time-delay set value

Operating time permissible error ± 15%

Conventional factory setting: short time delay current 8 I_r

Conventional factory setting: short time delay operating time 0.4s

Short circuit instantaneous protection characteristic

Short circuit instantaneous protection acting by threshold value.

| Setting parameter | Setting range |
|-------------------------------------|--|
| Instantaneous setting current I_i | $(2 \sim 1.5) I_n + \text{OFF}$ |
| Short time-delay setting step size | 1A (1600-2500 Frame size) ; 2A(4000-7500 Frame size) |
| Operating characteristics | $I < 0.85I_i$ No action |
| | $I > 1.15I_i$ Action |
| | $\leq 100\text{ms}$ Action time |

Earth Fault Protection Characteristic

Earth fault protection operating threshold

$< 0.9I_g$: no action;

$> 1.1I_g$: action;

NA8 -1600\2500: $0.2I_n \sim 1.0I_n + \text{OFF}$ (MAX:1200A)

NA8-4000\7500: 500 A~1200 A + OFF

| | | | | | |
|---------------------|--------------------------------------|------|------|-------|------|
| Definite time-delay | Setting time (s) | 0.1 | 0.2 | 0.3 | 0.4 |
| | Min (s) | 0.06 | 0.16 | 0.255 | 0.34 |
| | Max (s) | 0.14 | 0.24 | 0.345 | 0.46 |
| | Return time | 0.05 | 0.14 | 0.25 | 0.33 |
| Inverse time-delay | $t = \frac{(I_a)^2}{I^2} \times t_g$ | | | | |

Notes: I_g --- earth protection setting, NA8-1600\2500 default factory setting $I_g = 0.5I_n$, 4000\7500 default factory setting $I_g = 800\text{A}$

I --- fault current

T --- fault operating delay time

t_g --- earth inverse time-delay set value

Inverse time-delay operating time permissible error $\pm 15\%$

Conventional factory setting: OFF

Controller Minimum Factory Display Current

| Frame | Rated current | Minimum display value |
|-------------|---------------|-----------------------|
| 1600 | 400~1600 | 80 |
| 2500 | 630 ~ 2500 | 80 |
| ≥ 4000 | ≥ 1600 | 160 |

Measuring Accuracy of Intelligent Controller

| Current measurement | |
|---------------------|--|
| Measuring range | I _a , I _b , I _c and I _N not more than 15I _n (circuit breaker rated current) |
| Measuring accuracy | Below 0.1I _n , measurement is inaccurate. |
| | 0.1I _n ~0.4I _n , the accuracy will linearly change from 5% to 2%. |
| | 0.4I _n ~1.5I _n , the accuracy is 2%. |
| | > 1.5I _n , the accuracy will linearly change from 2% to 15%. |
| | Measuring accuracy of earth current is 10%. |

| Voltage measurement | |
|---------------------|---|
| Measuring range | Line voltage: 0~600 V Phase voltage: 0~300 V |
| Measuring accuracy | Error: ±1% |

| Frequency | |
|-----------------|---------------|
| Measuring range | 40Hz~70Hz |
| Error | Error: ±0.1Hz |

| Power | |
|-------------------|--|
| Measurement mode | Effective value |
| Measuring content | 3P: total active power, total reactive power, total apparent power |
| | 4P: split phase active power, split phase reactive power, split phase apparent power, total active power, total reactive power, total apparent power |
| Measuring range | Active power: -32768kW~+32767kW |
| | Reactive power: -32768Kvar~+32767Kvar |
| | Apparent power: 0KVA~65535kVA |
| | Error: ±2.5% |

| Power factor | |
|-------------------|------------------------------|
| Measuring content | 3P: total power factor |
| | 4P: split phase power factor |
| Measuring range | -1.00~+1.00 |

| Electric energy | |
|--------------------|---|
| Measuring content | Input reactive electric energy (EQ _{in}), output reactive electric energy (EQ _{out}) |
| | Input active electric energy (EP _{in}), output active electric energy (EP _{out}) |
| | Total active electric energy (EP _{total}), total reactive electric energy (EQ _{total}), total apparent electric energy (ES _{total}) |
| Measuring range | Active electric energy: -32768kWh~+32767kWh |
| | Reactive electric energy: -32768Kvarh~+32767Kvarh |
| | Apparent electric energy: 0~65535kVAh |
| Measuring accuracy | ±2.5% |

| Harmonic measurement | |
|---------------------------------|--|
| Fundamental wave measurement | Current: I _a , I _b , I _c |
| | Voltage: U _{ab} , U _{bc} , U _{ca} |
| Total harmonic distortion | THD: total distortion ratio of harmonic wave in relative to fundamental wave |
| THD and Thd | Thd: total distortion ratio of harmonic wave in relative to effective value |
| Harmonic amplitude spectrum | The controller may display FFT amplitude of 3~31 odd harmonic in percentage "%". |
| Control unit measuring accuracy | ±2% |

Tripping Characteristic Curve of Intelligent Controller

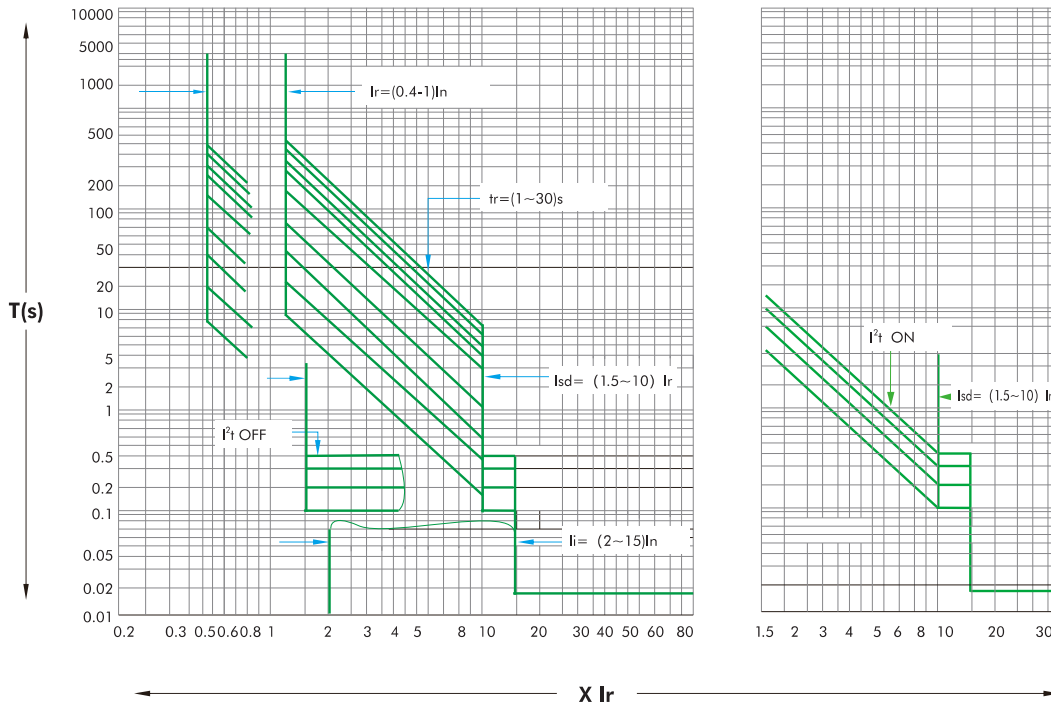


Fig.1 Overcurrent protection curves

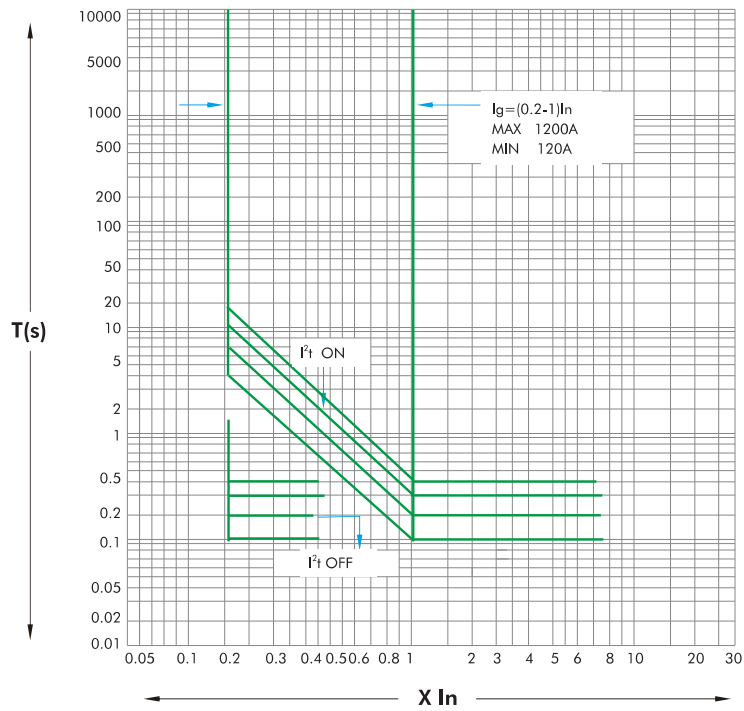
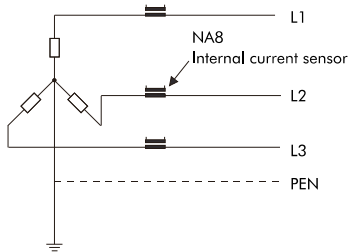


Fig.2 Asymmetrical earth fault protection curves

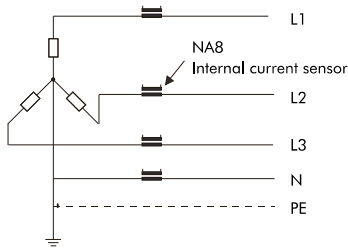
Explanations on Earth Fault Protection

Single Phase Earth Fault Protection

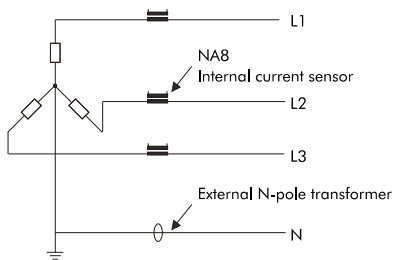
- The three-pole circuit breaker realizes earth protection through testing whether the three-phase current vector sum is zero or not via internal three current transformers.



- The four-pole circuit breaker realizes earth protection through testing whether the three-phase current and N phase current vector sum is zero or not via internal four current transformers.



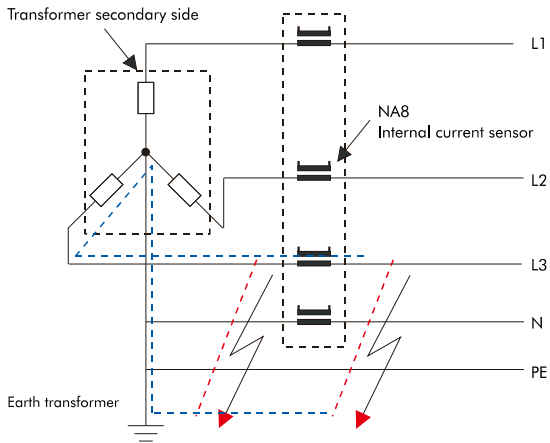
- The 3P+N system realizes earth protection through the vector sum calculation via the three-pole circuit breaker and external N-pole transformer.



- Notes:
- ① The external N-phase current transformer is special transformer configured by the company, and the default lead wire is 2m long.
 - ② At 3PT, the earth protection can be only used for balanced load; for unbalanced load, this function should be closed or the set value is set above the permissible unbalanced current; otherwise, it might cause the operation of intelligent controller.
 - ③ At (3P+N) T, maximum distance between transformer and circuit breaker cannot exceed 5m; when the transformer lead wire exceeds 2m long, it should be particularly indicated upon placing an order.



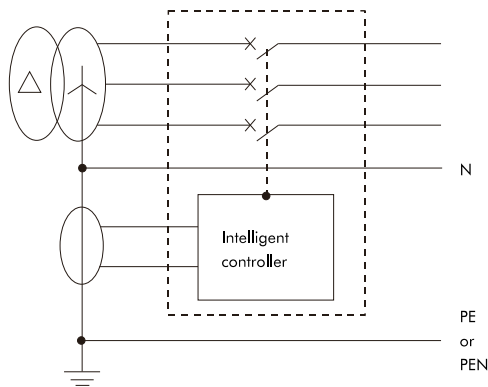
As show below, a load side fault of NA8 circuit breaker: The fault current only flows through one phase. If the three-phase current vector sum detected by 4 current sensors is higher than the set threshold, the intelligent control unit will activate the differential earth protection function. Such earth protection realizes the load side earth fault protection.



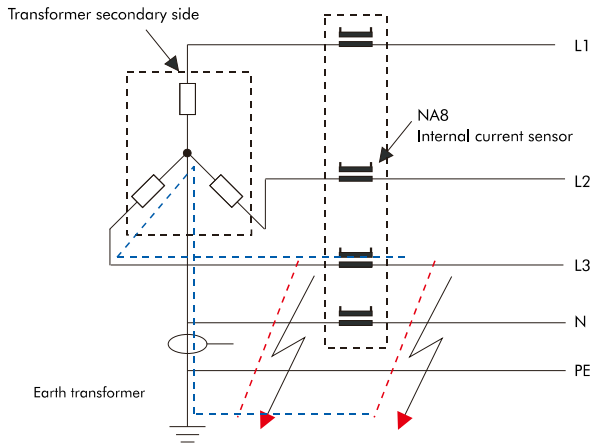
Earth Current Type Earth Protection

The earth transformer is used at the transformer star center to fulfill earth protection.

On condition of the circuit breaker protection of medium voltage/low voltage transformer, an earth transformer can be equipped at the transformer star connection center (the circuit breaker should be equipped with the H type controller, and the earth current protection transformer should be selected), and this earth transformer may measure the earth fault current at the power supply side and load side of NA8 circuit breaker, as shown below.



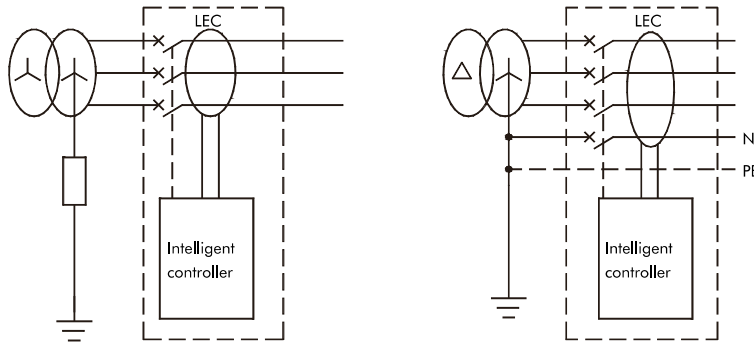
As shown below, through installing the external earth transformer, the earth fault at the power supply side of circuit breaker can be checked, and the earth fault at the load side of NA8 circuit breaker can also be detected.



Residual Leakage Protection

It is especially suitable for places having high-sensitivity requirement for the residual current protection to prevent man-made indirect contact. For NA8 circuit breaker, the H type controller should be selected, and the leakage protection function and leakage transformer (LEC) accessory should be added so as to realize leakage protection.

| | |
|--------------------------------|--|
| Leakage current $I_{\Delta n}$ | [A]0.5-1-2-3-5-7-10-20-30 |
| Tripping time Δt | [S]0.06-0.17-0.25-0.33-0.42-0.58-0.75-0.83 |



The NA8 circuit breaker realizes the residual current protection function and needs to meet the following requirements:

1. Select the H-type controller;
2. Adding the leakage protection function of the controller;
3. Adding leakage current transformer (LEC) accessories;
4. The outgoing terminal of the circuit breaker is connected vertically;
5. It is available when the rated current of the circuit breaker is $\leq 3200A$,

Accessory: Lock

Key Lock KL



There are 3 kinds of key lock (The later two kinds are used in the distribution system of two incoming cabinets and one connection cabinet):

one lock one key (1S1S)

two locks one key (2S1S)

three locks two keys (3S2S)

Drawer shutters Padlock

The padlock should be self prepared by the user.

If the padlock is selected, when the circuit breaker body is at the disconnected or test position, it should ensure the body terminal is not connected with external live circuit



Drawer Position Padlock

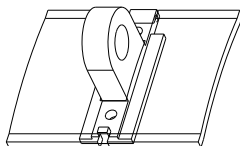
The padlock should be self prepared by the user.

After the drawer seat and body are locked at the disconnected using the padlock, the drawer seat rocker couldn't be inserted into the drawer seat rocking-handle hole, so the draw-out type circuit breaker body position cannot be changed.

Door Interlock

Circuit breaker condition door interlock

When the circuit breaker is closed, it is forbidden to open the switchgear door; when the circuit breaker is opened, it is allowed to open the switchgear door.



Circuit breaker position door interlock

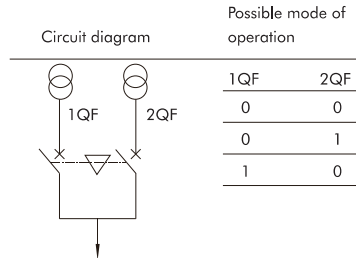
When the circuit breaker is at the connection and test position, it is forbidden to open the switchgear door; when the circuit breaker is at the detachment position, it is allowed to open the switchgear door.

Pushbutton Lock PL

Pushbutton lock: used to lock up the mechanical button opening and closing the circuit breaker, and the padlock is used. After locking, manual opening and closing operation couldn't be done. (the padlock should be self-prepared by the user).

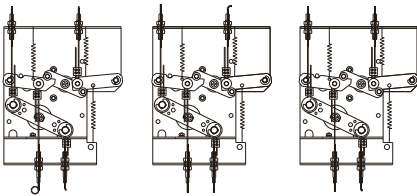
Mechanical Interlock IKL-2 (Wire rope two interlock):

It may realize the interlocking of two horizontal or vertically installed three- or four-pole circuit breakers.

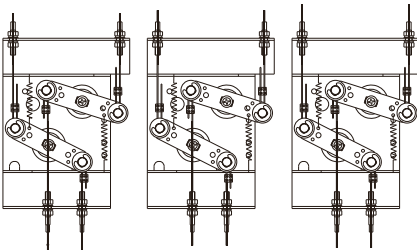


- Notes: a. When it needs to bend the wire rope, the transition arc at the bend should be higher than R120mm to ensure it can move flexibly.
 b. Check the wire rope and ensure enough lubricating oil in it to ensure its flexible movement.

ILK -3 three interlock diagram

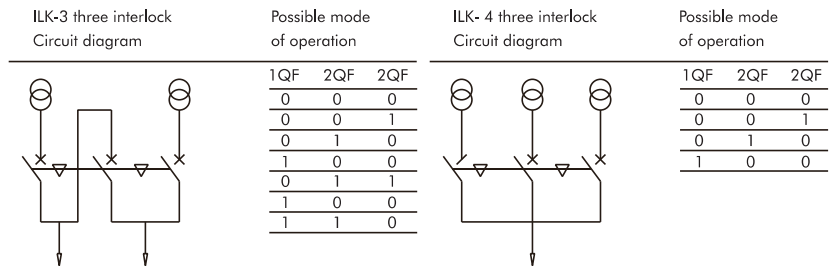


ILK -4 three interlock diagram



Mechanical Interlock ILK-3/4 (wire rope three interlock)

It may realize the interlocking of three flat or vertically installed three- or four-pole circuit breakers



- Notes: a. When it needs to bend the wire rope, the transition arc at the bend should be higher than R120mm to ensure it can move flexibly.
 b. Check the wire rope and ensure enough lubricating oil in it to ensure its flexible movement.

Accessory: Indication Contact



| Auxiliary contact OF | | |
|------------------------|-------------------------|--------------------|
| Standard configuration | 4CO | 6CO (NA8-1600) |
| Breaking capacity | current (A)/voltage (V) | |
| Utilization category | VAC (AC-15) | 1.3/240, 0.75/415 |
| | VDC (DC-13) | 0.55/110, 0.27/220 |

| Drawer seat three-position indication contact CD - CE - CT | | |
|--|-------------------------|--------------------|
| Standard configuration | 1CO/3 | |
| Breaking capacity | current (A)/voltage (V) | |
| Utilization category | VAC (AC-15) | 1.3/240, 0.75/415 |
| | VDC (DC-13) | 0.55/110, 0.27/220 |

| Tripping alarm contact | | |
|------------------------|-------------------------|--------------------|
| Standard configuration | 1CO | |
| Breaking capacity | current (A)/voltage (V) | |
| Utilization category | VAC (AC-15) | 1.3/240, 0.75/415 |
| | VDC (DC-13) | 0.55/110, 0.27/220 |

| Spring energy storage indication contact | | |
|--|-------------------------|--------------------|
| Standard configuration | 1NO | |
| Breaking capacity | current (A)/voltage (V) | |
| Utilization category | VAC (AC-15) | 1.3/240, 0.75/415 |
| | VDC (DC-13) | 0.55/110, 0.27/220 |

Notes: 1) CO is the changeover contact, 1NO 1NC is matched with a common terminal.

2) NO is normally open contact, NC is normally closed contact.





1600 frame MO



2500~7500 frame MO

Motor-driven mechanism (MO)

It has the function of motor energy storage and automatic re-energy storage after closing of circuit breaker to ensure the circuit breaker can be closed immediately after opening. Where there is no auxiliary power supply, the energy storage handle is used as standby.

| Characteristic | | |
|------------------------------------|-------------|---------------------------------------|
| Power supply | VAC 50/60Hz | 220/230/240, 380/400/415 |
| | VDC | 110, 220 |
| Operating threshold | | 0.85-1.1Us |
| Frame: power consumption (VA or W) | | 1600:75W; 2500:85W; 4000 ~ 7500: 150W |
| Motor over-current time | | ≤1 min |
| Energy storage time | | ≤7s |
| Operating frequency | | ≤2times/min |



1600 frame CC&ST



Electric remote operation coil (CC and ST)

Closing electromagnet (CC)

If energy storage of the mechanism is done, CC may fulfill remote closing after being energized.

| Characteristic | | CC |
|------------------------------------|-------------|-----------------------------|
| Power supply | VAC 50/60Hz | 220/230/240 380/400/415 |
| | VDC | 220,110 |
| Operating voltage | | 0.85-1.1Us |
| Frame: power consumption (VA or W) | AC | 400VA |
| | DC | 1600: 380W; 2500~7500: 130W |
| Circuit breaker response time | | 30ms-45ms |



2500, 4000~7500 frame CC&ST



Shunt release (ST)

After being energized, ST will open the circuit breaker instantaneously.

| Characteristic | | ST |
|------------------------------------|-------------|-----------------------------|
| Power supply | VAC 50/60Hz | 220/230/240 380/400/415 |
| | VDC | 220,110 |
| Operating voltage | | 0.85-1.1Us |
| Frame: power consumption (VA or W) | AC | 400VA |
| | DC | 1600: 380W; 2500~7500: 130W |
| Circuit breaker response time | | 20ms-30ms |



1600 frame UVT



2500, 4000~7500 frame UVT

Undervoltage release (UVT)

If the supply voltage reduced to a value between 35% and 70% of rated voltage, this tripping coil leads to the instantaneous opening of circuit breaker. If the UVT tripping coil is not energized, the circuit breaker cannot be closed, manually (closing button) or electrically (closed electromagnet). Only when the supply voltage of UVT tripping coil reaches 85% of rated voltage, the circuit breaker can be closed.

| Characteristic | | | |
|------------------------------|-------------|------------|--|
| Power supply | VAC 50/60Hz | | 220/230/240, 380/400/415 |
| | VDC | | - |
| Operating threshold | Opening | 0.35-0.7Ue | 0.35-0.7Ue |
| | Closing | 0.85Ue | 0.85-1.1Ue |
| Frame: power consumption (W) | | | 1600: 220W/15W; 2500, 4000~7500: 220W/13W |

Note: attracting/holding.

Undervoltage time delay release (UVTD)

To prevent the false tripping circuit breaker resulting from short time voltage drop, it requires UVT operating time delay. A time delay unit is added besides UVT to realize this function.

| Characteristic | | |
|-------------------------------|---|------------|
| Power supply | VAC 50/60Hz | |
| Operating threshold | Opening | 0.35-0.7Ue |
| | Closing | 0.85Ue |
| Frame: power consumption (VA) | 1600: 20VA; 2500~7500: 48VA | |
| Adjustable time | 1s~5s, the time delay can be selected and adjustable. | |

Note: Only NA8 - 1600 uses the external undervoltage time delay module, and 2500, 4000~7500 product undervoltage time delay release has built-in undervoltage time delay unit.



Capacity Derating and Power Loss

NA8-1600

| Ambient temperature | 200A | | 400A | | 630A | | 800A | | 1000A | | 1250A | | 1600A | |
|---------------------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
| Connection mode | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical |
| 40° | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 45° | - | - | - | - | - | - | - | - | - | - | - | - | 1550 | - |
| 50° | - | - | - | - | - | - | - | - | - | - | - | - | 1485 | 1540 |
| 55° | - | - | - | - | - | - | - | - | 950 | 950 | 1150 | 1200 | 1390 | 1450 |
| 60° | - | - | - | - | 580 | 580 | 700 | 700 | 900 | 900 | 1050 | 1100 | 1320 | 1370 |

NA8-2500

| Ambient temperature | 630A | | 800A | | 1000A | | 1250A | | 1600A | | 2000A | | 2500A | |
|---------------------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
| Connection mode | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical |
| 40° | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 45° | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 50° | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 55° | - | - | - | - | - | - | - | - | 1500 | 1520 | 1850 | 1850 | 2420 | 2450 |
| 60° | - | - | - | - | - | - | - | - | 1400 | 1420 | 1720 | 1750 | 2290 | 2320 |

NA8-4000

| Ambient temperature | 1600A | | 2000A | | 2500A | | 3200A | | 4000A | |
|---------------------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
| Connection mode | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical |
| 40° | - | - | - | - | - | - | - | - | - | - |
| 45° | - | - | - | - | - | - | - | - | 3800 | 3850 |
| 50° | - | - | - | - | - | - | 3100 | - | 3600 | 3650 |
| 55° | - | - | - | - | 2450 | - | 3000 | 3050 | 3400 | 3450 |
| 60° | - | - | 1900 | 1950 | 2350 | 2400 | 2900 | 2950 | 3200 | 3250 |

NA8-7500

| Ambient temperature | 4000A | | 5000A | | 6300A | | 7500A | |
|---------------------|------------|----------|------------|----------|------------|----------|------------|----------|
| Connection mode | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal | Vertical |
| 40° | - | - | - | - | / | - | / | - |
| 45° | - | - | - | - | / | 6100 | / | 7000 |
| 50° | - | - | 4700 | 4800 | / | 6000 | / | 6550 |
| 55° | 3900 | 3900 | 4600 | 4650 | / | 5500 | / | 6050 |
| 60° | 3800 | 3800 | 4400 | 4500 | / | 5200 | / | 5650 |

Note: "-" represents no derating; "/" means no horizontal connection.

Altitude Capacity Derating Factor

Voltage performance corrections under different altitudes

| Altitude (m) | | 2000 | 3000 | 4000 | 5000 |
|---------------------------------------|------------------|------|------|------|------|
| Rated impulse withstand voltage (kV) | U _{imp} | 12 | 11 | 10 | 8 |
| Average insulation grade (V) | U _i | 1000 | 900 | 800 | 700 |
| Power frequency withstand voltage (V) | | 2200 | 2100 | 1950 | 1760 |
| Maximum operational voltage (V) | U _e | 690 | 580 | 520 | 460 |

Current performance corrections under different altitudes

| Altitude (m) | Rated operating current (I _e) |
|--------------|--|
| 2000 | 1.0I _e |
| 2500 | 0.96I _e |
| 3000 | 0.93I _e |
| 3500 | 0.89I _e |
| 4000 | 0.75I _e |
| 4500 | 0.82I _e |
| 5000 | The factory must be contacted for confirmation |

Note: If the ambient temperature is lower than 40 °C, I_e = I_n; if the ambient temperature is higher than 40 °C, derating use must be done in strict accordance with the requirement of operation manual; in such case, I_e ≠ I_n, I_e and I_n can be looked up according to the temperature derating table.

Power loss

Power loss is the power consumption measured at I_n, 50/60 Hz.

| Frame | Rated current (A) | Power loss of draw-out type (W) | Power loss of fixed type (W) |
|-------|-------------------|---------------------------------|------------------------------|
| 1600A | 200 | 115 | 45 |
| | 400 | 140 | 80 |
| | 630 | 161 | 100 |
| | 800 | 215 | 110 |
| | 1000 | 230 | 120 |
| | 1250 | 250 | 130 |
| | 1600 | 460 | 220 |
| 2500A | 630 | 58.6 | 26.4 |
| | 800 | 73.7 | 36.6 |
| | 1000 | 172 | 78 |
| | 1250 | 268 | 122 |
| | 1600 | 440 | 200 |
| | 2000 | 530 | 262 |
| 4000A | 2500 | 600 | 312 |
| | 2000 | 470 | 250 |
| | 2500 | 550 | 280 |
| | 3200 | 670 | 420 |
| 7500A | 4000 | 1047 | 656 |
| | 4000 | 550 | - |
| | 5000 | 590 | - |
| | 6300 | 950 | - |
| | 7500 | 1500 | - |

Dimension Of Busbar

Bolt Configuration and Mounting Torque

| Bolt type | Application | Preferred tightening torque |
|-----------------------------|--|-----------------------------|
| M3 | Fasten the secondary connecting conductor | (0.5~0.7) N·m |
| M8 (with flat washer only) | Fasten the product on the switchgear (1600A frame) | (18~25) N·m |
| M10 (with flat washer only) | Fasten the product on the switchgear (2500A and above frame) | (25~40) N·m |
| M10 | Fasten the busbar | (36~52) N·m |

Connection Busbar Specification Reference under Different Temperatures

Permissible maximum busbar temperature: 100°C

The busbar material is bare copper, and the unit of width and thickness is both mm.

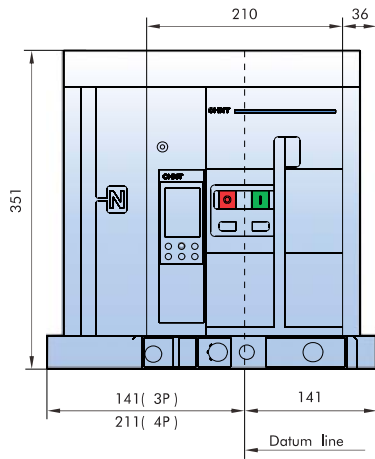
| Frame current | Rated current (A) | Ambient temperature (-5~40) °C | | | | Ambient temperature 50°C | | | | Ambient temperature 60°C | | | |
|---------------|-------------------|----------------------------------|-----------|------------------|---------------|----------------------------------|-----------|------------------|---------------|----------------------------------|-----------|------------------|---------------|
| | | Recommended busbar specification | | | | Recommended busbar specification | | | | Recommended busbar specification | | | |
| | | Width | Thickness | Number of panels | Specification | Width | Thickness | Number of panels | Specification | Width | Thickness | Number of panels | Specification |
| 1600A | 200 | 30 | 5 | 1 | 30*5*1 | 30 | 5 | 1 | 30*5*1 | 40 | 5 | 1 | 40*5*1 |
| | 400 | 30 | 5 | 2 | 30*5*2 | 30 | 5 | 2 | 30*5*2 | 30 | 10 | 1 | 30*10*1 |
| | 630 | 40 | 5 | 2 | 40*5*2 | 40 | 5 | 2 | 40*5*2 | 50 | 5 | 2 | 50*5*2 |
| | 800 | 50 | 5 | 2 | 50*5*2 | 50 | 5 | 2 | 50*5*2 | 50 | 6 | 2 | 50*6*2 |
| | 1000 | 50 | 5 | 3 | 50*5*3 | 50 | 5 | 3 | 50*5*3 | 50 | 6 | 3 | 50*6*3 |
| | 1250 | 60 | 8 | 2 | 60*8*2 | 60 | 8 | 2 | 60*8*2 | 60 | 10 | 2 | 60*10*2 |
| 2500A | 1600 | 60 | 10 | 2 | 60*10*2 | 60 | 10 | 2 | 60*10*2 | 60 | 10 | 3 | 60*10*3 |
| | 630 | 40 | 5 | 2 | 40*5*2 | 50 | 5 | 2 | 50*5*2 | 50 | 5 | 2 | 50*5*2 |
| | 800 | 50 | 5 | 2 | 50*5*2 | 50 | 5 | 2 | 50*5*2 | 60 | 5 | 2 | 60*5*2 |
| | 1000 | 50 | 5 | 3 | 50*5*3 | 50 | 5 | 3 | 50*5*3 | 60 | 5 | 3 | 60*5*3 |
| | 1250 | 60 | 8 | 2 | 60*8*2 | 60 | 8 | 2 | 60*8*2 | 60 | 8 | 3 | 60*8*3 |
| | 1600 | 60 | 10 | 2 | 60*10*2 | 60 | 10 | 2 | 60*10*2 | 60 | 10 | 3 | 60*10*3 |
| 4000A | 2000 | 100 | 5 | 3 | 100*5*3 | 100 | 5 | 3 | 100*5*3 | 100 | 5 | 4 | 100*5*4 |
| | 2500 | 100 | 10 | 2 | 100*10*2 | 100 | 10 | 2 | 100*10*2 | 80 | 10 | 3 | 80*10*3 |
| | 800 | 80 | 8 | 3 | 80*8*3 | 80 | 8 | 3 | 80*8*3 | 80 | 10 | 3 | 80*10*3 |
| | 2500 | 80 | 6 | 4 | 80*6*4 | 80 | 6 | 4 | 80*6*4 | 80 | 8 | 4 | 80*8*4 |
| 7500A | 3200 | 100 | 10 | 4 | 100*10*4 | 100 | 10 | 4 | 100*10*4 | 100 | 10 | 4 | 100*10*4 |
| | 4000 | 100 | 10 | 5 | 100*10*5 | 100 | 10 | 5 | 100*10*5 | 120 | 10 | 5 | 120*10*5 |
| | 4000 | 100 | 10 | 5 | 100*10*5 | 100 | 10 | 5 | 100*10*5 | 100 | 10 | 6 | 100*10*5 |
| | 5000 | 100 | 10 | 7 | 100*10*7 | 100 | 10 | 7 | 100*10*7 | 120 | 10 | 7 | 120*10*7 |
| | 6300 | 120 | 10 | 7 | 120*10*7 | 120 | 10 | 7 | 120*10*7 | 120 | 10 | 8 | 120*10*8 |
| | 7500 | 120 | 10 | 9 | 120*10*9 | 120 | 10 | 9 | 120*10*9 | 120 | 10 | 10 | 120*10*10 |

- Notes: a. When the copper busbar selected by the user is not matched with the circuit breaker connection terminal, it needs to design and process the extension busbar for connection. The extension busbar will be designed by the user; its section area cannot be less than the above requirement, and the clearance between extension busbars cannot be less than that between the circuit breaker connection terminals.
- b. After installing the above recommended busbar, it shall ensure the electric clearance between adjacent phases of the circuit breakers is not less than 18mm.
- c. For electric components using thyristor for three-phase rectification and high-frequency inversion in the load devices, like high-frequency induction heating electric furnace (intermediate frequency furnace steel facility), solid state high frequency welder (such as submerged arc welder), vacuum heating melting facility (like single crystal growing furnace), upon selecting the circuit breaker, it should take into account not only the impact of ambient temperature and altitude, but also the impact of higher harmonic generated by thyristor on the circuit breaker; in such case, it must be used by derating, and the recommended derating factor is (0.5~0.8).
- d. After the user installs the busbar, the electric clearance between upper and lower busbar fastening bolts should not be less than 20 mm.
- e. After the circuit breaker is installed, the safe spacing between different potential electrified bodies and between the electrified body and ground should be not less than 18mm.

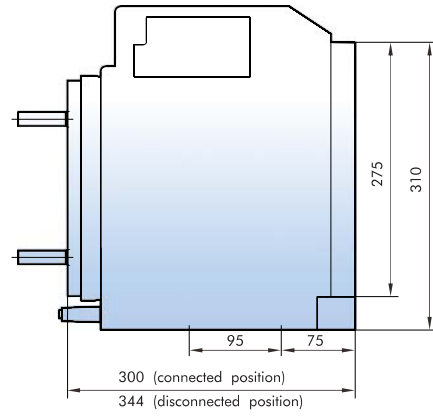
Dimension And Installation

NA8-1600 draw-out type

Front view

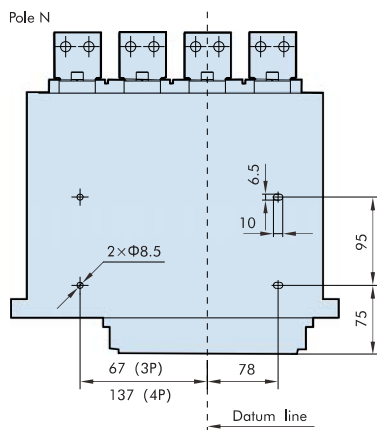


Side view

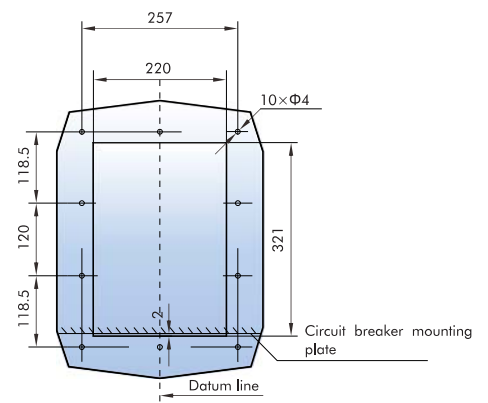


Hole size

Hole size of the base

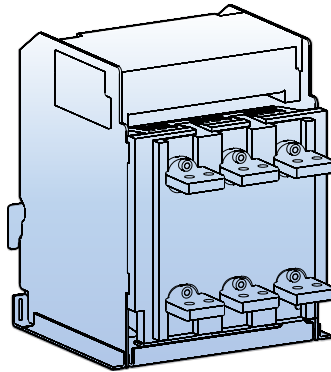


Hole size of the panel



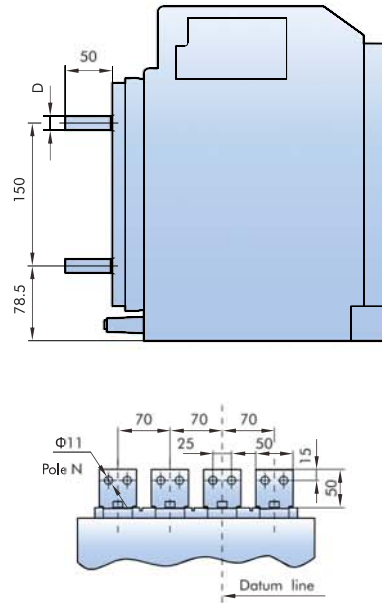
Horizontal connection

Side view

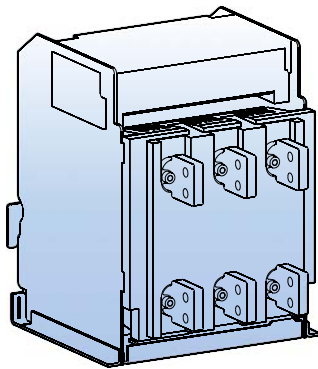


| In(A) | D(mm) |
|-----------|-------|
| 200~800 | 10 |
| 1000~1600 | 16 |

Busbar mounting dimensions

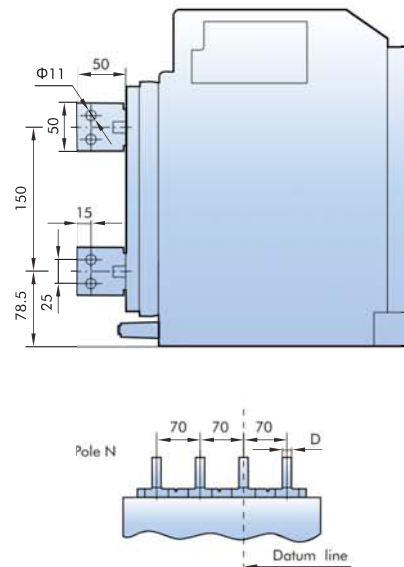


Vertical connection



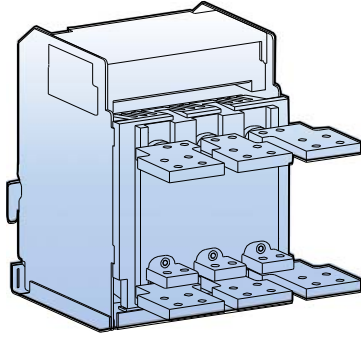
| In(A) | D(mm) |
|-----------|-------|
| 200~800 | 10 |
| 1000~1600 | 16 |

Busbar mounting dimensions

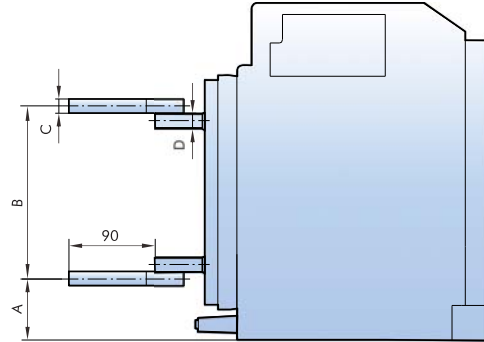


Three-pole product horizontal extension busbar (optional)

Side view



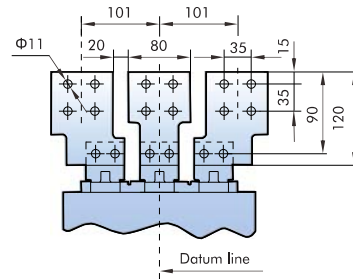
Busbar mounting dimensions



Unit: mm

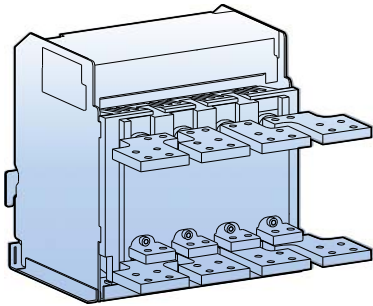
| In(A) | A | B | C | D |
|-----------|------|-----|----|----|
| 200~800 | 68.5 | 170 | 10 | 10 |
| 1000~1600 | 63 | 181 | 15 | 16 |

Note: The extension busbar is of optional accessory, requiring additional expense.

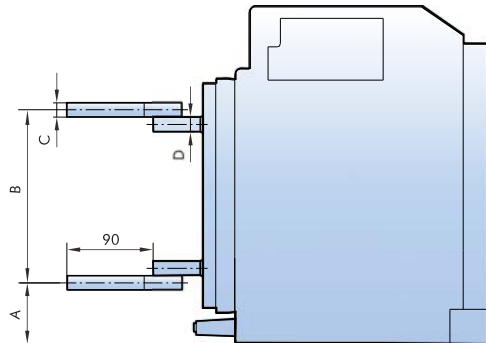


Four-pole product horizontal extension busbar (optional)

Side view



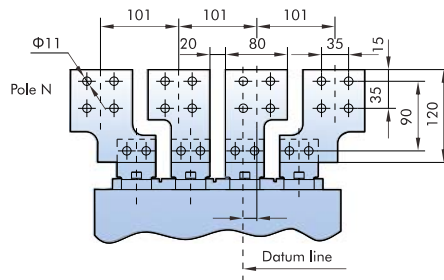
Busbar mounting dimensions



Unit: mm

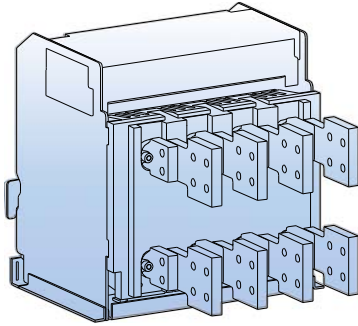
| In(A) | A | B | C | D |
|-----------|------|-----|----|----|
| 200~800 | 68.5 | 170 | 10 | 10 |
| 1000~1600 | 63 | 181 | 15 | 16 |

Note: The extension busbar is of optional accessory, requiring additional expense.

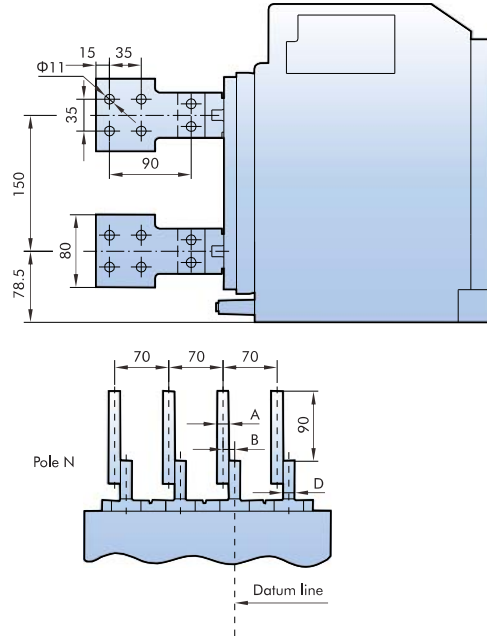


Vertical extension busbar (optional)

Side view



Busbar mounting dimensions



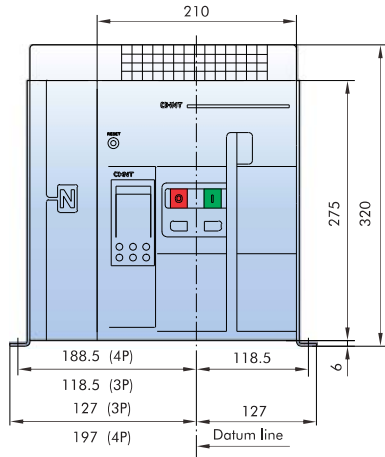
Unit: mm

| In(A) | A | B | D |
|-----------|----|------|----|
| 200~800 | 10 | 10 | 10 |
| 1000~1600 | 15 | 15.5 | 16 |

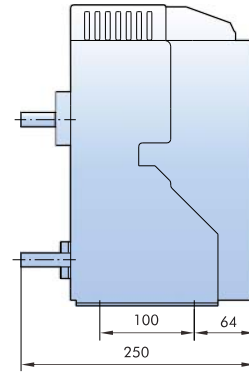
Note: The extension busbar is of optional accessory, requiring additional expense.

NA8-1600 fixed type

Front view

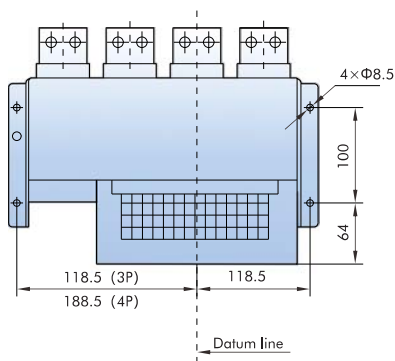


Side view

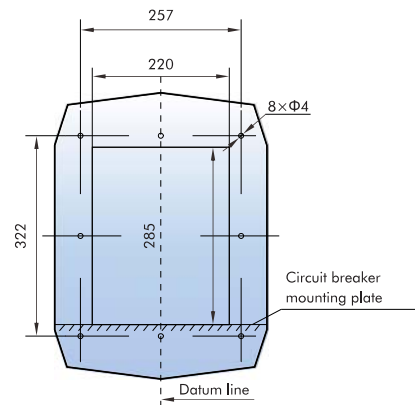


Hole size

Hole size of the base

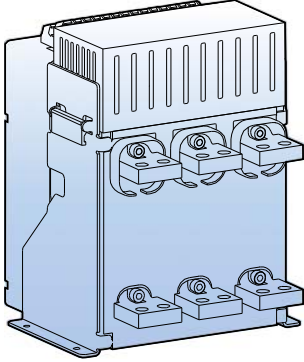


Hole size of the panel

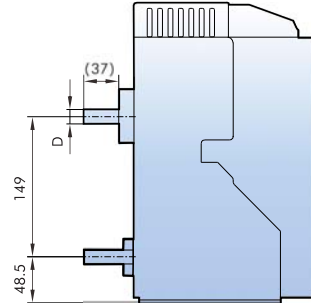


Horizontal connection

Side view

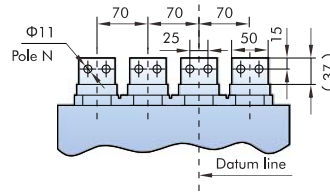


Busbar mounting dimensions



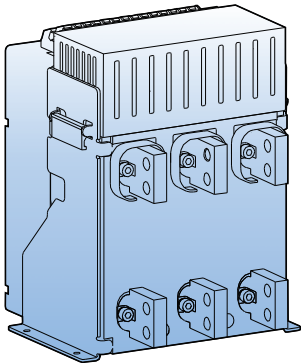
| In(A) | D(mm) |
|-----------|-------|
| 200~800 | 10 |
| 1000~1600 | 16 |

Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

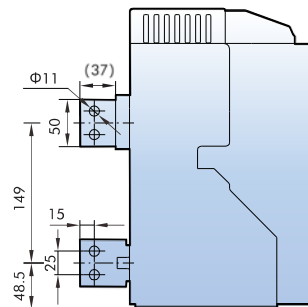


Vertical connection

Side view

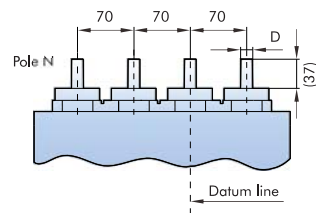


Busbar mounting dimensions



| In(A) | D(mm) |
|-----------|-------|
| 200~800 | 10 |
| 1000~1600 | 16 |

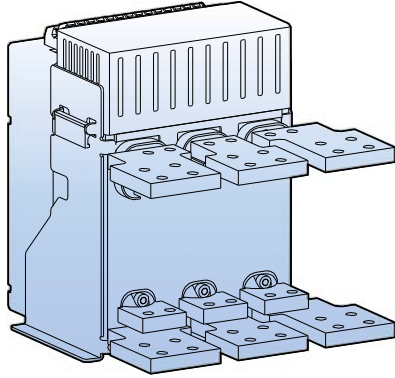
Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.



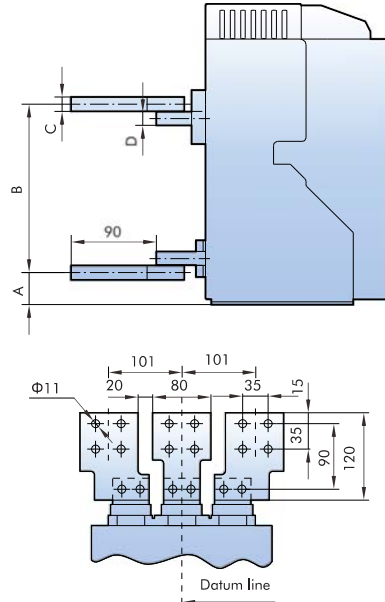


Three-pole product horizontal extension busbar connection (optional)

Side view



Busbar mounting dimensions



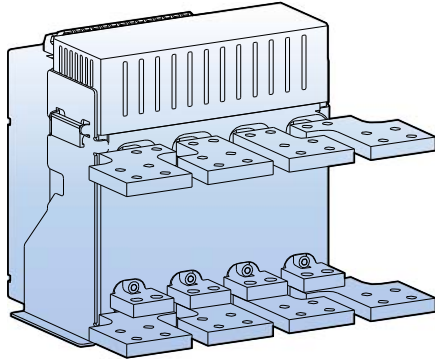
Unit: mm

| In(A) | A | B | C | D |
|-----------|------|-----|----|----|
| 200~800 | 38.5 | 169 | 10 | 10 |
| 1000~1600 | 33 | 180 | 15 | 16 |

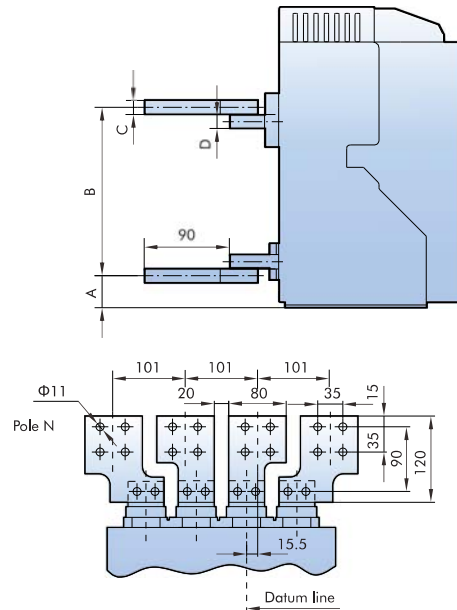
Note: The extension busbar is of optional accessory, requiring additional expense.

Four-pole product horizontal extension busbar connection (optional)

Side view



Busbar mounting dimensions



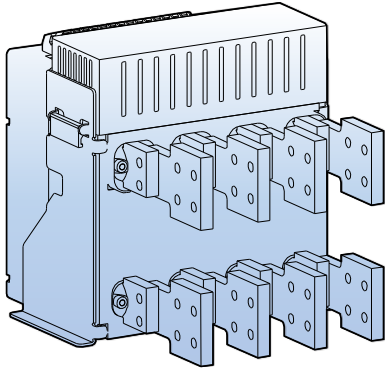
Unit: mm

| In(A) | A | B | C | D |
|-----------|------|-----|----|----|
| 200~800 | 38.5 | 169 | 10 | 10 |
| 1000~1600 | 33 | 180 | 15 | 16 |

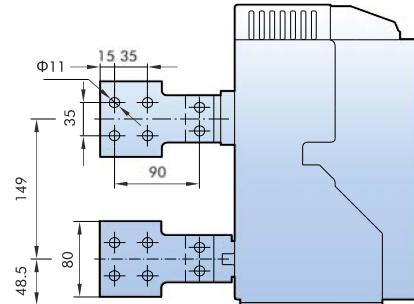
Note: The extension busbar is of optional accessory, requiring additional expense.

Vertical connection of extension busbar (optional)

Side view

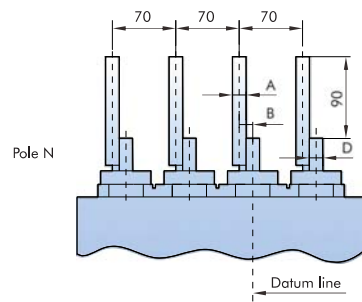


Busbar mounting dimensions



Unit: mm

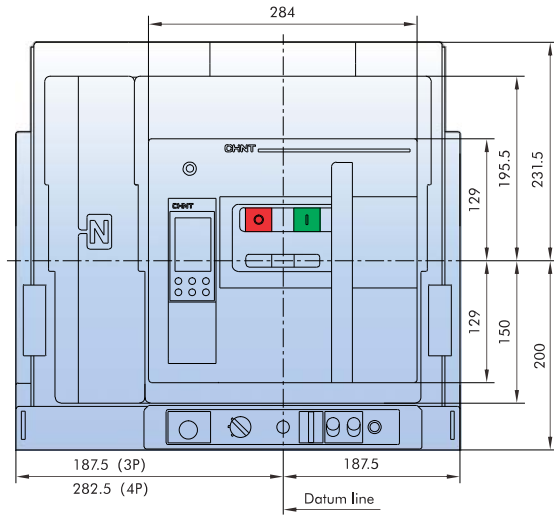
| In(A) | A | B | D |
|-----------|----|----|----|
| 200~800 | 10 | 10 | 10 |
| 1000~1600 | 15 | 15 | 16 |



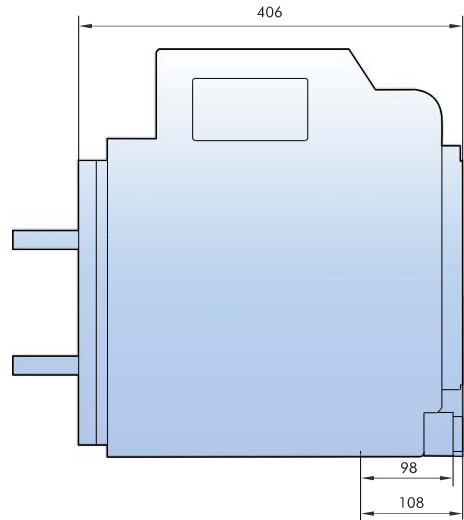
Note: The extension busbar is of optional accessory, requiring additional expense.

NA8-2500 Draw-out type

Front view

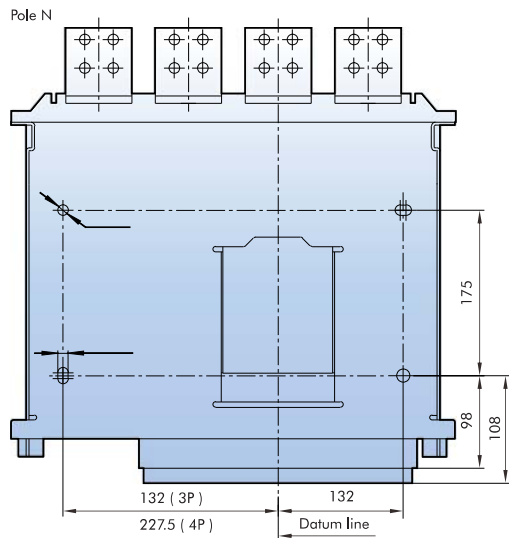


Side view

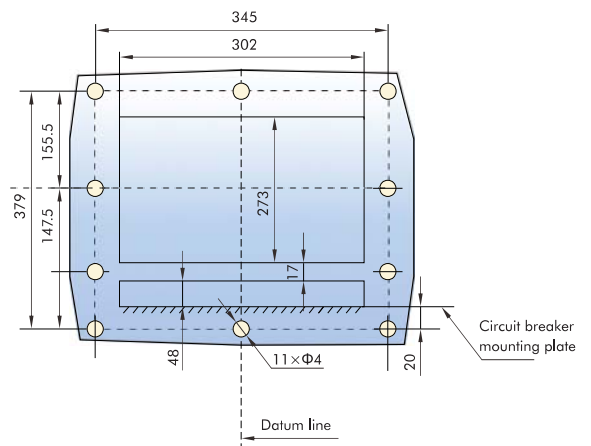


Hole size

Hole size of the base

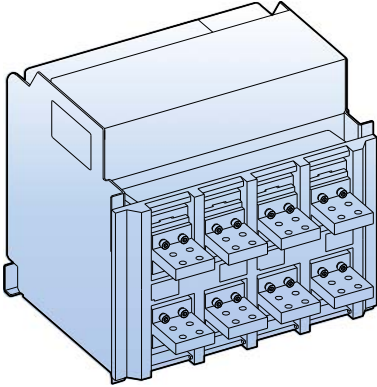


Hole size of the panel



Horizontal connection

Side view

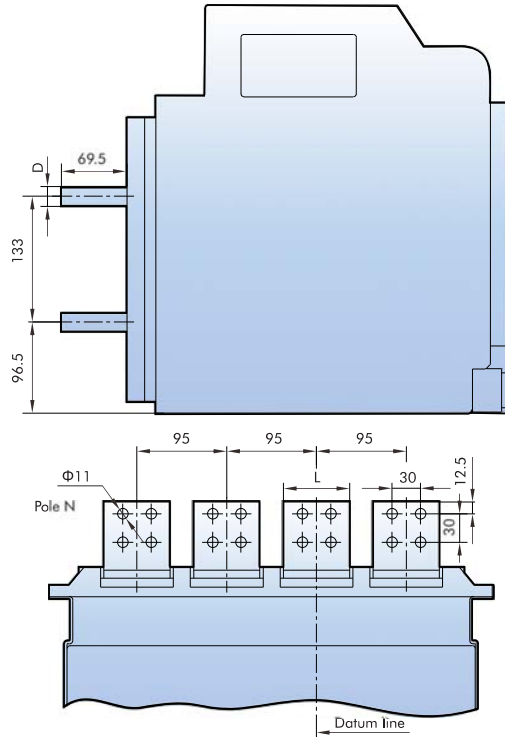


Unit: mm

| In(A) | D | L |
|-----------|----|----|
| 630~1600 | 15 | 60 |
| 2000~2500 | 20 | 70 |

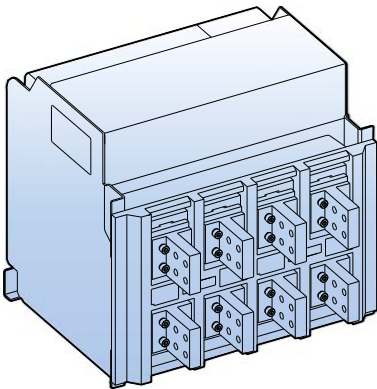
Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

Busbar mounting dimensions



Vertical connection

Side view

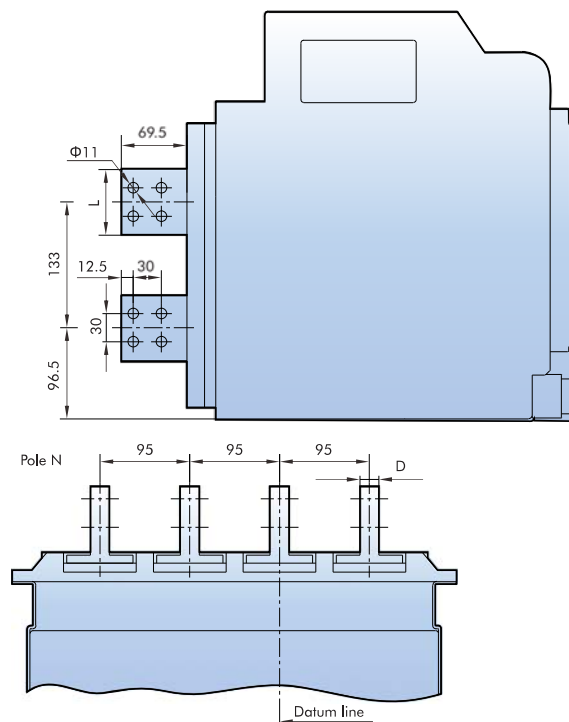


Unit: mm

| In(A) | D | L |
|-----------|----|----|
| 630~1600 | 15 | 60 |
| 2000~2500 | 20 | 70 |

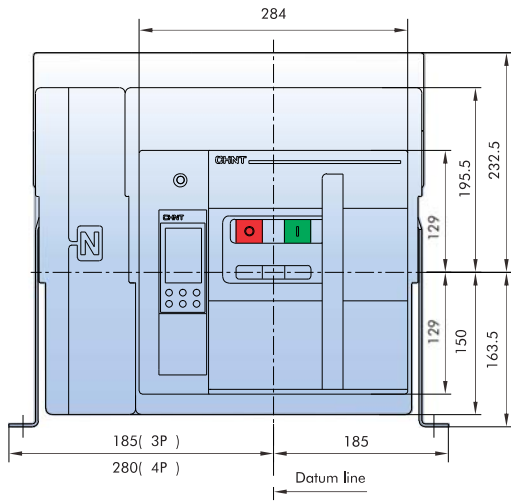
Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

Busbar mounting dimensions

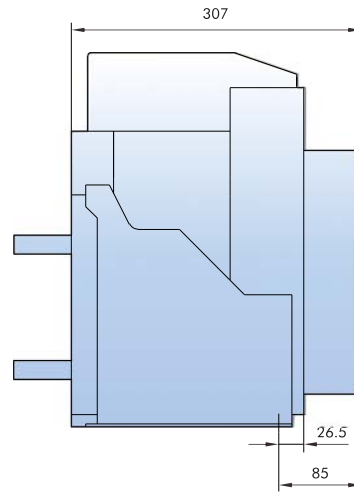


NA8-2500 fixed type

Front view

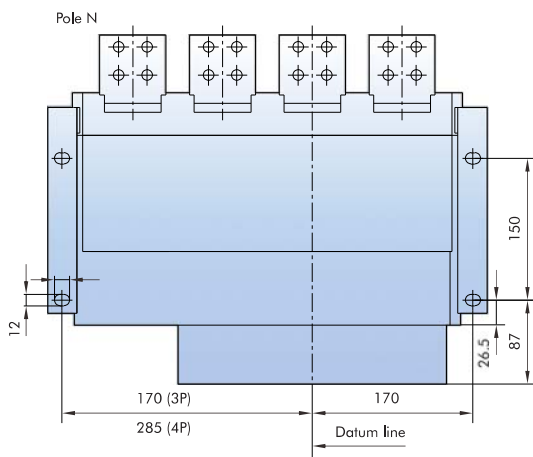


Side view

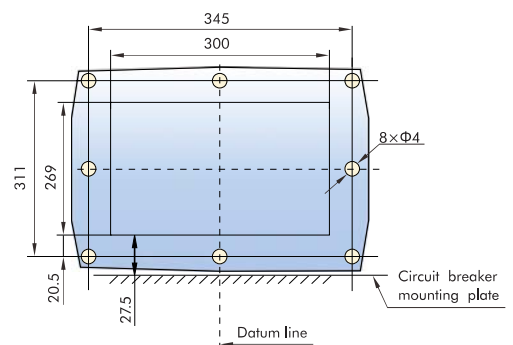


Hole size

Hole size of the base

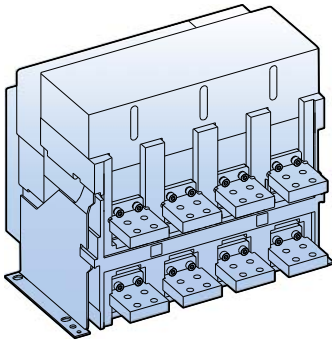


Hole size of the panel



Horizontal connection

Side view

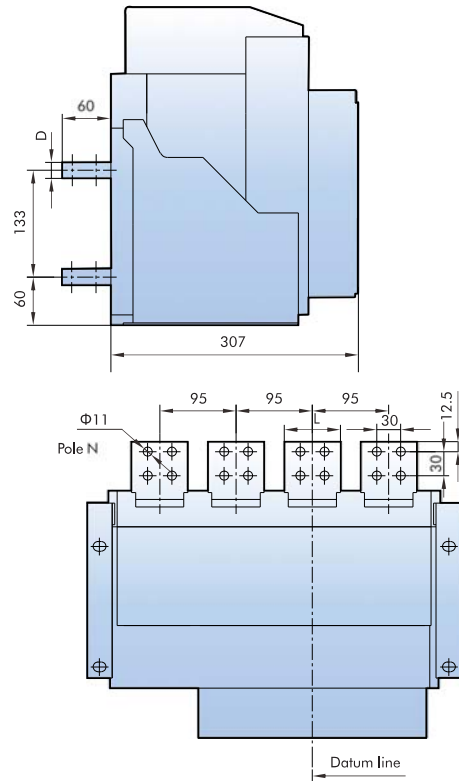


Unit: mm

| In(A) | D | L |
|-----------|----|----|
| 630~1600 | 15 | 60 |
| 2000~2500 | 20 | 70 |

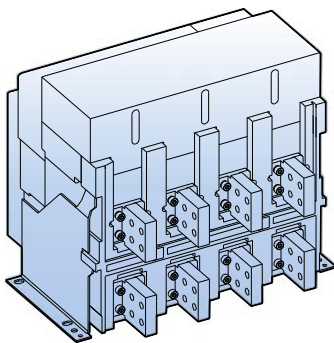
Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

Busbar mounting dimensions



Vertical connection

Side view

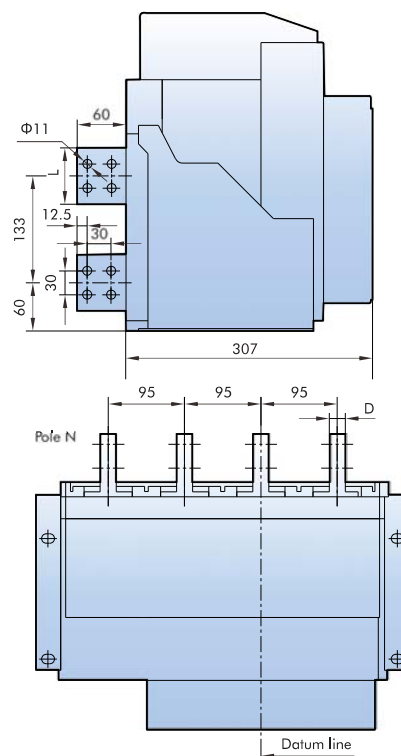


Unit: mm

| In(A) | D | L |
|-----------|----|----|
| 630~1600 | 15 | 60 |
| 2000~2500 | 20 | 70 |

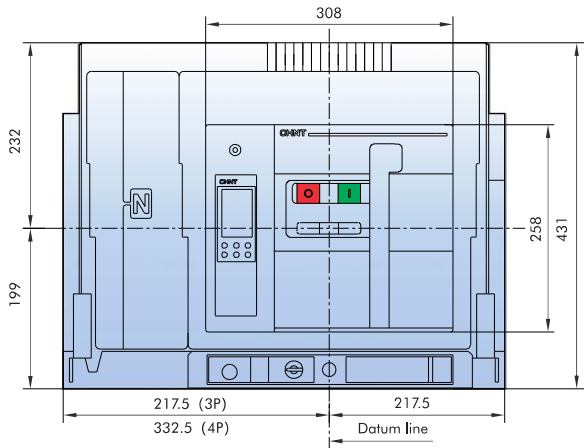
Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

Busbar mounting dimensions

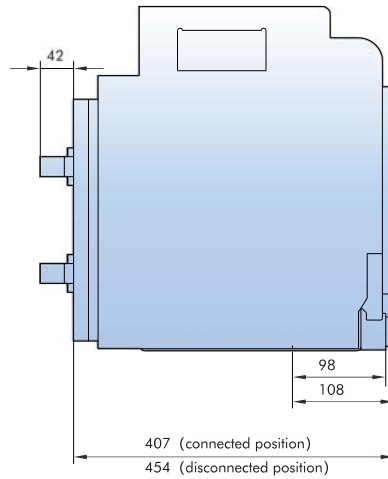


NA8-4000 draw-out type

Front view

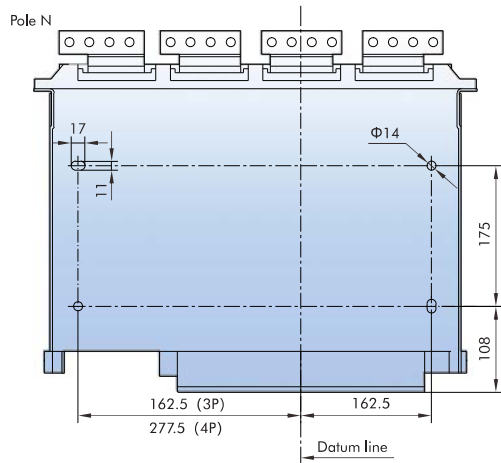


Side view

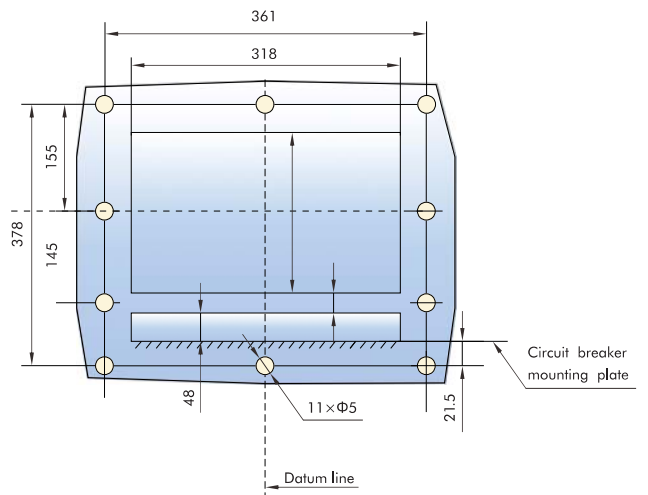


Hole size

Hole size of the base

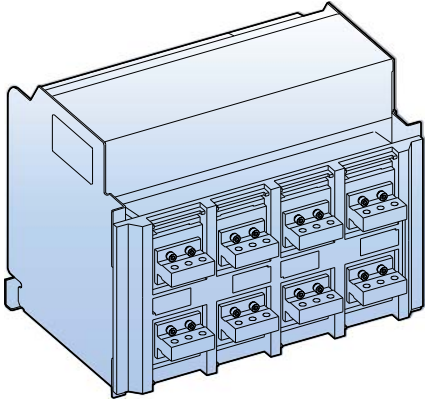


Hole size of the panel

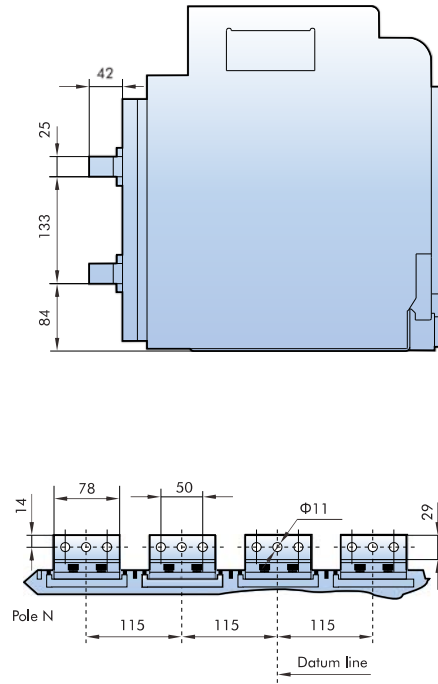


Horizontal connection (In=1600A~2500A)

Side view



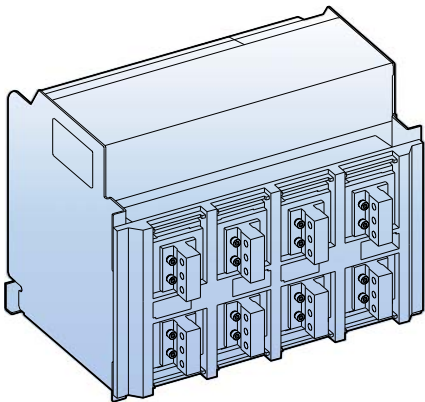
Busbar mounting dimensions



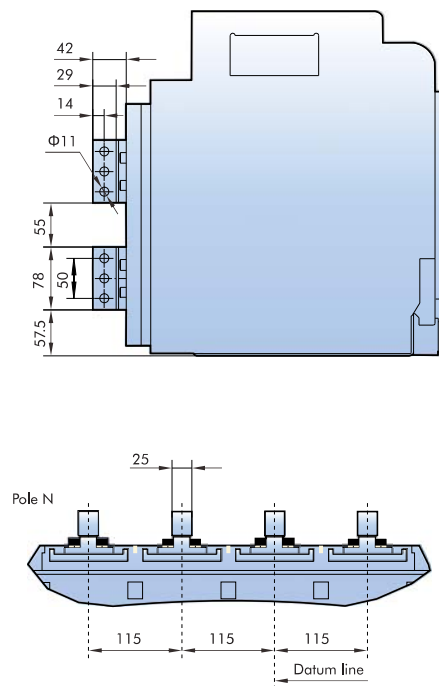
Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

Vertical connection (In=1600A~2500A)

Side view



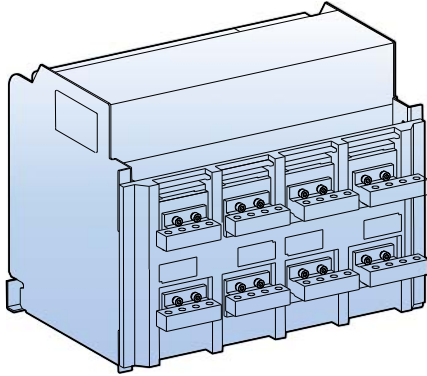
Busbar mounting dimensions



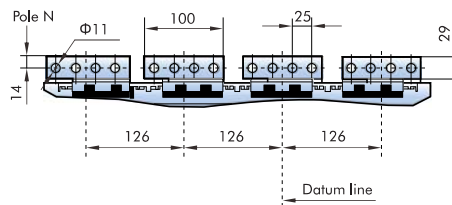
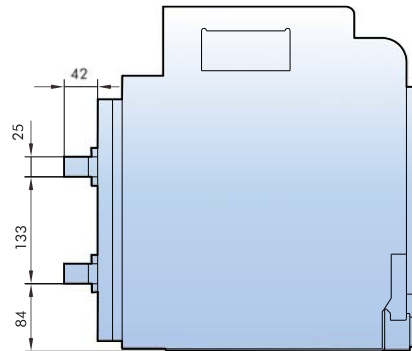
Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

Horizontal connection ($I_n=3200A\sim 4000A$)

Side view



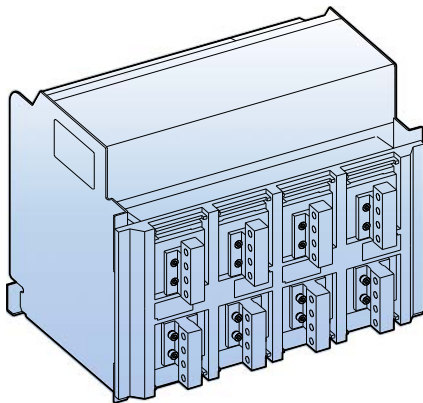
Busbar mounting dimensions



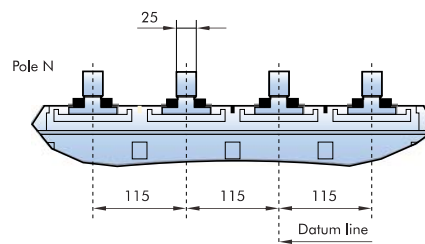
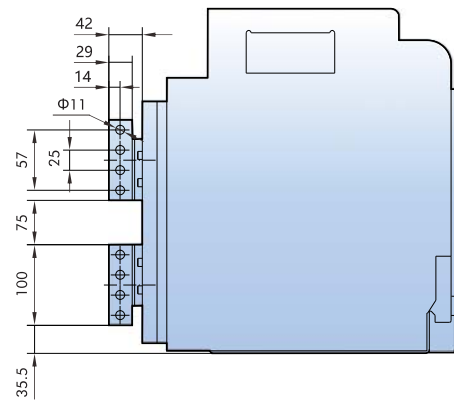
Note: If the user intends to change horizontal connection into vertical connection at site, it needs to change the upper and lower busbars of phases N and B into the same busbars of phases A and C.

Vertical connection ($I_n=3200A\sim 4000A$)

Side view



Busbar mounting dimensions

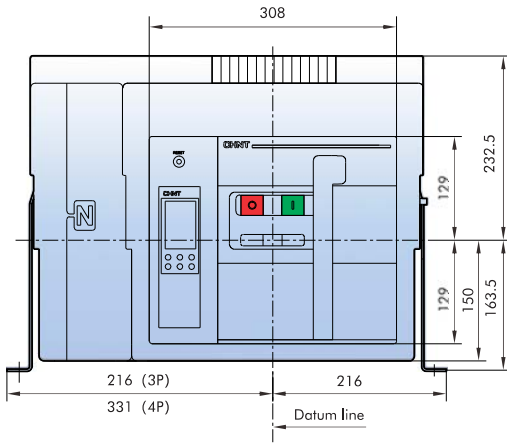


Note: If the user intends to change vertical connection into horizontal connection at site, it needs to change the upper and lower busbars of phases N and B into the same busbars of phases A and C.

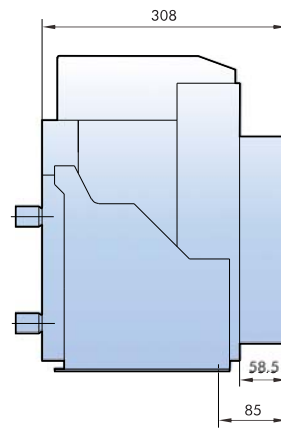


NA8-4000 fixed type

Front view

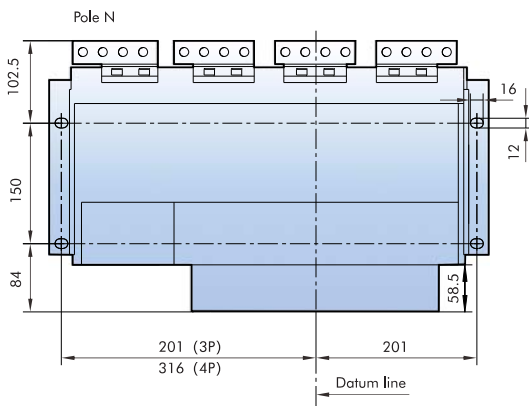


Side view

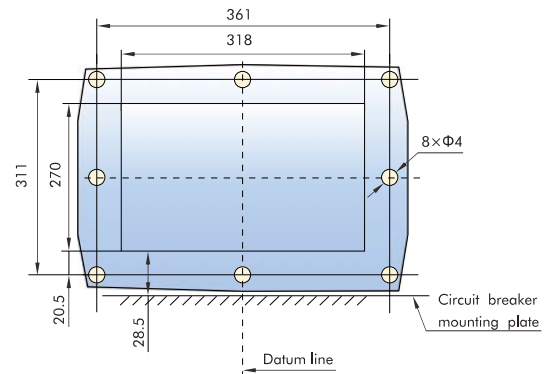


Hole size

Hole size of the base

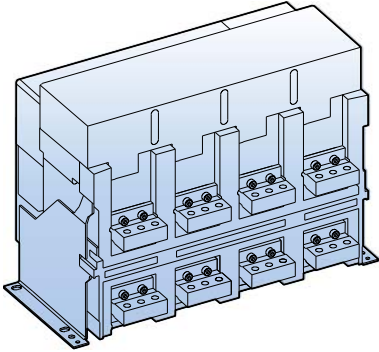


Hole size of the panel

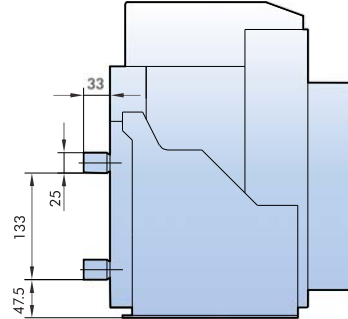


Horizontal connection (In=1600A~2500A)

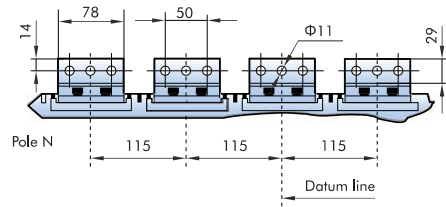
Side view



Busbar mounting dimensions

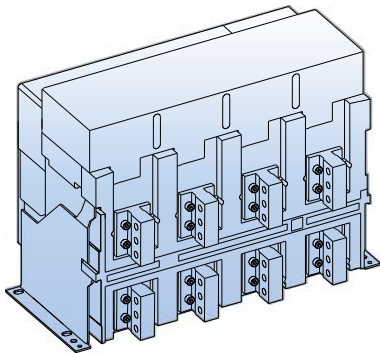


Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

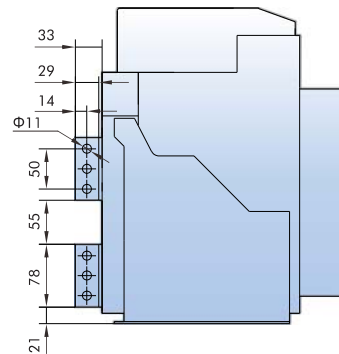


Vertical connection (In=1600A~2500A)

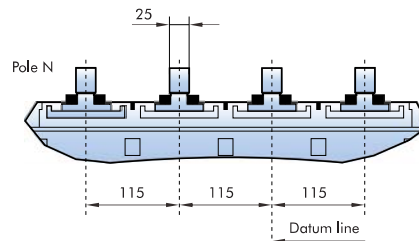
Side view



Busbar mounting dimensions

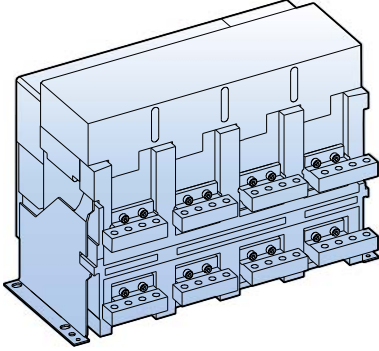


Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

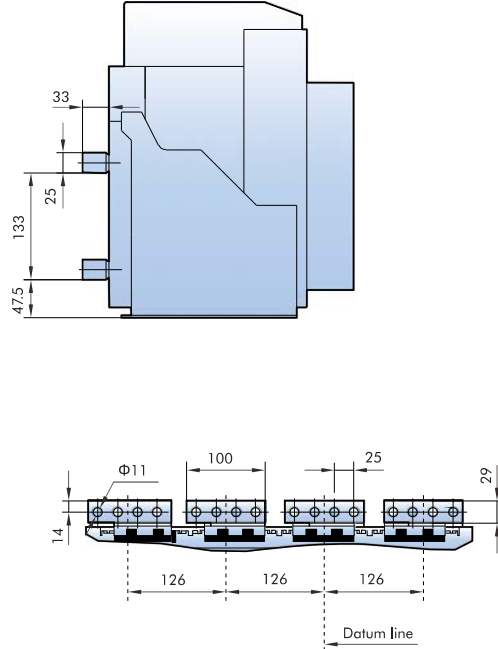


Horizontal connection (In=3200A~ 4000A)

Side view



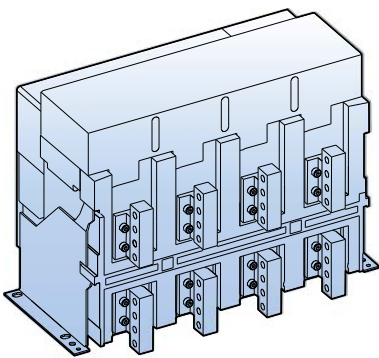
Busbar mounting dimensions



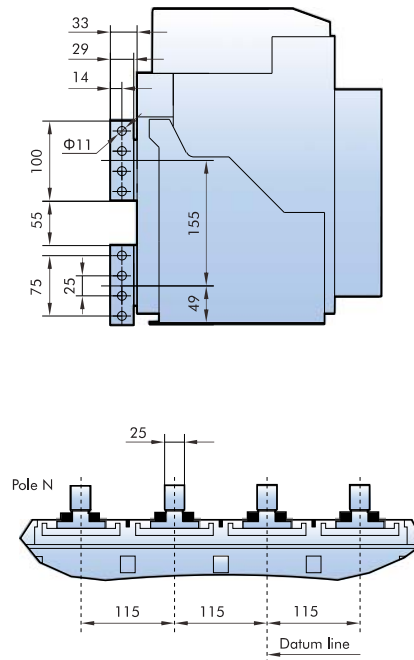
Note: If the user intends to change horizontal connection into vertical connection at site, it needs to change the upper and lower busbars of phases N and B into the same busbars of phases A and C.

Vertical connection (In=3200A~ 4000A)

Side view



Busbar mounting dimensions

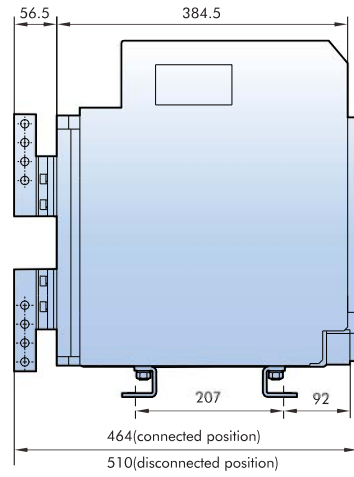
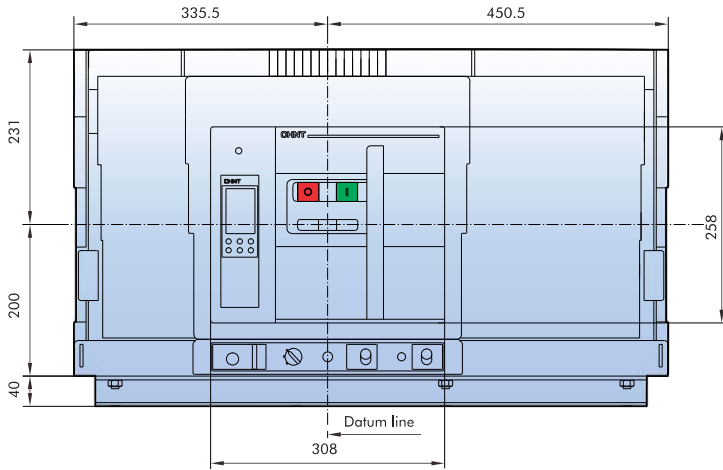


Note: If the user intends to change vertical connection into horizontal connection at site, it needs to change the upper and lower busbars of phases N and B into the same busbars of phases A and C.

NA8-7500 (In=4000A~ 6300A) three-pole draw-out type

Front view

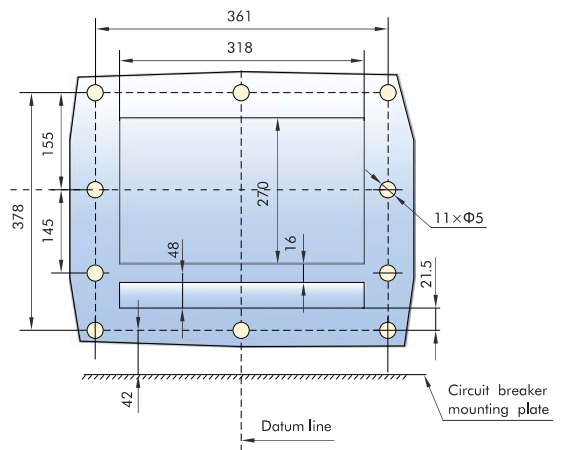
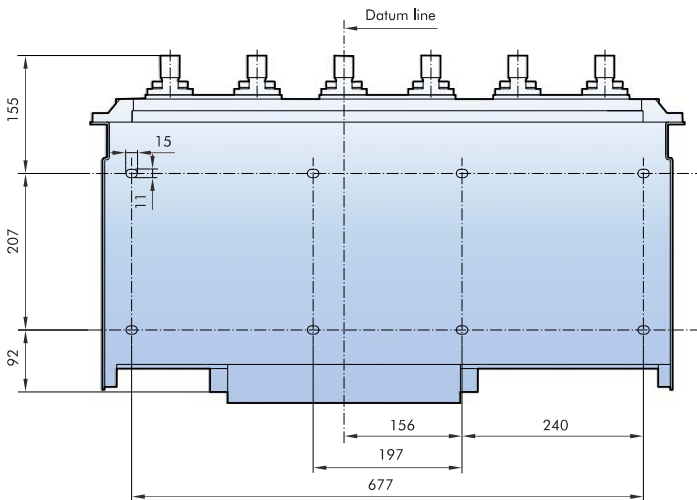
Side view



Hole size

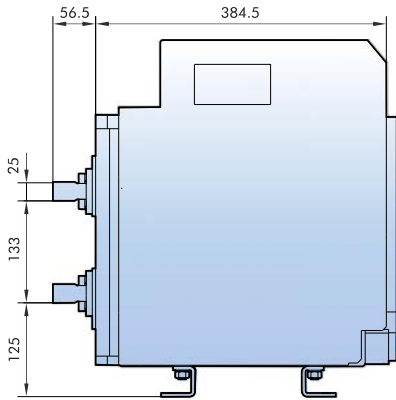
Hole size of the base

Hole size of the panel

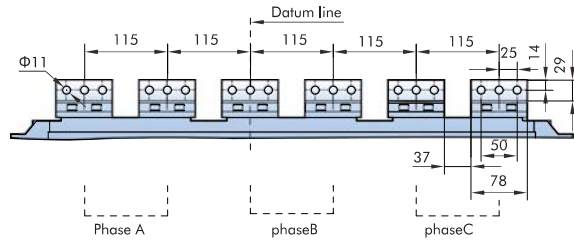


Horizontal connection (In=4000A~ 5000A/ three poles)

Side view



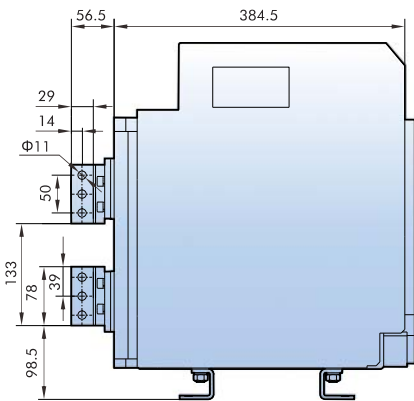
Busbar mounting dimensions



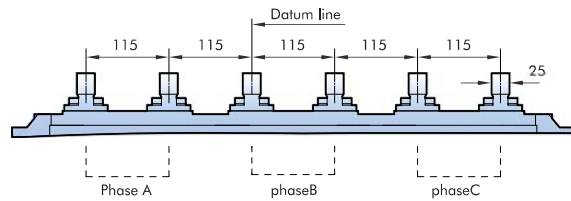
Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

Vertical connection (In=4000A~ 5000A/ three poles)

Side view



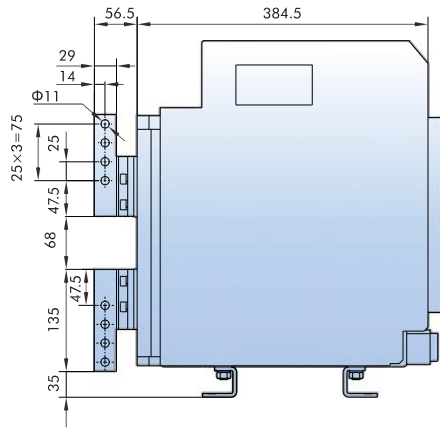
Busbar mounting dimensions



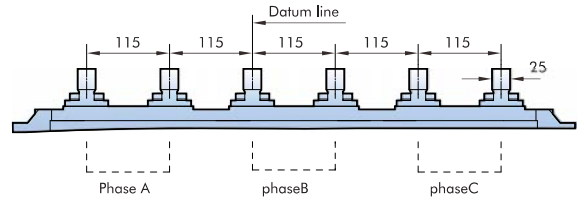
Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

Vertical connection (In=6300A/ three poles)

Side view



Busbar mounting dimensions

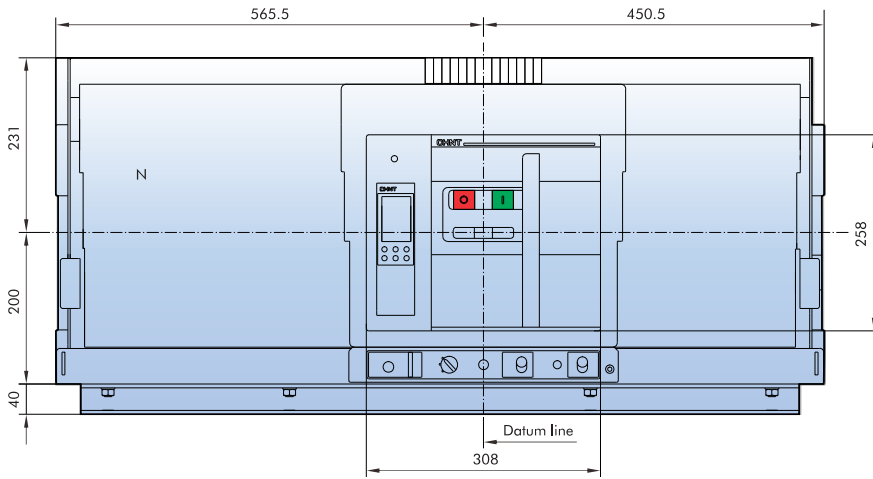


Note: In=6300A only has vertical connection and has no horizontal connection.

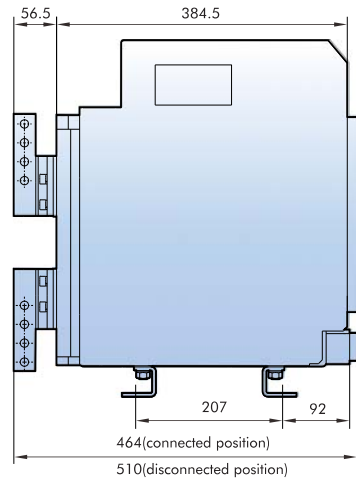


NA8-7500 draw-out type (In=4000A~ 6300A) four poles/ (In=7500A) three & four poles

Front view

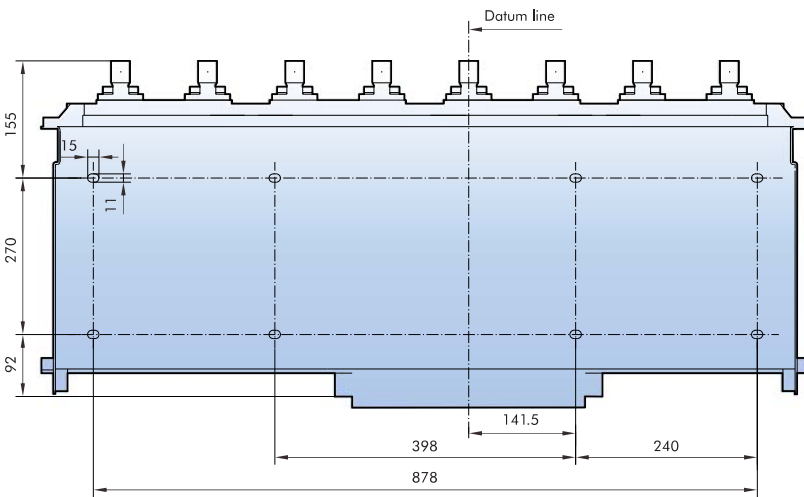


Side view

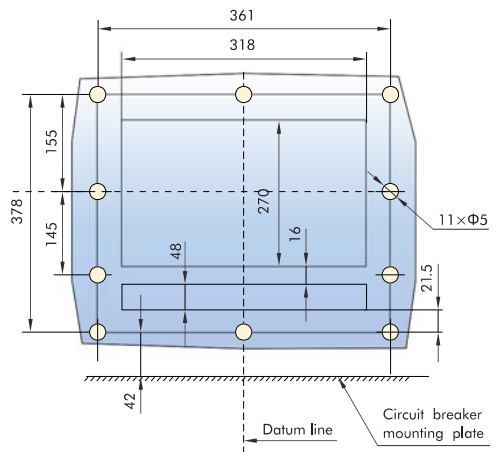


Hole size

Hole size of the base

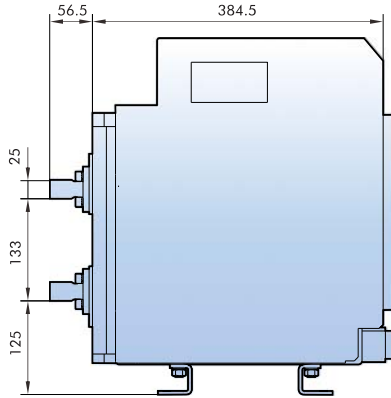


Hole size of the panel

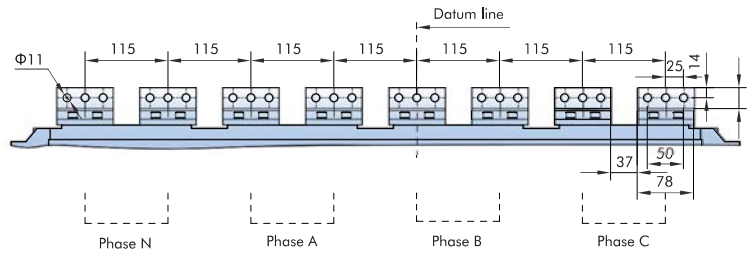


Horizontal connection (In=4000A ~ 5000A/ four poles)

Side view



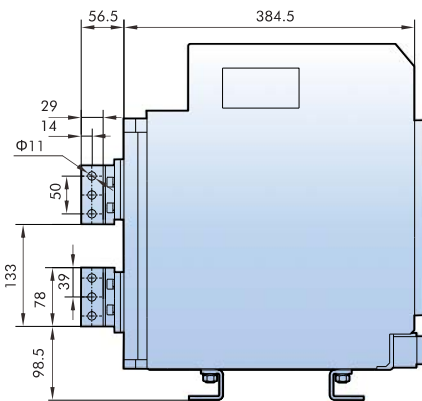
Busbar mounting dimensions



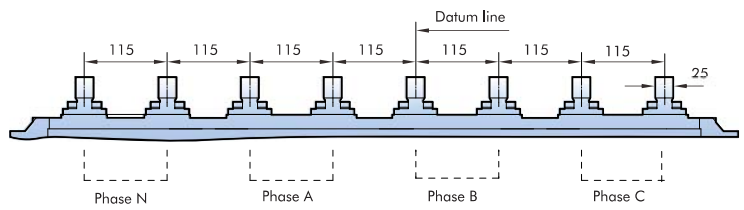
Note: If the user intends to change horizontal connection into vertical connection at site, it only needs to rotate the busbar by 90°.

Vertical connection (In=4000A~ 5000A/ four poles)

Side view



Busbar mounting dimensions

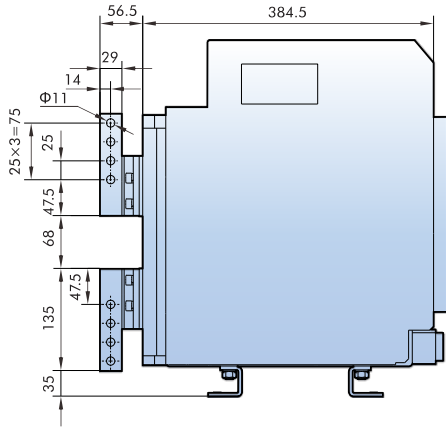


Note: If the user intends to change vertical connection into horizontal connection at site, it only needs to rotate the busbar by 90°.

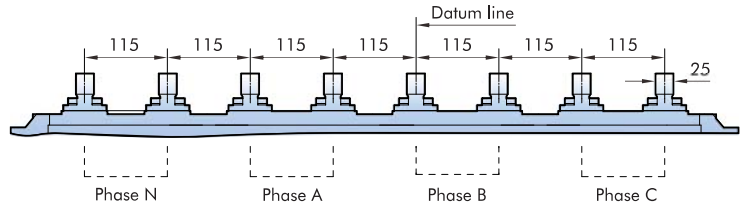


Vertical connection (In=6300A/ four poles)

Side view



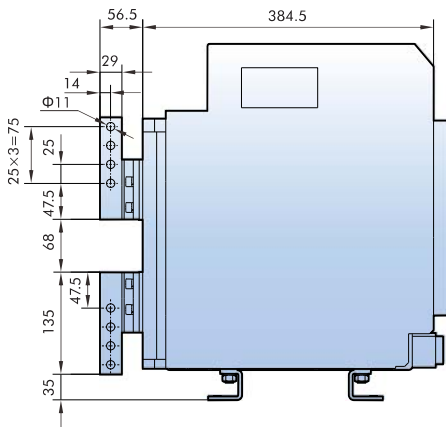
Busbar mounting dimensions



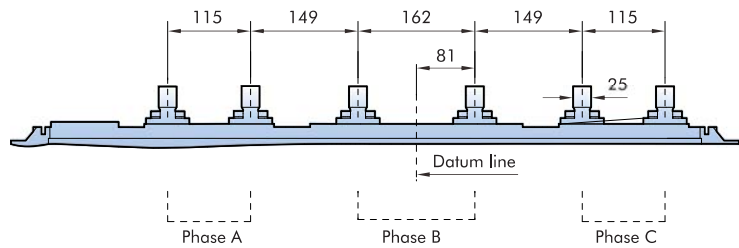
Note: In=6300A only has vertical connection and has no horizontal connection.

Vertical connection (In=7500A/ three poles)

Side view



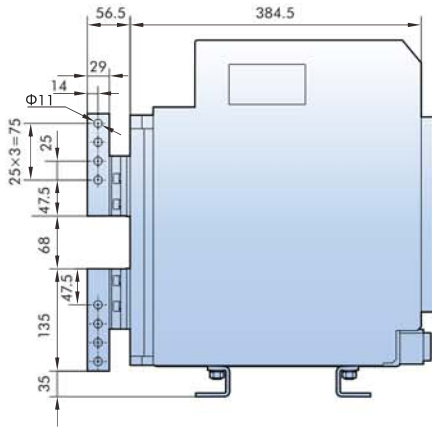
Busbar mounting dimensions



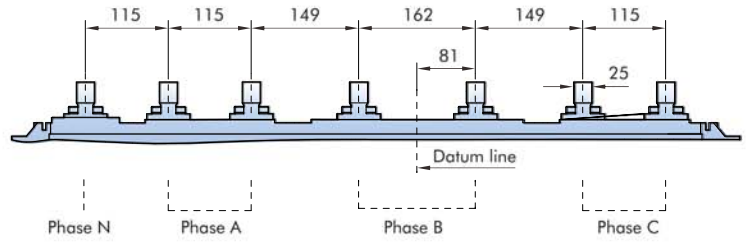
Note: In=7500A only has vertical connection and has no horizontal connection.

Vertical connection (In=7500A/ four poles)

Side view

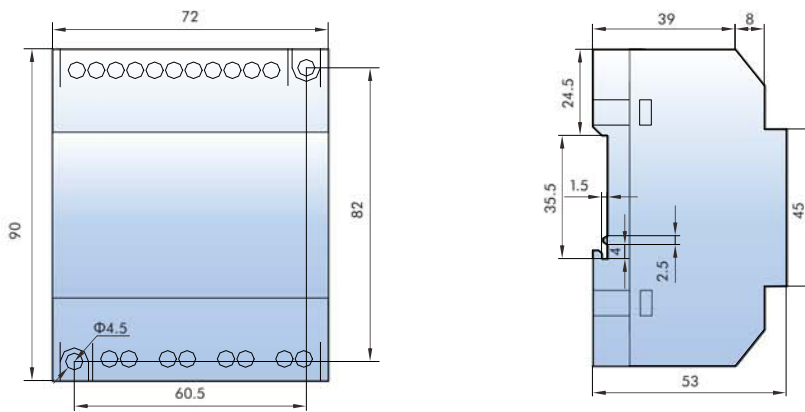


Busbar mounting dimensions



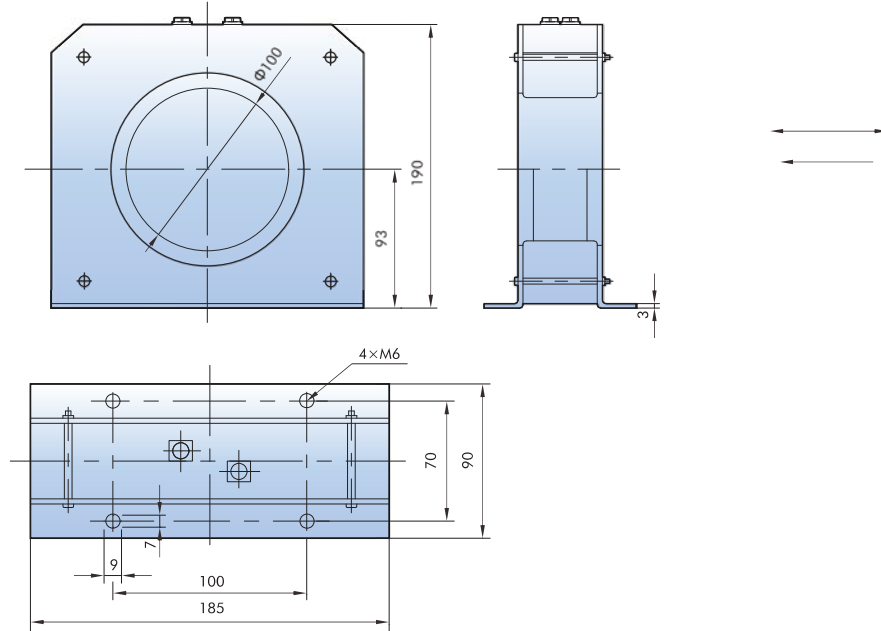
Note: In=7500A only has vertical connection and has no horizontal connection.

Dimensions of undervoltage time delay control module, power module, RU-1 relay signal module

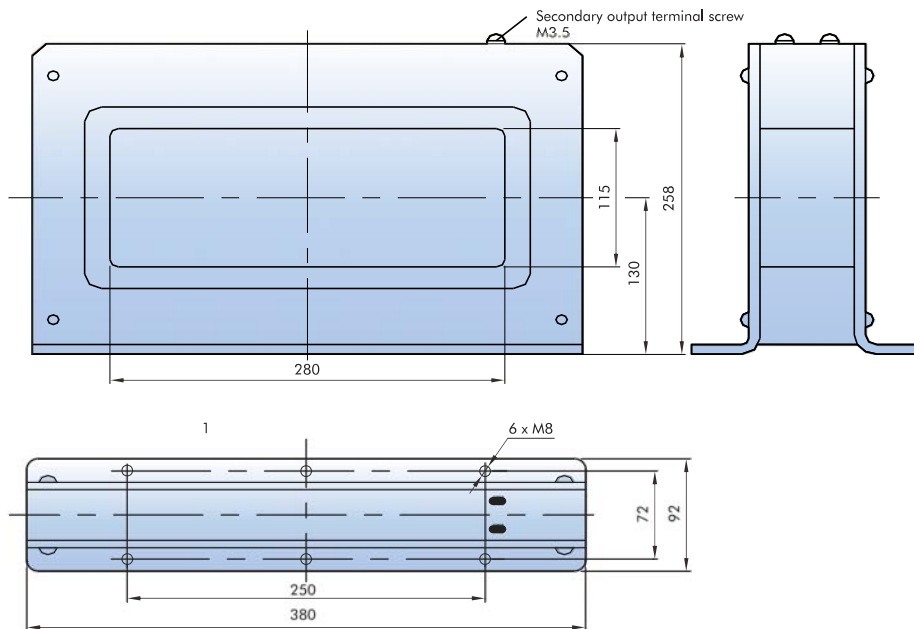


Note: Undervoltage time delay control module, power module, RU-1 relay signal module have consistent overall dimensions, and can be installed using the 35mm standard DIN rail mounting.

Dimensions of ground current transformer

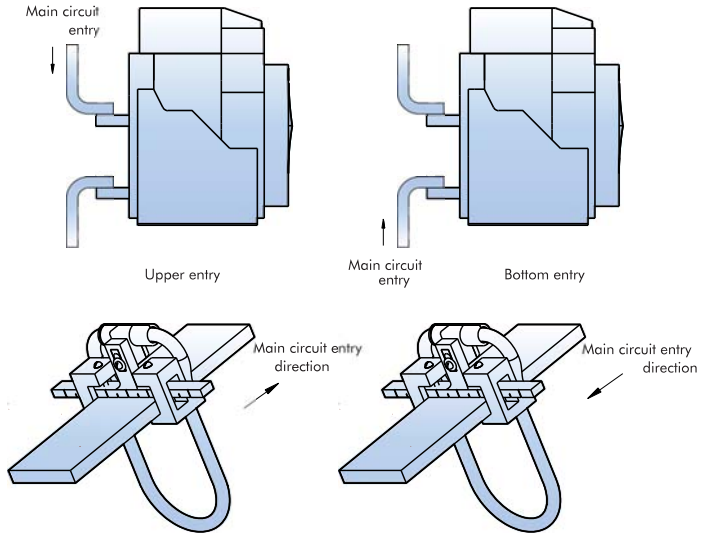
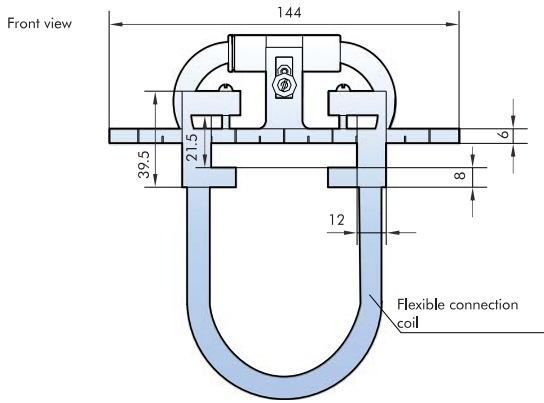


Dimensions of leakage protection transformer



Note: The circuit breaker selected with the leakage transformer should use the vertical busbar connection mode.

Dimensions of neutral pole current transformer



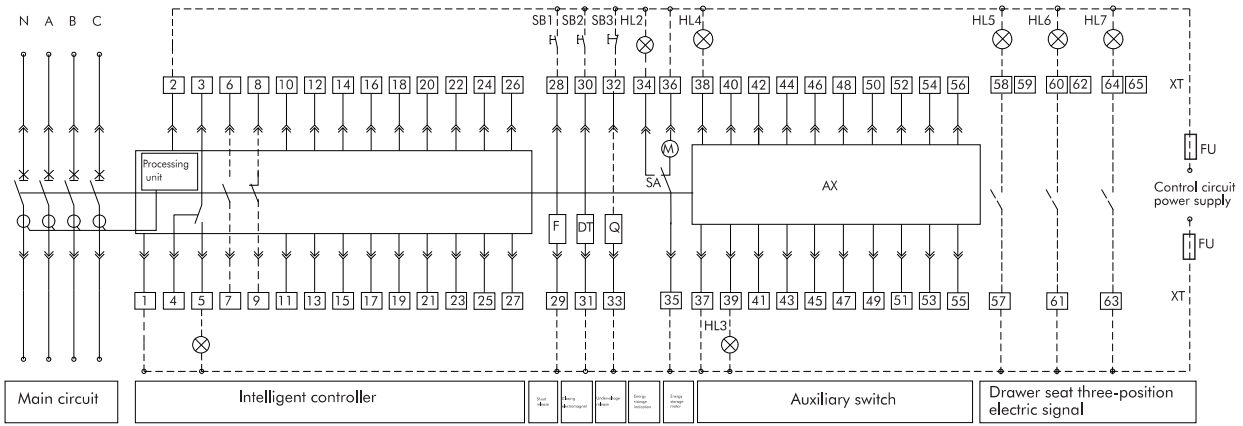
- Note: 1. Upon fixing the neutral transformer, it needs to install it at the entry end of circuit breaker, and one side of its flexible cable should face the entry direction of main circuit.
 2. When the rated current is 200A-630A, the transformer needs to be wrapped around the busbar twice to be used normally.



Secondary Circuit Wiring

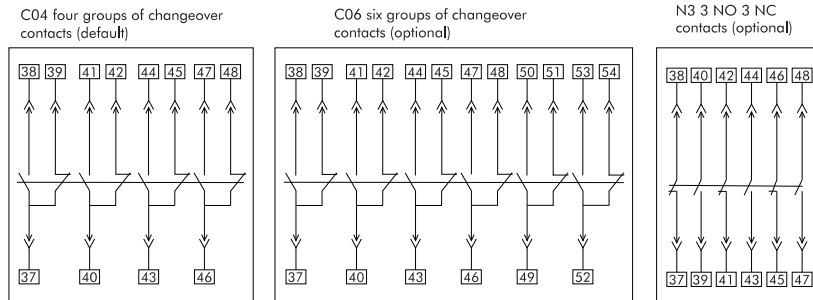
NA8-1600

M Type controller



Type of AX auxiliary contact

Used by the user



F—Shunt release DT—Closing electromagnet

Q—Undervoltage release

M—Motor-driven mechanism

SA—Travel switch XT—Connection terminal

AX—Auxiliary contact SB1—Breaking button

SB2—Making button SB3—Emergency stop button

HL1—Fault indicator light HL2—Energy storage indicator light

HL3—Breaking indicator light

HL4—Making indicator light

HL5 ~7 —Position indicator light

FU—Fuse (6A)

1#, 2#: Intelligent controller power supply: voltage AC220/380V can be directly connected to 1#, 2#; If voltage is DC220/110V, it needs to through the power module, and the power module outputs 24V which can be connected to 1#, 2#.

3#~5#: Tripping alarm contact (3 is the common point.)

6#~ 9#: Auxiliary contact (1 NO and 1 NC), optional.

10#, 11#: Empty

12#~ 19#: Empty

20#: Empty

21#~23#: Empty

24#, 25#: The contacts for external phase N transformer input signal; for conventional product, they are empty, and should be ordered by the user specifically. Where external transformer is required, they are the external transformer signal input contacts.

27#: Protective grounding, is connected to the outer board of the circuit breaker;

28#, 29#: Shunt release;

30#, 31#: Closing electromagnet;

32#, 33#: Undervoltage release.

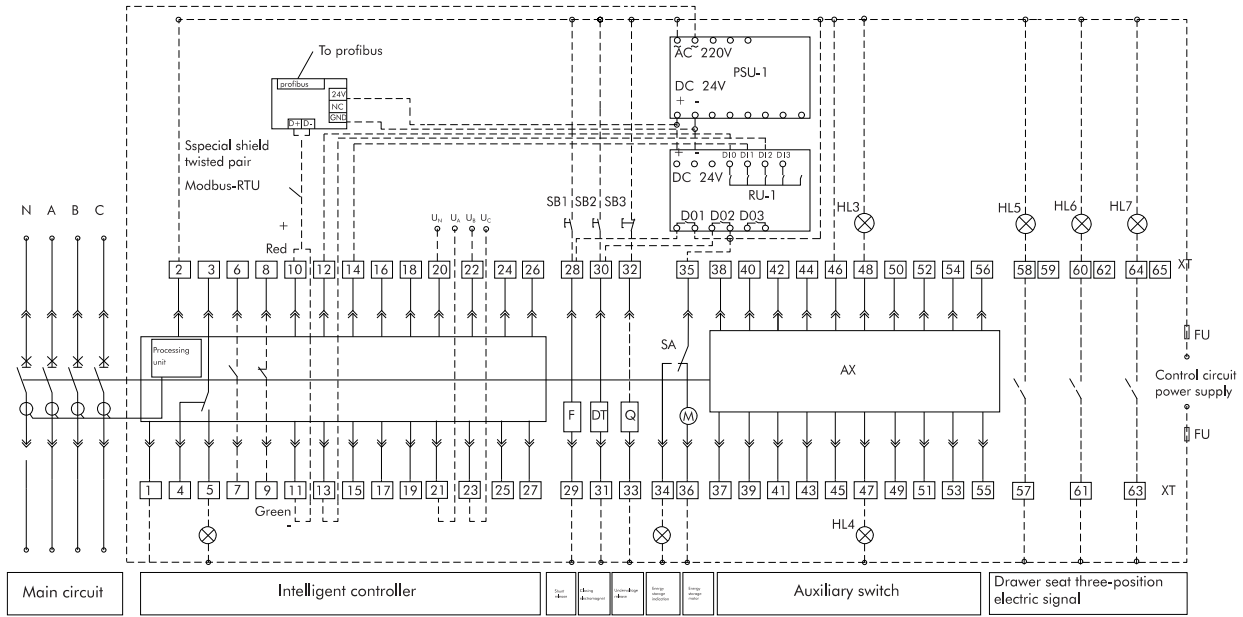
34#~36#: Motor-driven mechanism.

37#~56#: Auxiliary contact. The conventional product has 4 groups of changeover auxiliary contacts; in case of special order from the user, 6 groups of changeover contacts can be provided, 3 NO 3C contacts. 6 groups of changeover contacts are used for AC only.

57#~65#: Draw-out type circuit breaker three-position signal indication; the conventional supply has not wire connection, is only for the draw-out type circuit breaker with the secondary functions selected.

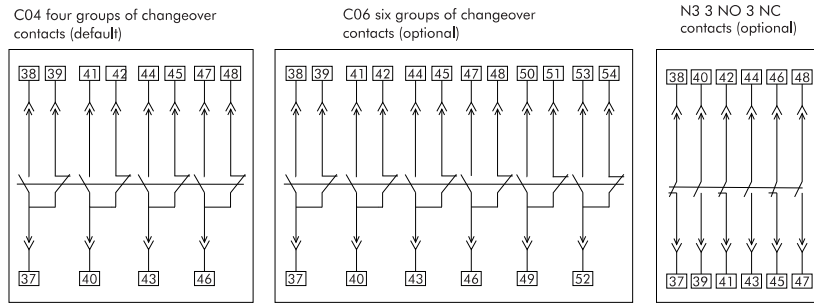
Note: The part in solid line has been connected by the factory, and the part in dashed line shall be connected by the customer.





Type of AX auxiliary contact

Used by the user



F —Shunt release DT —Closing electromagnet

Q —Undervoltage release

M —Motor-driven mechanism

SA —Travel switch XT —Connection terminal

AX —Auxiliary contact SB1 —Breaking button

SB2 —Making button SB3 —Emergency stop button

HL1 —Fault indicator light

HL2 —Energy storage indicator light

HL3 —Breaking indicator light

HL4 —Making indicator light

HL5 ~ 7 —Position indicator light

FU —Fuse (6A)

1#, 2#: Intelligent controller power supply: voltage AC220/380V can be directly connected to 1#, 2#; If voltage is DC220/110V, it needs to through the power module, and the power module outputs 24V which can be connected to 1#, 2#.

3#~5#: Tripping alarm contact (3 is the common point)

6#~9#: Auxiliary contact (1 NO and 1 NC), optional.

10#, 11#: Type H intelligent controller default communication output contact.

12#~15#: 3 groups of programmable output signal, which must be connected with external RU-1 relay module. When type H intelligent controller has programmable output signal, default output: 12 #, 13#: Closing signal output, 12#, 14 #: Openingsignal output, 12 #, 15 #: Fault tripping. The conventional product has no such connection.

19#: H type intelligent controller communication shielding ground wire

20#~23#: Voltage display input signal contact, 20#: Phase N voltage signal, 21#: Phase A voltagesignal, 22#: Phase B voltage signal, 23# : Phase C voltage signal. The conventional product has no such connection.

24#, 25#: External Phase N transformer or external earth current transformer input signal contact; for conventional product, they are empty, and should be ordered by the user specifically. Where external transformer is required, they are the external transformer signal input contacts.

27#: Protective grounding, is connected to the outer board of the circuit breaker;

28#, 29#: Shunt release;

30#, 31#: Closing electromagnet;

32#, 33#: Undervoltage release.

34 #~ 36 #: Motor-driven mechanism.

37 #~ 56 #: Auxiliary contact. 6 groups of changeover contacts are used for AC only. The conventional product has 4 groups of changeover auxiliary contacts; in case of special order from the user, 6 groups of changeover contacts, 3 NO 3C contacts can be provided.

57#~ 65#: Draw-out type circuit breaker three-position signal indication; the conventional supply has not wire connection, is only for the draw-out type circuit breaker with the secondary functions selected.

ST-DP: DP protocol module; when the upper computer communication protocol is Modbus-RTU, ST-DP protocol module is not required; when the upper computer communication protocol is Profibus-DP, ST-DP protocol module is required to change the Modbus-RTU protocol into Profibus-DP protocol with the cost separately charged.

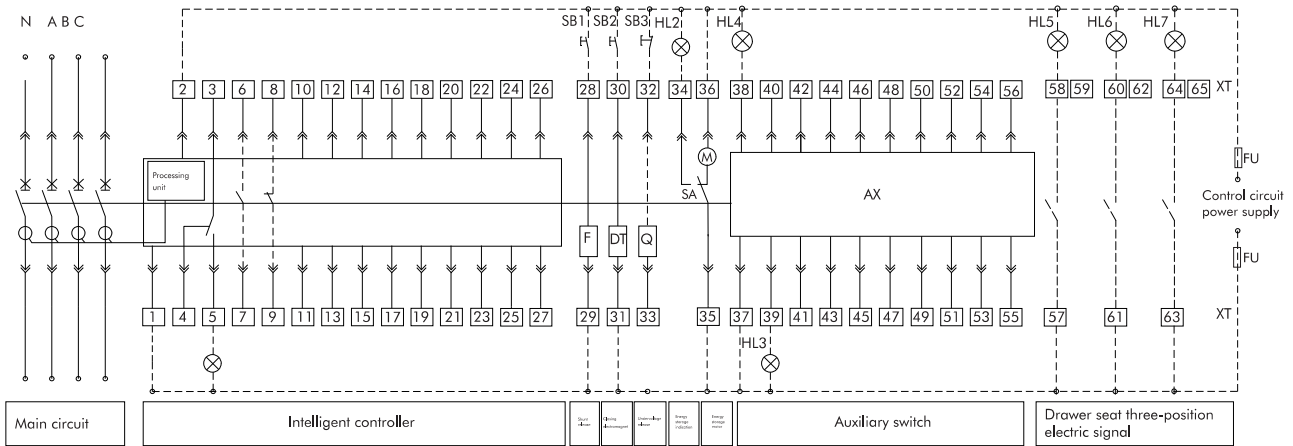
RU-1: Relay module. The upper computer remotely controls it to open or close the circuit breaker, and it is used for amplifying the opening and closing signal energy with the cost separately charged.

Note: The part in solid line has been connected by the factory, and the part in dashed line shall be connected by the customer.

Secondary Circuit Wiring

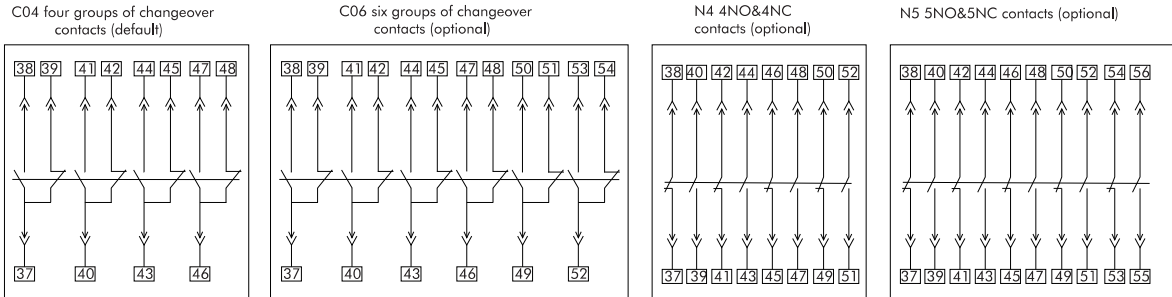
NA8-2500/4000/7500

M Type controller



Type of AX auxiliary contact

Used by the user



F—Shunt release DT —Closing electromagnet

Q —Undervoltage release

M—Motor-driven mechanism

SA—Travel switch XT—Connection terminal

AX—Auxiliary contact SB1—Breaking button

SB2—Making button SB3—Emergency stop button

HL1—Fault indicator light HL2—Energy storage indicator light

HL3—Breaking indicator light HL4—Making indicator light

HL5 ~ 7—Position indicator light

FU—Fuse (6A)

1#, 2#: Intelligent controller power supply: voltage AC220/380V can be directly connected to 1#, 2#; If voltage is DC220/110V, it needs to through the power module, and the power module outputs 24V which can be connected to 1#, 2#.

3#~ 5#: Tripping alarm contact (3 is the common point)

6#~ 9#: Auxiliary contact (1 NO and 1 NC), optional

10#, 11#: Empty

12#~ 19#: Empty

20#: Empty

21#~ 24#: Empty

24#, 25#: The contacts for external Phase N transformer nput signal; for conventional product, they are empty, and should be ordered by the user specifically. Where external transformer is required, they are the external transformer signal input contacts.

27#: Protective grounding, is connected to the outer board of the circuit breaker;

28 #, 29 #: Shunt release;

30#, 31#: closing electromagnet;

32 #, 33 #: Undervoltage release.

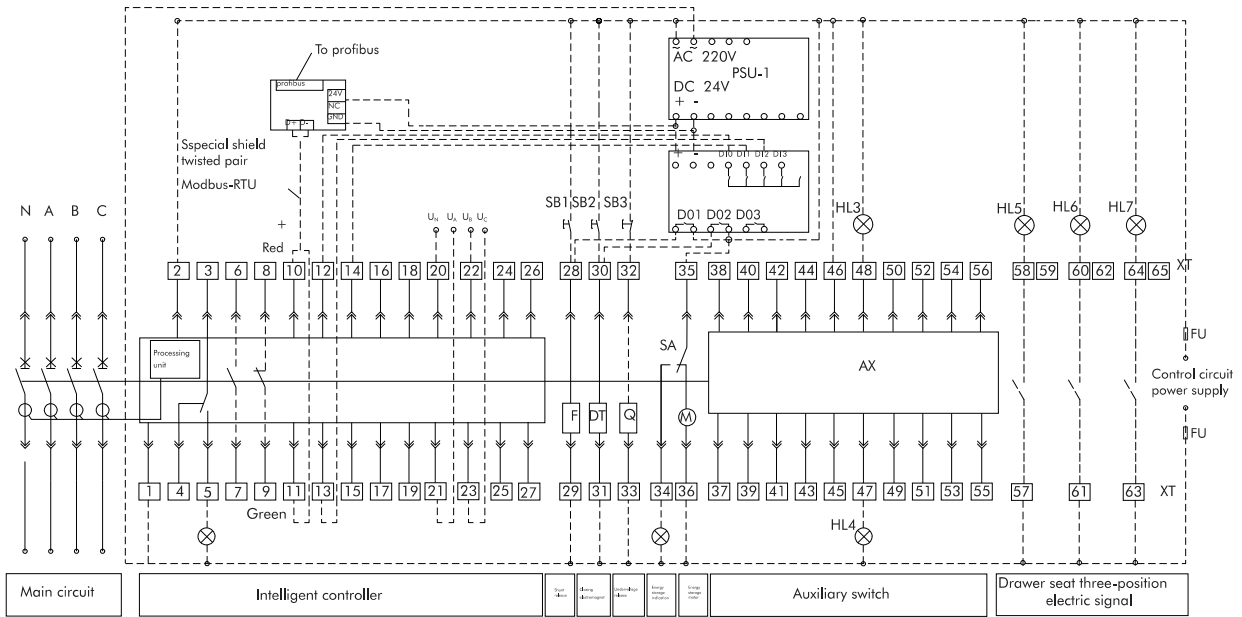
34 #~36 #: Motor-driven mechanism.

37#~56#: Auxiliary contact. 6 groups of changeover contacts are used for AC only. The conventional product has 4 groups of changeover auxiliary contacts; in case of special order from the user, 6 groups of changeover contacts, 4 NO 4 NC contacts and 5 NO 5 NC contacts can be provided.

57#~ 65#: Draw-out type circuit breaker three-position signal indication, the conventional supply has not wire connection, is only for the draw-out type circuit breaker with the secondary functions selected.

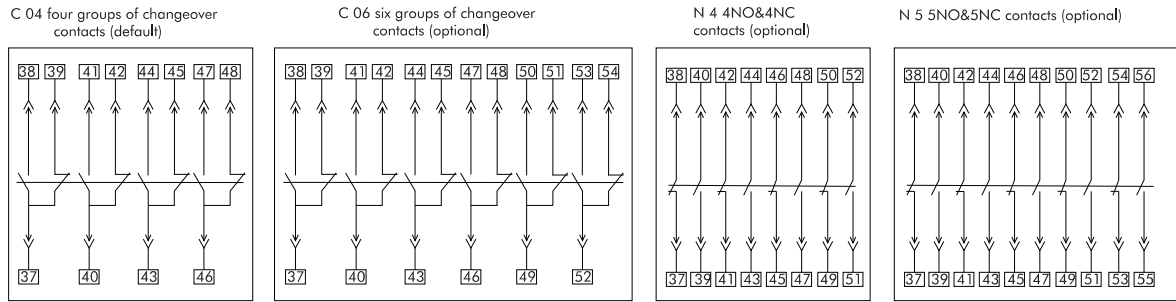
Note: The part in solid line has been connected by the factory, and the part in dashed line shall be connected by the customer.





Type of AX auxiliary contact

Used by the user



F —Shunt release DT —Closing electromagnet

Q —Undervoltage release

M —Motor-driven mechanism

SA —Travel switch XT —Connection terminal

AX —Auxiliary contact SB1 —Breaking button

SB2 —Making button SB3 —Emergency stop button

HL1 —Fault indicator light HL2 —Energy storage indicator light

HL3 —Breaking indicator light HL4 —Making indicator light

HL5~7 —Position indicator light

FU —Fuse (6A)

1#, 2#: Intelligent controller power supply: voltage AC220/380V can be directly connected to 1#, 2#; If voltage is DC220/110V, it needs to through the power module, and the power module outputs 24V which can be connected to 1#, 2#.

3#~5#: Tripping alarm contact (3 is the common point)

6#~9#: Auxiliary contact (NO contact), optional.

10#, 11#: Type H intelligent controller default communication output contact.

12#~15#: 3 groups of programmable output signal, which must be connected with external RU-1 relay module. When type H intelligent controller has programmable output signal, default output: 12#, 13#: Closing signal output, 12#, 14#: Opening signal output, 12#, 15 #: Fault tripping. The conventional product has no such connection.

19#: H type intelligent controller communication shielding ground wire

20#~23#: Voltage display input signal contact, 20#: Phase N voltage signal, 21#: Phase A voltage signal, 22#: Phase B voltage signal, 23#: Phase C voltage signal. The conventional product has no such connection.

24#, 25#: External Phase N transformer or external earth current transformer input signal contact; for conventional product, they are empty, and should be ordered by the user specifically, where external transformer is required, they are the external transformer signal input contacts.

27#: Protective grounding, is connected to the outer board of the circuit breaker;

28 #, 29 #: Shunt release;

30#, 31#: Closing electromagnet;

32#, 33#: Undervoltage release.

34 #~ 36 #: Motor-driven mechanism.

37 #~56 #: Auxiliary contact. 6 groups of changeover contacts are used for AC only. The conventional product has 4 groups of changeover auxiliary contacts; in case of special order from the user, 6 groups of changeover contacts, 4 NO 4 NC contacts or 5 NO 5 NC can be provided.

57#~ 65#: Draw-out type circuit breaker three-position signal indication, the conventional supply has not wire connection, is only for the draw-out type circuit breaker with the secondary functions selected.

ST-DP: DP protocol module, when the upper computer communication protocol is Modbus-RTU, ST-DP protocol module is not required; when the upper computer communication protocol is Profibus-DP, ST-DP protocol module is required to change the Modbus-RTU protocol into Profibus-DP protocol with the cost separately charged.

RU-1: Relay module. The upper computer remotely controls it to open or close the circuit breaker, and it is used for amplifying the opening and closing signal energy with the cost separately charged.

Note: The part in solid line has been connected by the factory, and the part in dashed line shall be connected by the customer.



Circuit Breaker Configuration

| Standard component | NA8-1600 | | NA8-2500 | | NA8-4000 | | NA8-7500 |
|---------------------------------------|------------|---------------|------------|---------------|------------|---------------|---------------|
| | Fixed type | Draw-out type | Fixed type | Draw-out type | Fixed type | Draw-out type | Draw-out type |
| Circuit breaker body | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Drawer seat | | ■ | | ■ | | ■ | ■ |
| Intelligent controller | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Upper and lower horizontal connection | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Auxiliary contact 4CO | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Fault tripping indication contact | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Motor-driven operating mechanism | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Closed electromagnet | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Shunt release | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Door frame | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

Note: The table above is the standard configuration of motor-driven type

| Optional accessory | NA8-1600 | | NA8-2500 | | NA8-4000 | | NA8-7500 |
|--|------------|---------------|------------|---------------|------------|---------------|---------------|
| | Fixed type | Draw-out type | Fixed type | Draw-out type | Fixed type | Draw-out type | Draw-out type |
| Undervoltage time delay release | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Undervoltage instantaneous release | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Opening/closing button lock | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Drawer position padlock | | ■ | | ■ | | ■ | ■ |
| Drawer safety barrier padlock | | ■ | | ■ | | ■ | ■ |
| Body key lock | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Position door interlock | | ■ | | ■ | | ■ | ■ |
| Condition door interlock | | ■ | | ■ | | ■ | ■ |
| Auxiliary contact 6CO | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Auxiliary contact 3NO + 3NC | ■ | ■ | | | | | |
| Auxiliary contact 4NO + 4NC | | | ■ | ■ | ■ | ■ | ■ |
| Auxiliary contact 5NO + 5NC | | | ■ | ■ | ■ | ■ | ■ |
| Drawer position indication contact | | ■ | | ■ | | ■ | ■ |
| Mechanical interlock (two) | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| External neutral line transformer | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Ground current transformer and accessories | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Interphase insulating barrier | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Mechanical interlock (three) | | | ■ | ■ | ■ | ■ | ■ |

Circuit Breaker Type Selection Table

| Frame current | NA8-1600 | NA8-2500 | NA8-4000 | NA8-7500 |
|---|---|--|--|---|
| Circuit breaker | N <input type="checkbox"/> | N <input type="checkbox"/> H <input type="checkbox"/> | N <input type="checkbox"/> H <input type="checkbox"/> | N <input type="checkbox"/> |
| Rated current | 200A <input type="checkbox"/> | 630A <input type="checkbox"/> | 2000A <input type="checkbox"/> | 4000A <input type="checkbox"/> |
| | 400A <input type="checkbox"/> | 800A <input type="checkbox"/> | 2500A <input type="checkbox"/> | 5000A <input type="checkbox"/> |
| | 630A <input type="checkbox"/> | 1000A <input type="checkbox"/> | 3200 A <input type="checkbox"/> | 6300A <input type="checkbox"/> |
| | 800A <input type="checkbox"/> | 1250A <input type="checkbox"/> | 4000 A <input type="checkbox"/> | 7500A <input type="checkbox"/> |
| | 1000A <input type="checkbox"/> | 1600A <input type="checkbox"/> | | |
| | 1250A <input type="checkbox"/> | 2000A <input type="checkbox"/> | | |
| Number of poles | 3 poles <input type="checkbox"/> | 4 poles <input type="checkbox"/> | | |
| Mounting mode | Draw-out type <input type="checkbox"/> | Fixed type <input type="checkbox"/> (NA8-7500 has no fixed type) | | |
| Busbar connection mode | Horizontal connection <input type="checkbox"/> | Vertical connection <input type="checkbox"/> | Mixed connection <input type="checkbox"/> (indicating the connection mode) | |
| Intelligent controller | M type <input type="checkbox"/> (basic type) | H type <input type="checkbox"/> (communication type) | | |
| Shunt, closing, motor | Closing electromagnet <input type="checkbox"/> | Shunt release <input type="checkbox"/> | Energy storage motor <input type="checkbox"/> | |
| | AC220/230V | AC380/400 V <input type="checkbox"/> | DC220V <input type="checkbox"/> | AC/DC110V <input type="checkbox"/> DC24V <input type="checkbox"/> |
| Undervoltage release | UVT <input type="checkbox"/> | UVTD | | |
| | AC220/230V | AC380/400 V <input type="checkbox"/> | DC220V <input type="checkbox"/> | AC/DC110V <input type="checkbox"/> DC24V <input type="checkbox"/> |
| Auxiliary contact | NA8-1600 C04 (standard) C 06 <input type="checkbox"/> (only for AC) N3 <input type="checkbox"/> (only for AC) NA8-2500、NA8-4000~7500 C04 (standard) C 06 <input type="checkbox"/> N4 <input type="checkbox"/> N5 <input type="checkbox"/> | | | |
| Auxiliary contact indication (optional) | Drawer seat three-position signal device <input type="checkbox"/> | | | |
| Connecting accessory (optional) | Interphase insulating barrier <input type="checkbox"/> | | NA8-1600 extension busbar <input type="checkbox"/> | |
| Controller function and accessories (optional) | External transformer: Phase N external transformer <input type="checkbox"/> External LEC leakage transformer <input type="checkbox"/> Ground current protection transformer <input type="checkbox"/> | | | |
| | Controller functions: 3P + N protection function <input type="checkbox"/> Leakage protection function <input type="checkbox"/> Ground current protection function <input type="checkbox"/> Voltage measurement and protection function <input type="checkbox"/> Electric energy measurement and protection function <input type="checkbox"/> Signal contact output function <input type="checkbox"/> ZSI zone interlock protection function <input type="checkbox"/> Load monitoring function <input type="checkbox"/> | | | |
| Notes: 1) For 3P + N protection function, the phase N external transformer must be selected at the same time; 2) For the leakage protection function, the external LEC leakage transformer must be selected at the same time; 3) For the ground current protection function, the ground current protection transformer must be selected at the same time. | | | | |
| Lock mechanism (optional) | Breaking/Making button lock <input type="checkbox"/> | One lock one key <input type="checkbox"/> | Two locks one key <input type="checkbox"/> | Three locks two keys <input type="checkbox"/> |
| Mechanical interlock (optional) | Wire rope interlock (two interlock) <input type="checkbox"/> | Wire rope interlock (MIT-3) <input type="checkbox"/> | Wire rope interlock (MIT- 4) <input type="checkbox"/> | |
| Module (optional) | PSU-1 <input type="checkbox"/> | RU-1 <input type="checkbox"/> | ST-DP protocol conversion module <input type="checkbox"/> | |

Remark: Upon placing an order, the frame current, rated current and auxiliary control voltage must be indicated!

Notes: 1) Please check the corresponding to required option with "√" or "-", and fill the figure; if there is no marking, we will provide the goods according to the conventional factory setting.

2) If the additional functions and special requirement are selected, additional expense will incur separately. TEL: 0577-62877777 – 706213. FAX: 0577 - 62877777-706288.



Configuration explanations

I. NA8-1600~2500、NA8-4000 ~7500 conventional configuration explanations Shunt release, closing electromagnet, 4 groups changeover contacts, motor, M type intelligent controller, main circuit horizontal connection, door frame, main circuit mounting bolts, circuit breaker operation manual, packing case, drawer seat (draw-out type circuit breaker)

II. Optional configuration (with additional expense)

NA8-1600 optional configuration explanations: undervoltage instantaneous release, undervoltage time delay release, wire rope interlock, key lock, external transformer earth protection function, 6 groups of changeover contacts, 3NO 3NC contacts, H type intelligent controller, optional type H function, interphase insulating barrier, position signal.

NA8-2500、NA8-4000~7500 optional configuration explanations: undervoltage time delay release (1s~5s adjustable), wire rope interlock, button lock, key lock, door interlock, external transformer ground protection function, vertical connection, 6 groups of changeover contacts, 4NO 4NC contacts, 5NO5NC contacts, type H intelligent controller, optional H type function, position signal.

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