

NA1 intelligent universal low-voltage breaker

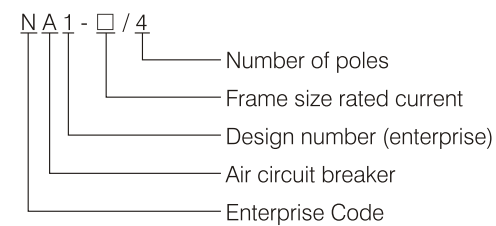
Essentials of NA1

APPLICATION SCOPE

NA1 series air circuit breaker (hereinafter referred to as breaker) is suitable for the circuit of AC 50Hz with rated voltage 400V, 690V and rated current up to 6300A. It is mainly used to distribute electric energy and protect circuits and power-supply equipment from over-load, under-voltage, short-circuit and single-phase earthing. With intelligentized and selective protection functions, the breaker can improve the reliability of power supply, and avoid unnecessary power failure. The breaker is applicable for power stations, factories, mines (for 690V) and modern high-buildings, especially for the distribution system of intelligentized building. This breaker conforms to IEC60947-2 and GB14048.2. The whole series have past CCC certification and CB certification of SEMKO.

Product model and its meaning

Model meaning



Environment conditions for operation

Environmental temperature

Temperature condition: -5°C ~ +40°C; the average value within 24h shall not exceed +35°C;

(Special situation excluded) Elevation

Altitude of installation place shall not exceed 2000m.

Atmosphere condition

Relative humidity at +40°C shall not exceed 50%. Higher humidity is permissible at lower temperature condition. When the highest monthly average relative humidity is 90% in the humidest month, the lowest monthly average temperature of this month is +25°C. And consider the influence of dew on product surface due to temperature changes. Pollution grade: grade III The breaker should be installed according to the requirements on the instruction manual. The vertical inclination degree shall not exceed 5°.

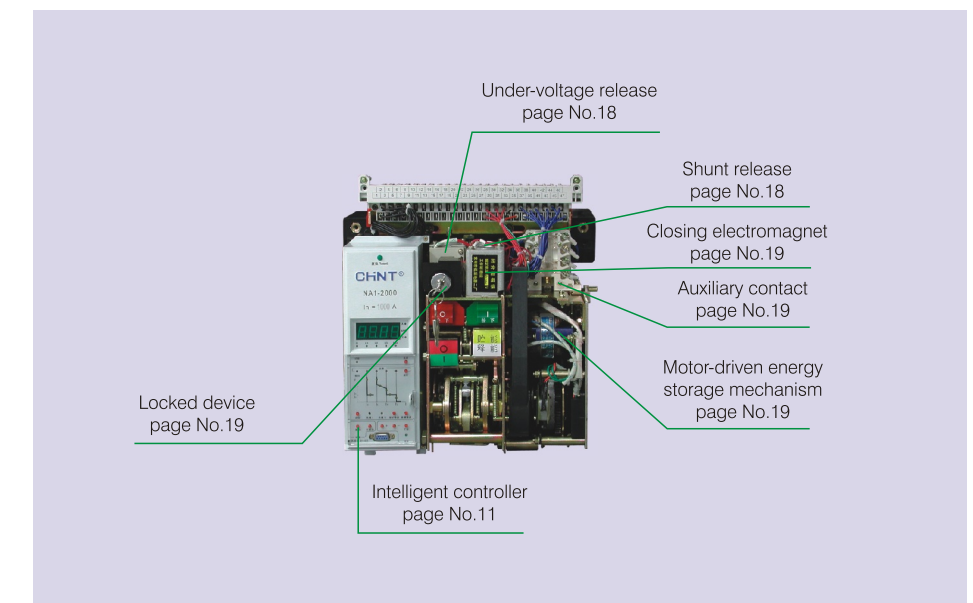
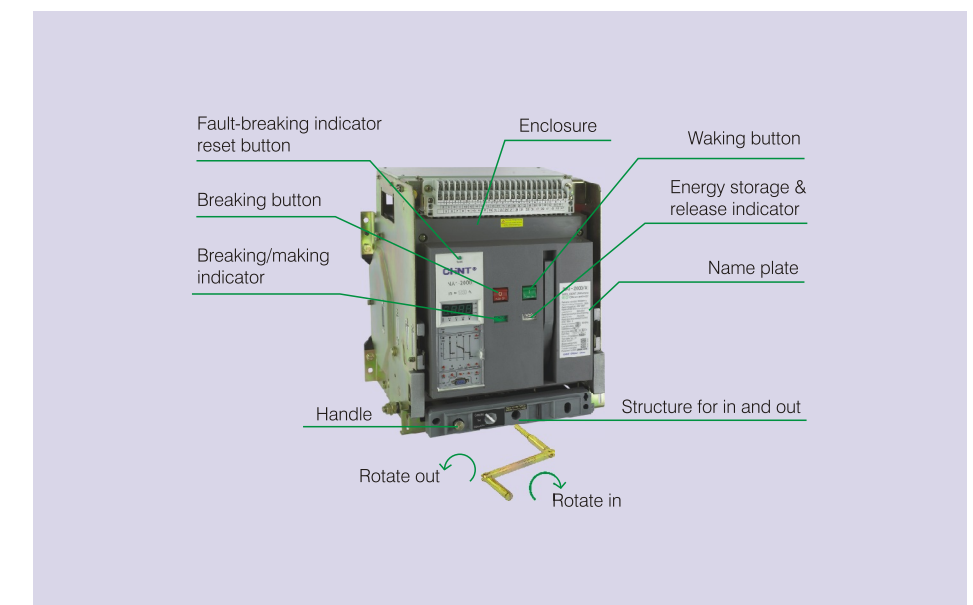
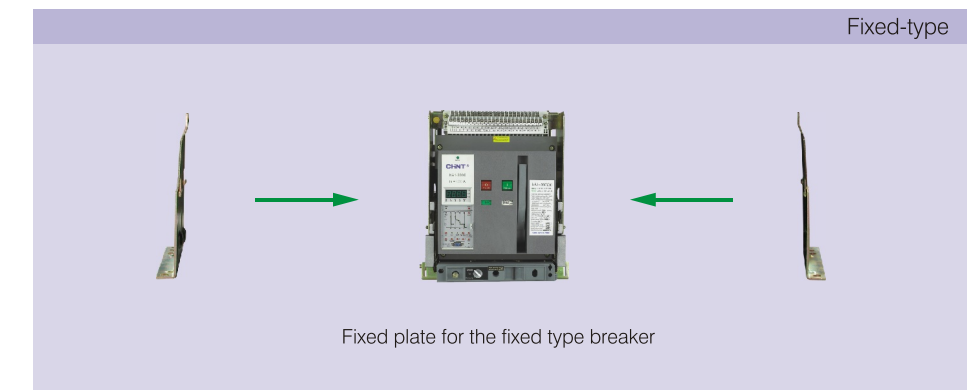
Structure

Drawer type breaker and Fixed type breaker



The breaker consists of body and drawer base. Inserting the body into the drawer base, thus make the drawer-type breaker.

Fixed-type



Installation and usage



Installation

Unload the breaker from the soleplate of package-box. If it is draw-ertype, firstly pull out the handle from under the drawer-base of breaker, and plug it into the hole on central section of plastic cover under the drawer-base crossbeam, anticlockwise turns the handle, breaker body will slowly slide along the outside of drawer-base. When the guide-rod points to separated position and handle can't be rotated any longer, pull out the handle and firmly grasp the aluminum handle on drawer-base, pull out the breaker body and remove it from the base, then move the base from the soleplate and clean up the dirty things inside the drawer-base.

Check the insulation resistance with a 500V megger, resistance should not be less than 20MΩ when ambient temperature is 20°C ± 5°C and relative humidity is 50%~70%. Otherwise have it drying.

Put the breaker (fixed-type) or drawer-base (drawer-type) onto the installation-bracket, and make it fixed, directly connect the bus wire of main circuit to the bus wire of fixed-type circuit breaker. Alternatively put breaker body onto the guild rail of drawer-base. Plug the handle into installation hole, clockwise turns it until the under-part of drawer-base points at the connection position and "click" sound is heard. It indicates that breaker body has been connected to its place, then connect the bus wire of main circuit to bus wire of drawer-base.

Wiring the secondary circuit according to electric principle diagram.

Note: Something like bolts, nuts, gaskets shouldn't be left inside the drawer-base to avoid being blocked.

Usage and operation

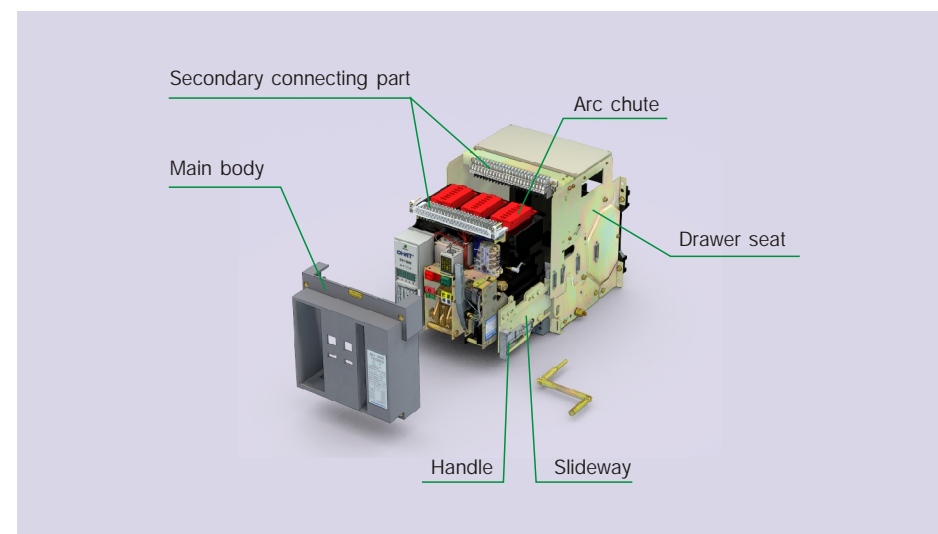
Check the rated voltage of the following components whether conforms to the power voltage or not. Such as under voltage release, shunt release, closing electromagnet, motor-driven mechanism and intelligent controller

Maintenance

Check the technical index on time or add some lubricating oil, etc.

This breaker structure is arranged vertically and modularized composition with each function-cell separated, which make the maintenance easy. It has compact structure, reliable operation and strong free maintenance capability.

Please check the technical parameters on the nameplate accordance with the requirements of order before installation



Making the secondary circuit power, the motor-driven mechanism can store energy automatically until hearing the click and energy stored "indicating on the panel. Otherwise press the storage handle for 6 times until hearing the click and the indicator display energy stored" And the closing operation can be realized either by closing electromagnet or manual button.



Main technical parameter

Type	NA1-1000
------	----------

Short-circuit breaking capacity



Rated ultimate short circuit breaking capacity (kA)	I _{cu} =42kA 400V 20kA 690V I _{cs} =I _{cw} =30kA 400V 15kA 690V	
rated current I _n (A)	200 400 630 800 1000	
Number of poles	3、4	
Rated voltage U _e (V)	400V、690V	
Rated insulation voltage U _i (A)	1000V	
Rated current of N-pole I _N (A)	50%I _n 、100%I _n	
Fixed disconnection time	23--32ms	
Intelligent controller	Standard type (M)	● ● ● ● ●
	Communication type (H)	
Operation performance	Electric life	500
	Mechanical life	Non-maintenance 2500 Maintenance 10000
Connection pattern	Horizontal、Vertical	

Type	NA1-2000
------	----------

Short-circuit breaking capacity



Rated ultimate short circuit breaking capacity (kA)	$I_{cu}=80kA$ 400V 50kA 690V $I_{cs}=I_{cw}=50kA$ 400V 40kA 690V	
rated current I_n (A)	400 630 800 1000 1250 1600 2000	
Number of poles	3、4	
Rated voltage U_e (V)	400V、690V	
Rated insulation voltage U_i (A)	1000V	
Rated current of N-pole I_N (A)	50% I_n 、100% I_n	
Fixed disconnection time	23–32ms	
Intelligent controller	Standard type (M)	● ● ● ● ● ● ●
	Communication type (H)	● ● ● ● ● ● ●
Operation performance	Electric life	500
	Mechanical life	Non-maintenance 2500 Maintenance 10000
Connection pattern	Horizontal、Vertical	

Type	NA1-3200、NA1-4000
------	-------------------

Short-circuit breaking capacity



Rated ultimate short circuit breaking capacity (kA)	$I_{cu}=100kA$ 400V 80kA 690V $I_{cs}=I_{cw}=80kA$ 400V 40kA 690V	
rated current I_n (A)	2000 2500 3200 4000	
Number of poles	3、4 3	
Rated voltage U_e (V)	400V、690V	
Rated insulation voltage U_i (A)	1000V	
Rated current of N-pole I_N (A)	50% I_n 、100% I_n	
Fixed disconnection time	23–32ms	
Intelligent controller	Standard type (M)	● ● ● ●
	Communication type (H)	● ● ● ●
Operation performance	Electric life	500
	Mechanical life	Non-maintenance 2500 Maintenance 10000
Connection pattern	Horizontal、Vertical	

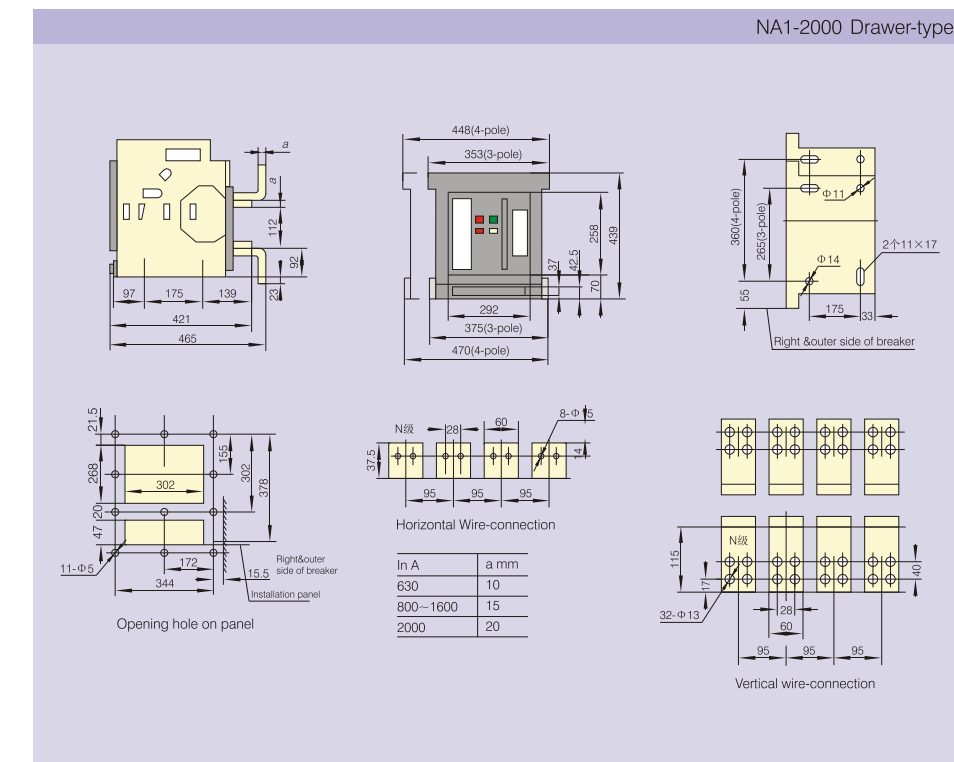
Type	NA1-6300
------	----------

Short-circuit breaking capacity

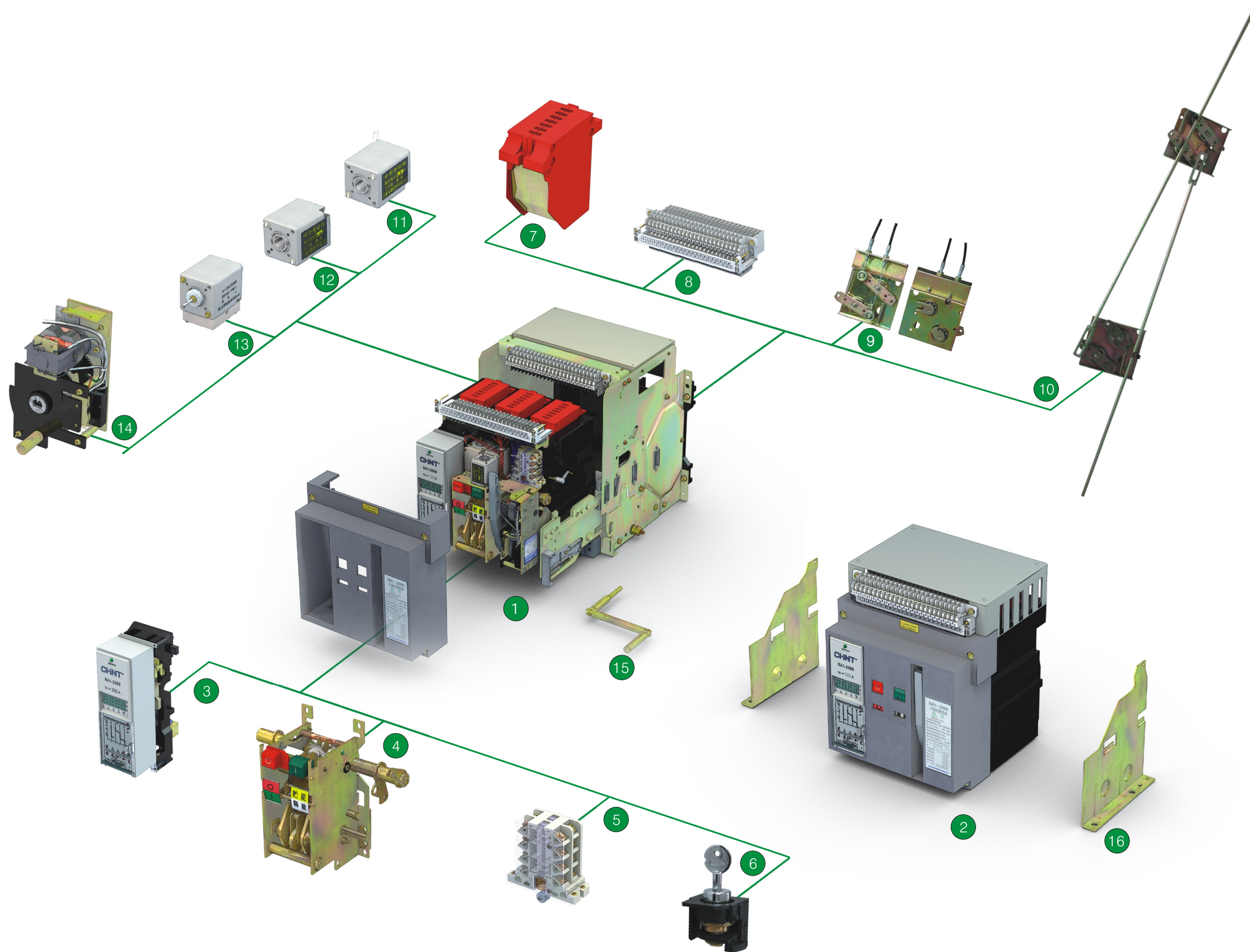


Rated ultimate short circuit breaking capacity (kA)	$I_{cu}=120kA$ 400V 80kA 690V $I_{cs}=I_{cw}=100kA$ 400V 65kA 690V	
rated current I_n (A)	4000 5000 6300	
Number of poles	3、4 3	
Rated voltage U_e (V)	400V、690V	
Rated insulation voltage U_i (A)	1000V	
Rated current of N-pole I_N (A)	50%	
Fixed disconnection time	23–32ms	
Intelligent controller	Standard type (M)	● ● ●
	Communication type (H)	● ● ●
Operation performance	Electric life	500
	Mechanical life	Non-maintenance 2500 Maintenance 10000
Connection pattern	Horizontal、Vertical	

Overall & installation dimensions

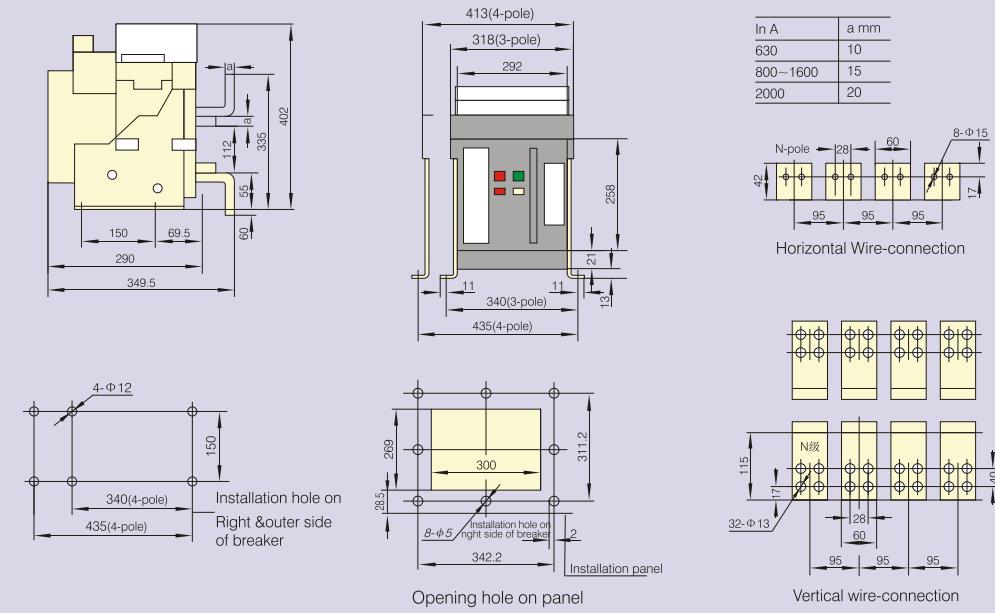


NA1 intelligent universal low-voltage breaker

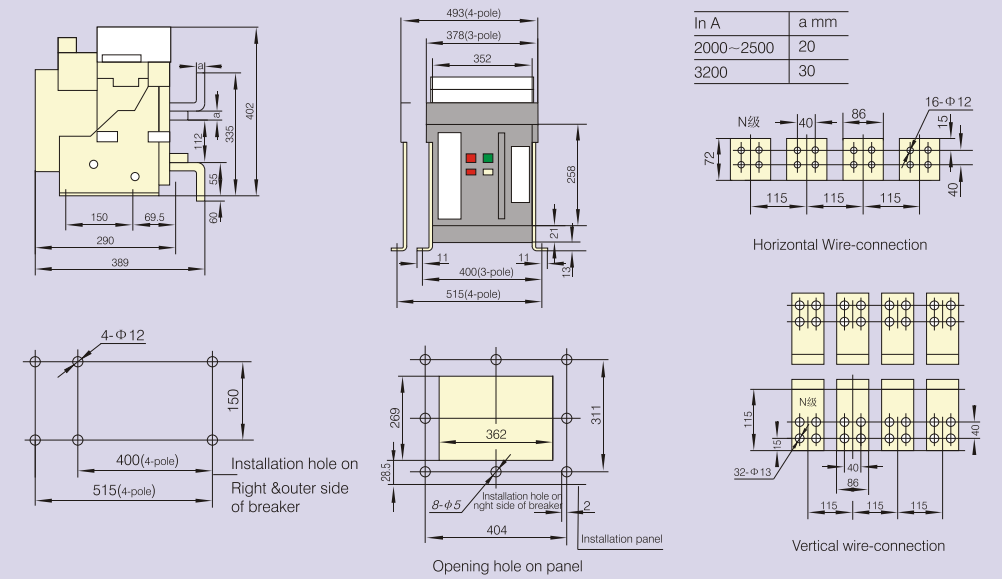


- 1 Withdrawable-breaker
- 2 Fixed-breaker
- 3 Intelligent controller
- 4 Operating mechanism
- 5 Auxiliary contact
- 6 Locking-device
- 7 Arc chute
- 8 Secondary connecting part
- 9 Wire-cable mechanical interlock
- 10 Connecting-rod type mechanical interlock
- 11 Shunt release
- 12 Closing electromagnet
- 13 Under-voltage release
- 14 Motor-driven energy-storage mechanism
- 15 Handle
- 16 Fixed plate

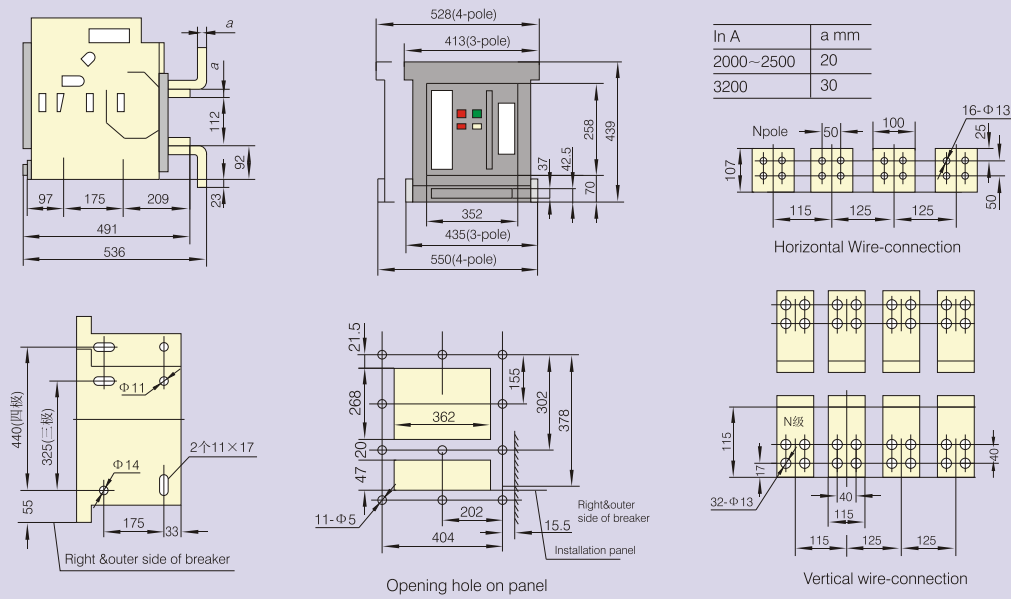
NA1-2000 Fixed-type



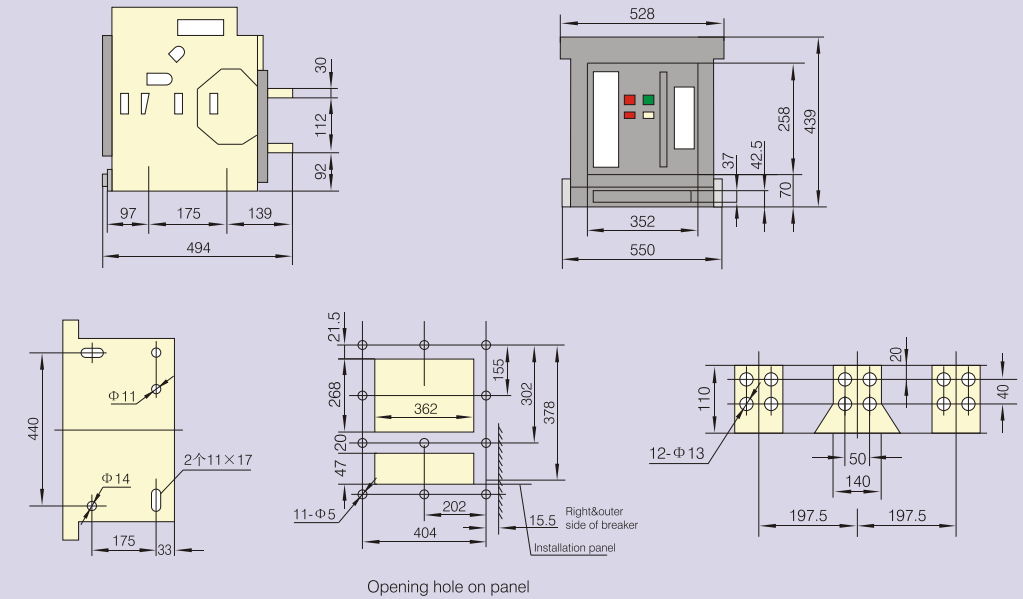
NA1-3200 Fixed-type



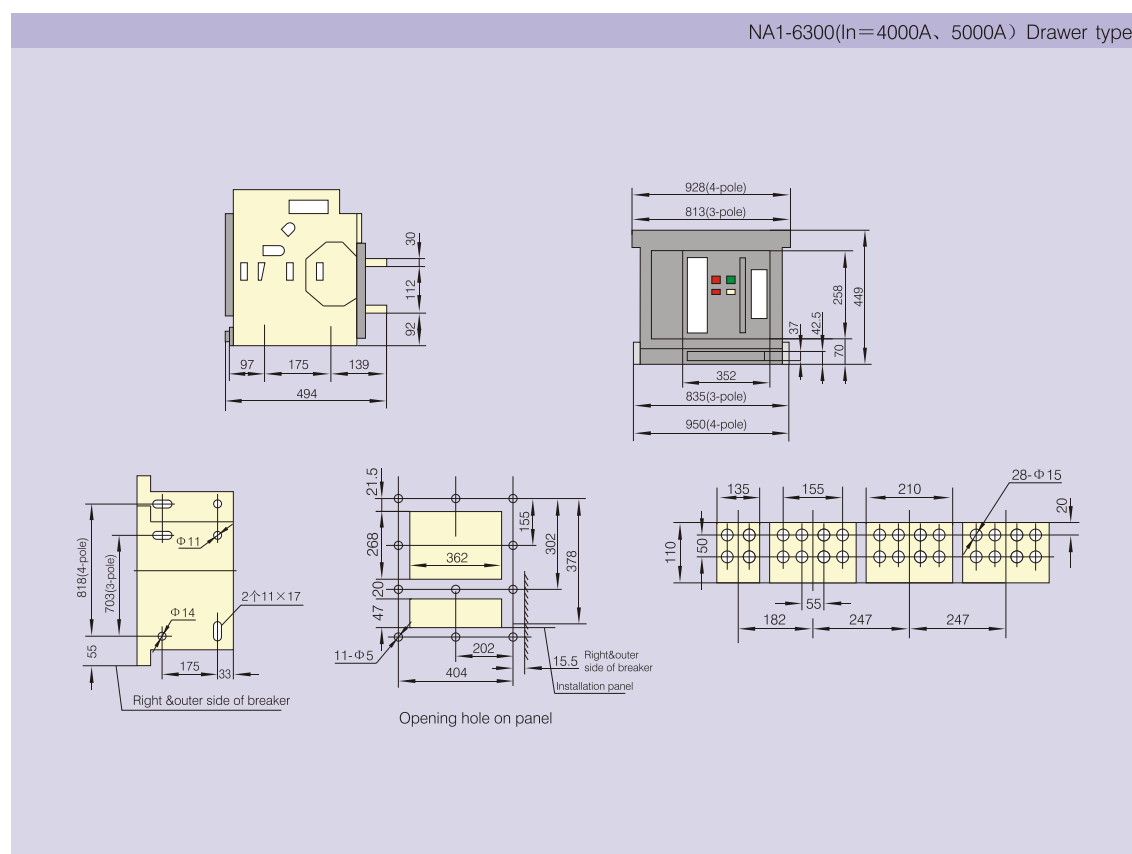
NA1-3200 Drawer-type



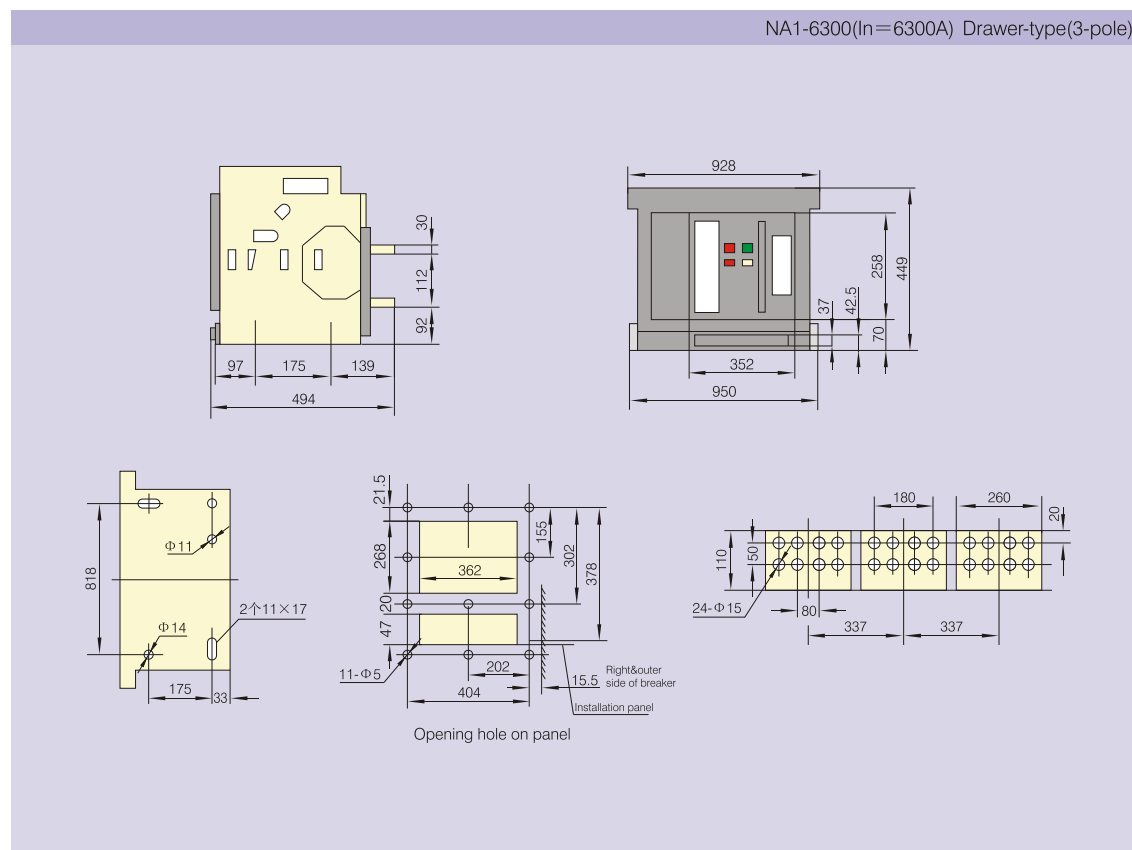
NA1-4000 Drawer-type(3-pole)



NA1-6300(In=4000A、5000A) Drawer type

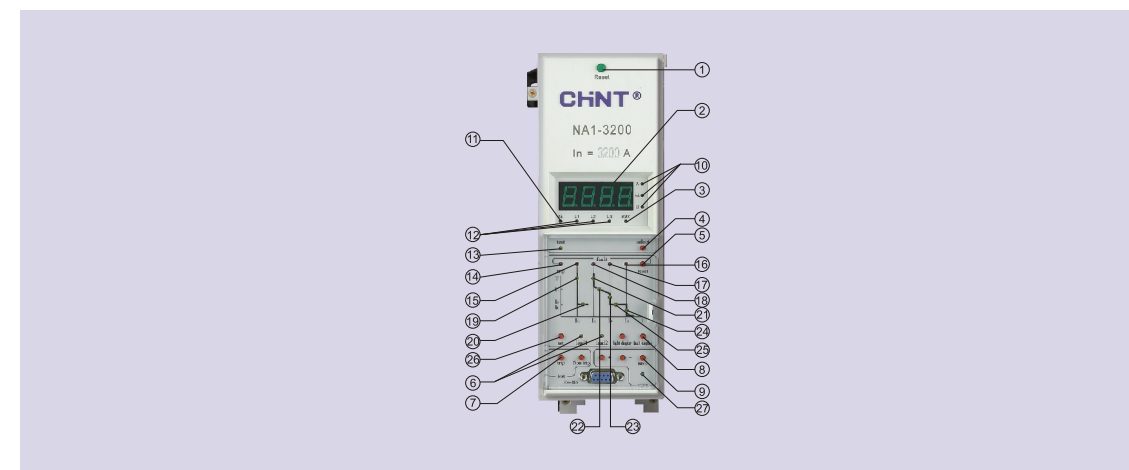


NA1-6300(In=6300A) Drawer-type(3-pole)



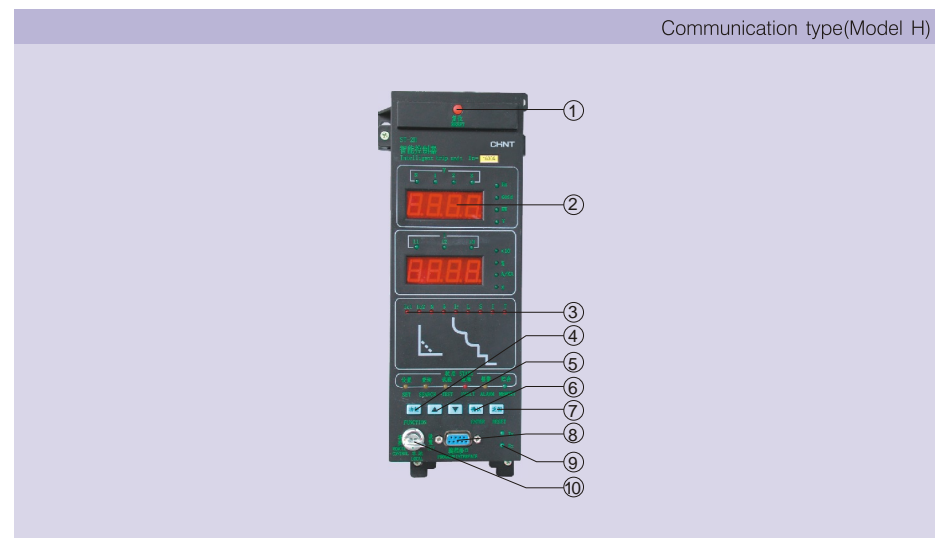
Control unit

Intelligent controller is the core part of circuit breaker, it is classified into two types: standard and communication. The latter has one more function of communication than the former.



Intelligent controller

- 1 Reset button: After the breaker trip by fault, the reset button should be pressed in order to make it close again. Otherwise, it won't be realized.
- 2 Display screen: It shows time and current value
- 3 LED indicator: display all states and types
- 4 Select key: Under normal operation state, shows the parameters of current, time or voltage of every phase.
- 5 Clean key: Press this key to make breaker normally operate after release's setting, test, fault or data check.
- 6 Set key: Check and set the current and time for protection characteristic. Press this key to circularly display each state of breaker.
- 7 Fault check key: Press this key to display the last fault state and its fault current and time.
- 8 Trip or non-trip key: Used for release test function, when tested, the breaker is needed to be broken or not.
- 9 Save + -key: Setting the current and time
- 10 A/K/A/S indicator: Indicate the unit of displayed value
- 11 G" indicator: Indicate the displayed current is earthing fault current.
- 12 "L1、L2、L3" indicator: "L1、L2、L3" is the phase of displayed current, if "MAX"simultaneously shining with one of L1,L2,L3, it shows the displayed phase's current is maximum among three phases.
- 13 Test indicator: it indicates the breaker is at the test state.
- 14 Trip indicator: Indicate the release sending out tripping signal
- 15 Indicator flashing shows the earthing-fault process state, if shining with "trip" light, shows it has tripped.
- 16 Indicator flashing shows the fault process state of instantaneous short-circuit, if shining with "trip" light, shows it has tripped.
- 17 Indicator flashing shows the fault process state of short-circuit short time-delay, if shining with "trip" light, shows it has tripped.
- 18 Indicator flashing shows the fault process state of overload long time-delay, if shining with "trip" light, shows it has tripped.
- 19 Set state of earthing fault protection, set current is displayed if the light shines.
- 20 Set state of earthing fault protection, set time is displayed if the light shines.
- 21 Set state of long time-delay protection, set current is displayed if the light shines.
- 22 Set state of long time-delay protection, set time is displayed if the light shines.
- 23 Set state of short time-delay protection, set current is displayed if the light shines.
- 24 Set state of instantaneous protection, set time is displayed if the light shines.



- 1 Reset button: After the breaker trip by fault, the reset button should be pressed in order to make it close again. Otherwise, it won't be realized.
- 2 Display screen: It shows time, current and voltage., etc.
- 3 LED indicator: display all states and types
- 4 Function key: Press this key to select the function to be operated.
- 5 “▲” key: Check and set the current and time for protection characteristic. Press this key to circularly display each state of breaker.
- 6 Confirm key: After selecting the function or parameter, press this key to confirm.
- 7 Return key: After the function is operated, press this key to choose another function or set parameter.
- 8 Programme interface: Original program of release, compiling of parameter and modification input.
- 9 Communication light: This light shines if release at the communication state.
- 10 Position lock: Indicates the state of release if communication function is operated.

Note: Conform to the communication protocol of Modbus or Profibus + DP.

Basic functions:

- Over-load long inverse time-delay protection
- Short inverse time-delay or definite time-delay protection
- Instantaneous protection
- Earthing fault protection
- Ampere-meter function
- Self-check
- Setting
- Test
- Monitoring with load
- Display

selective functions

- Voltage
- Frequency
- Power factor
- Active power display

Usage of standard type (model M) intelligent controller setting of controller

Long time-delay setting of controller: press “set” key until long time-delay (IL indication on control panel) indicator shines, and displays the ex-works setting value of long time-delay current, generally is I_n , current setting range is $(0.4\sim 1.0I_n)$, press “+”, “-” key if need. Add or subtract at $\leq 2\%$ interval each time, until it reaches the proximal needed current. Then press “save” key for 1 second, and the light under this key shines, it indicates the end of regulating and setting of long time-delay current.

Time setting of long time-delay: after long time-delay current setting ends, press “set” key again, enter into the time setting state of long time-delay, simultaneously the indicator shines, display the ex-works time setting value of long time-delay. Press “+” key, it increases one time for each press, if exceeds, then press “-” key, time decrease half for each press until it reaches the proximal needed value. Press “save” key for one second, and the light under this key shines, it indicates the end of time regulating and setting of long time-delay. If press “set” key again, enter into short time-delay current (1s), time/instantaneous current (1t), earthing current (1g), time setting (setting method as above). Time setting of earthing protection fault at “OFF” position, indicates at fault state, controller only has alarm indication, and breaker won't trip

Simulation test of controller

After setting the parameter of controller, users can check and test its any type of protection function before the breaker is operated. Controller has selection of “trip” and “on-trip”. Users firstly set one simulation value just as all types of current setting value. If the simulation value is “1”, when I_{r1} (setting value of long time-delay current) is less than, and I_{r2} (setting value of short time-delay current) exceeds 1, then press “rip” key, breaker will break because of long time-delay protection. (Note: don't press “save” key after setting simulation value). Alternatively press “on-trip” key, the breaker won't break. But after either of the two operations, action current and time will be displayed.

Fault check of controller

Press “fault check” key, controller will display the latest protection action current time, which is convenient to analyze the fault reason. (current and time for test won't be memorized)

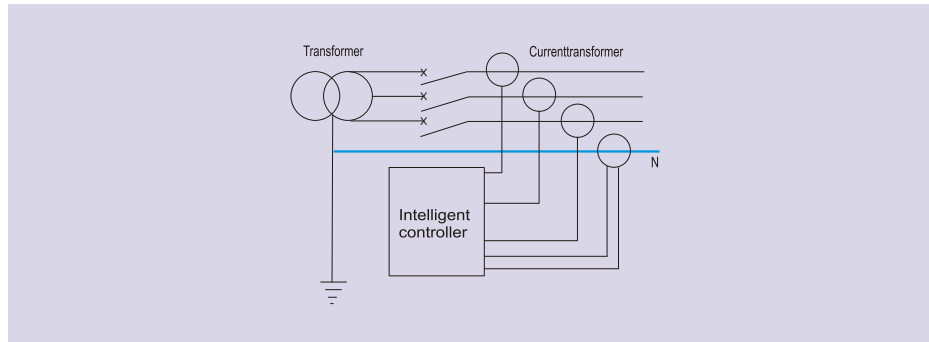
Usage of standard type (model H) intelligent controller setting of controller

Press “return” key to make the controller at normal state, the key points to “set” position, press “unction” key until the light flashes, and press “confirm” key, then press “▲” or “▼” key to select the parameters need to be set or modified. (I_{c1} indicating load 1, I_{c2} for load 2, & is non-balance rate, If for earthing or leakage protection, L for long time-delay, S for short time-delay, I is instantaneous), then press “onfirm” key after that. Set the light to illuminate all along, press “▲” or “▼” key and set to needed value, then press “onfirm” key, “save” light flashes one time indicating the set or regulation finished. If don't press “onfirm” key, directly press “return” key, the parameter won't be modified. Press “eturn” key, set-light will flash again, and other parameters can be set again. After all the set finished, press “eturn” ey until the set-light extinguish.

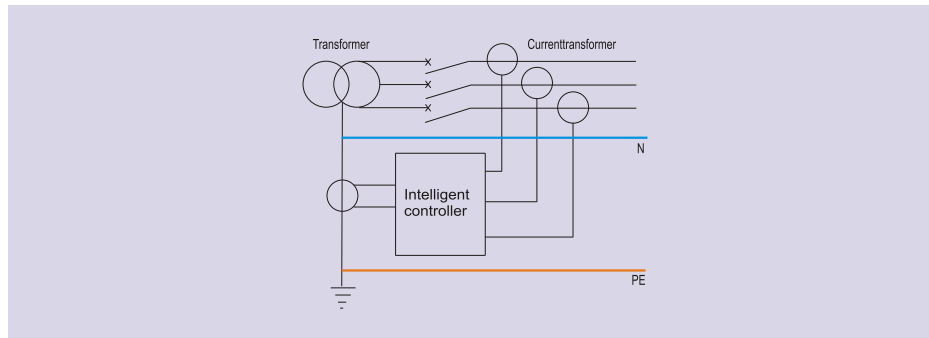
Test of controller

Test function of this controller is to have simulation test for instantaneous trip of breaker, display fixed action time after acting. It display “Er12” if breaker not breaking. Key-lock is at “set” position, press “function” key until test-light flashes, press “confirm” key and test-light illuminate all along, then press “confirm” key again, breaker will break and display fixed mechanic action time of breaker, press “return” key until the test-light extinguishes, then exit the test state.

Select NA1 three-pole circuit breaker for three-phase four-wire system
 Connecting neutral-pole current transformer for earth fault protection (connect 25#, 26# terminals)
 Connecting neutral-pole current transformer for earth fault protection (connect 25#, 26# terminals)
 Earth fault protection signal is vector sum of three-phase current and N pole current
 Protection characteristic is definite time-delay protection

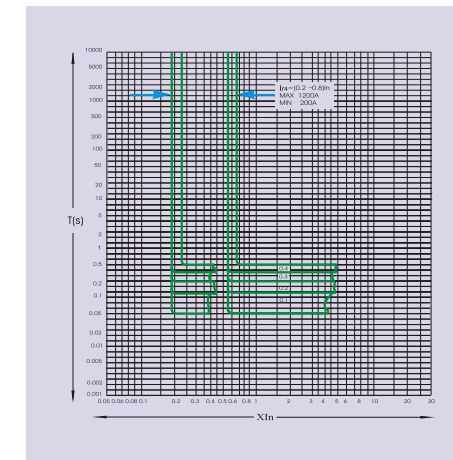
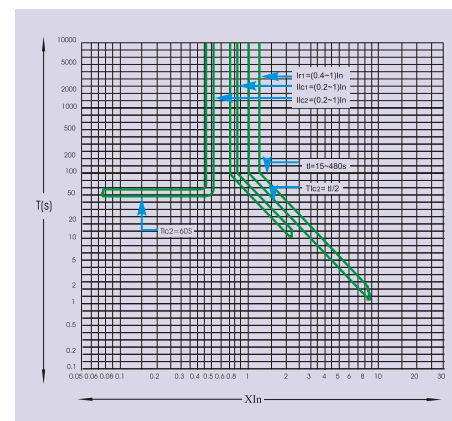
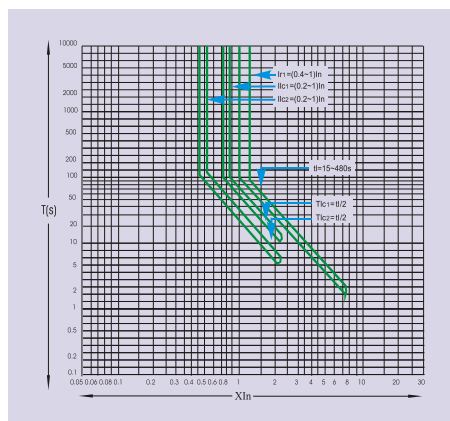


Select NA1 three-pole circuit breaker for TN-S system
 Connecting current transformer for earth fault protection (connect 25#, 26# terminals)
 Protection characteristic is definite time-delay protection



Characteristic of monitoring with load

Pattern 1: It can control two-circuit load, send out contact signal and break sub-load when the operating current surpasses super-overload long time-delay inverse time-delay setting current I_{lu} , thus ensure the power supply of main system.
 Pattern 2: Only control one-circuit load, when operating current surpasses I_{lc1} setting value, signal is sent out to break the sub-load, thus ensure the normal power-supply of main system. If the main current falls to I_{lc2} setting value after reaking lasts for some time, controller can make broken load and recover the supply of whole system.



Single-phase earthing fault protection characteristic

Single-phase earthing fault means the metal-property earthing protection when fault current exceeds several hundred amperes, which is generally applied to direct center earthing system. When earthing fault protection is definite time-delay acting, the setting is as follows:

Model	Rated current(Ir4)	Error	Rated delay timeT4 (s)	Return time (s)	Time error
NA1-2000	(0.2~0.8)In 1600A	±10%	0.1、0.2、 0.3、0.4	0.06、0.14、 0.23、0.35	±15%
NA1-3200 NA1-6300	(0.2~0.8)In		OFF		

Note: t4 is set to "OFF", earthing fault only gives a alarm, and the breaker don't break.

Knowledge of accessories

Shunt release

Except manual-operated to directly break the circuit breaker for special products
 It can be remote-operated to break the circuit breaker
 Characteristic

Rated control power voltage Us (V)	AC400、230、127	DC220、110
Action voltage (V)	(0.7~1.1) Us	
Power consumption	40VA	40W
Breaking time	Lessthan30mS	

Forbid making the power for long time to avoid being damaged.

Under-voltage release

Users can select it or not if need.
 Under-voltage release is used to break circuit breaker and protect the equipment (such as motor) when under-voltage or voltage-failure happens. or automatically break the under-voltage circuit of power supply system, improves the reliability and safety (such as dual-circuit).
 Its action-pattern is classified into instantaneous action and time-delay action.
 Delay-time of under-voltage time-delay release is classified into three types of 1s, 3s and 5s, and the accuracy is ±15%.
 Within 1/2 time-delay scope, Circuit breaker don't break when power voltage recovers and exceeds 85%Ue.

Characteristic





Rated control power voltage U_e (V)	AC400、230、127	DC220、110
Action voltage (V)	(0.35~0.7) U_e	
Reliable switching voltage (V)	(0.85~1.1) U_e	
Reliable non-switching voltage (V)	$\sqrt{0.35}U_e$	
Power consumption	48VA (W)	

Make the power before operating the circuit breaker

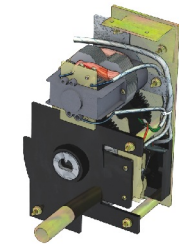
Closing electromagnet

After the motor finishes storing energy, closing electromagnet can instantly release spring-force of operation mechanism, and quickly close the circuit breaker.

Characteristic

Rated control power voltage U_s (V)	AC400、230、127	DC220、110
Action voltage (V)	(0.85~1.1) U_s	
Power consumption	40VA	40W
Storing-energy time	Less than 70ms	

Forbid making the power for long time to avoid being damaged.



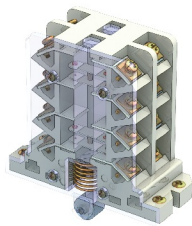
Motor-driven energy-storage mechanism

With automatic re-storing energy function, which is convenient for switching duplicate power supply.

Characteristic

Rated control power voltage U_s (V)	AC400、230	DC220
Action voltage (V)	(0.85~1.1) U_s	
Power consumption	192VA	192W
Storing-energy time	Less than 5s	

Forbid making the power for long time to avoid being damaged.



Auxiliary contact

Standard model: 4-NO (normal open) and 4-NC (normal close)

Special models: 3-NO & 5-NC, 5-NO & 3-NC, 6-NO & 2-NC, 2-NO & 6-NC.

Rated value

Rated voltage (V)	Rated heating current I_{th} (A)	Rated control capacity
AC230	6	300VA
AC400	6	300VA
DC220	6	60W

Break the locking device

Breaking the locking device will make the breaking button locked at the pressed position, and the breaker can't be closed at this moment.

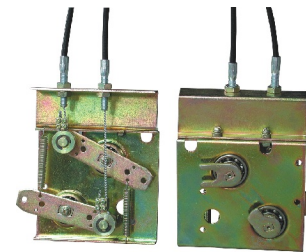
When drawer-type breaker at the breaking position, pull out the lock-rod and lock the breaker by padlock, after that circuit breaker can't reach "test" or "making" position (Padlock is prepared by users)

Locks and keys will be provided by us.

Separate lock and key is matched with one set of circuit breaker.

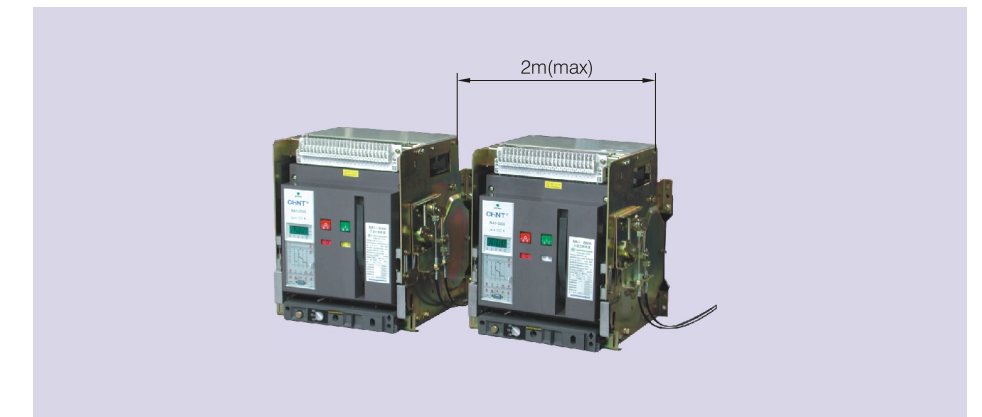
Two same locks and keys are matched with two circuit breakers.

Three same locks and two same keys are matched with three circuit breakers.



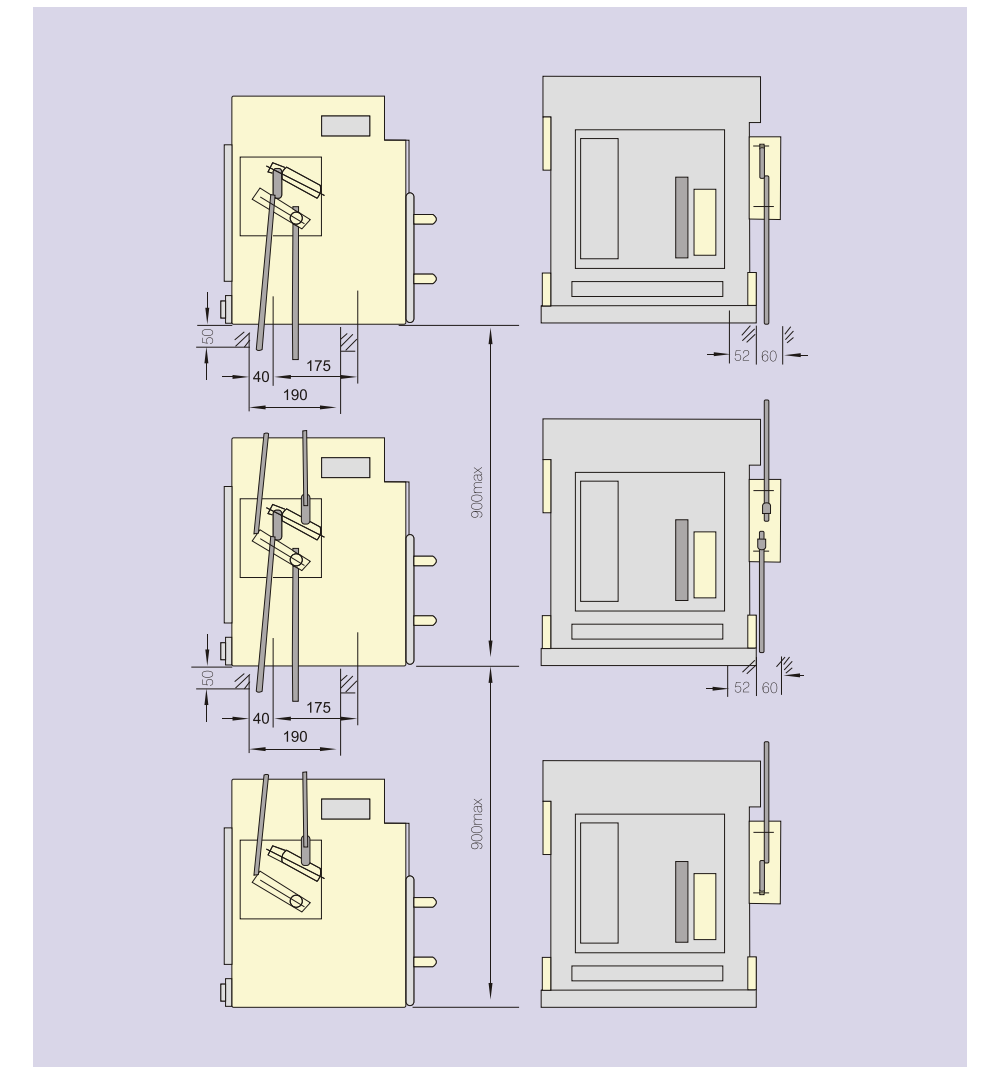
Wire-cable mechanical interlock

It can realize the interlock of two sets of horizontal or vertical-installed three-pole or four-pole drawer-type or fixed-type circuit breakers.



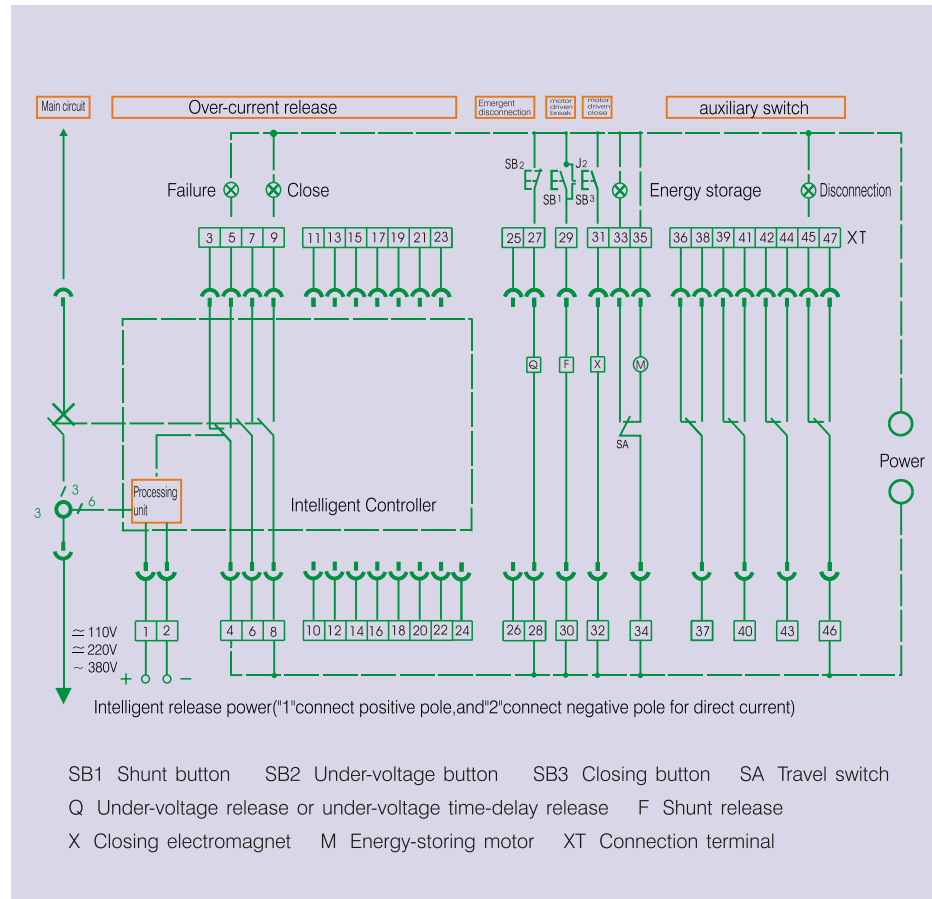
Connecting-rod type mechanical interlock

Three sets of vertical-installed three-pole or four-pole drawer-type or fixed-type circuit breakers realize the interlock between one breaker with another two different-state breakers.



Secondary circuit wiring diagram

Wiring diagram of standard-type intelligent controller



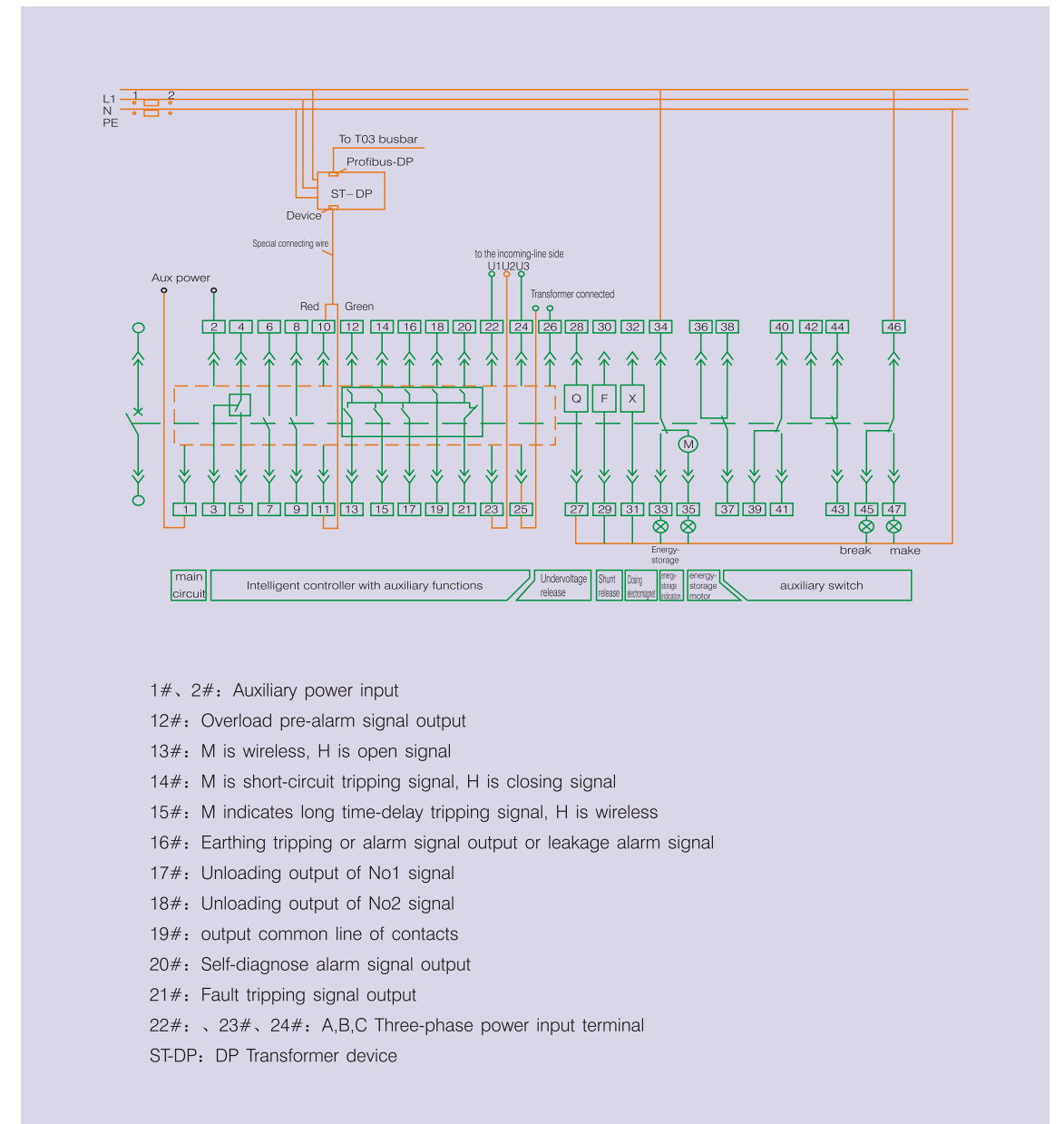
Note: If control voltage of Q, F, X is different from each other, they can be connected to different power. If model ST intelligent release is direct current power, it must pass through U1 and U2 before directly connected to termination 1 or 2.

Circuit explanation for signal output

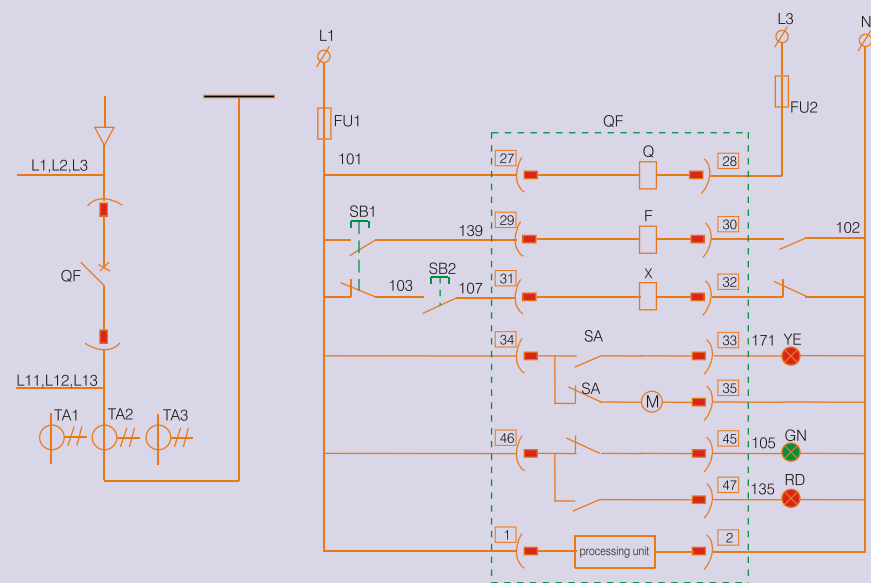
- 1) Broken-line parts shall be provided by customers.
- 2) Terminals 6# ~7# can output NC (normal close) contact if that is required by users.
- 3) Terminal 35# can be directly connected to power (automatic pre-storing energy), alternatively connect power after connecting NO button (manual-controlled pre-storing energy).

In order to avoid the damage to shunt release and closing electromagnet, one group of NO (shunt) or NC (close) contact should be separately connected to the control circuit.

Wiring diagram of communication-type intelligent controller



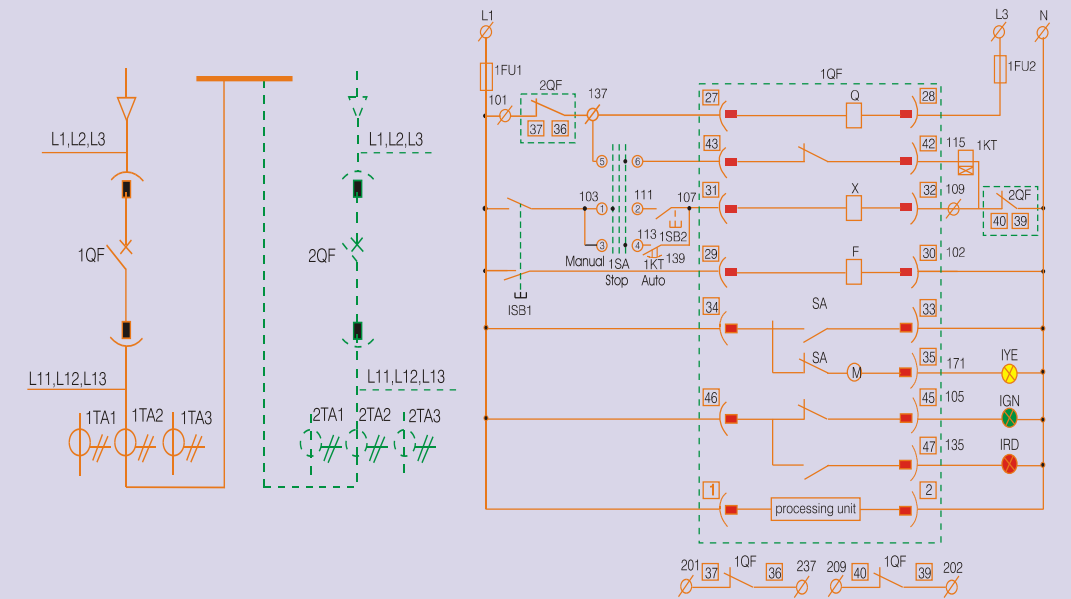
Single receiving-circuit operation circuit



QF: Circuit breaker NA1-□
 FU1~2: Fuse RT14-20/10A
 SB1~2: Button LA18-22 Each one for red and green
 YEHL: Signal indicator AD11-25~230V Yellow
 GNHL: Signal indicator AD11-25~230V Green
 RDHL: Signal indicator AD11-25~230V Red
 Seri number inside the broken-line circle, is the terminal number on terminal block of NA1 main body

(NA1 Inner components)
 Q: Under-voltage coil~400V
 F: Shunt coil~230V
 X: Closing electromagnetic~230V
 M: Energy-storage motor~230V
 SA: Motor limit switch

Dual receiving-circuit auto-switching operation circuit



1QF、2QF: Circuit breaker NA1-□
 1FU1~2: Fuse RT14-20/10A
 1SB1~2: Button LA18-22 Each one for red and green
 1SA: Change-over switch LW12-16/4.0081.1
 1KT: Time-delay relay JS14A~230V
 1YEHL: Signal indicator AD11-25~230V Yellow
 1GNHL: Signal indicator AD11-25~230V Green
 1RDHL: Signal indicator AD11-25~230V Red
 Seri number inside the broken-line circle, is the terminal number on terminal block of NA1 main body

(NA1 Inner components)
 Q: Under-voltage coil~400V
 F: Shunt coil~230V
 X: Closing electromagnetic~230V
 M: Energy-storage motor~230V
 SA: Motor limit switch

Fault reason and maintenance method

Fault description	Reasons analysis	Maintenance method
Tripping of circuit breaker	Over load tripping (IL indicator shining)	1. Check the breaking current value and acting time of intelligent release. 2. Analyze the load and electric network, exclude the overload if it happens. 3. Match the actual operating current with long delay ction current setting value. 4. Press the reset button to reclose the breaker
	Short circuit tripping ("Is" or "It" indicator shining)	1. Check the breaking current value and acting time of intelligent release. 2. Exclude the short circuit fault if it happens 3. Check the setting value of intelligent release 4. Check the normal state of breaker 5. Press the reset button to reclose the breaker
	Earthing fault tripping (IG indicator shining)	1. Check the breaking current value and acting time of intelligent release. 2. Exclude the earthing fault if that happens. 3. Match the fault current setting value with the actual protection. 4. Press the reset button to reclose the breaker.
	Under-voltage release fault: 1. Rated working voltage is less than 70%Ue 2. Fault of control unit	1.Check the power is on or not 2.Check the power voltage of under-voltage release, it shouldn't be less than 85%Ue. 3.Replace the control unit of under-voltage release
	Mechanical interlock acting	Check the working state of two circuit breakers fixed with mechanical interlock
The breaker can't be closed	Intelligent release don't reset (panel is raised)	Press the reset button to recluse the breaker
	Secondary circuit of drawer-type breaker isn't connected	Make the breaker to "making" position ("click" sound will be heard)
	Breaker hasn't stored energy	Check the secondary circuit: 1. Power voltage of motor shouldn't less than 85%Ue. 2. Check the storage mechanism, replace it if necessary.
	Mechanical interlock acting leads to locking of breaker	Check the working state of two circuit breakers fixed with mechanical interlock
	Closing electromagnet: 1.Rated control voltage is less than 85%Us; 2.Closing electromagnet is damaged	1. Power voltage of closing electromagnet shouldn't less than 85%Us. 2. Replace the electromagnet.
Tripping after closing the circuit breaker (Fault indicator shining)	Tripping immediately: 1. Short circuit current is closed 2.Delay tripping because of transient current is high when closing; 3. Overload current is closed	1. Check the breaking current value and acting time of intelligent release; 2. Exclude the short circuit fault if it happens; 3. Exclude overload fault 4. Check the normal state of breaker 5. Modify the current setting value of intelligent release 6. Press the reset button to reclose the breaker

Fault description	Reasons analysis	Maintenance method
Circuit breaker can't be opened	The breaker can't be opened manually 1. There is fault with mechanical operating mechanism	1. Check the mechanism, if there is fault happened.
	The breaker can't be opened by motor remotely 1. There is fault with mechanical operating mechanism 2. Power voltage of shunt release is less than 70%Us; 3. Shunt release is damaged	1. Check the mechanism, if there is fault happened. 2. Check the Power voltage of shunt release is less than 70%Us or not 3. Replace shunt release
Circuit breaker can't store energy	Manual storage can't be realized	Mechanical fault with the energy-stored device
	Motor storage can't be realized 1.Power voltage of motor energy-stored device is less than 85%Us; 2.There is mechanical fault with energy-stored device	1. Power voltage of motor energy-stored device shouldn't less than 85%Us 2. Mechanical fault with the energy-stored device
Handle of drawer-type circuit breaker can't be drawn in or out	1. There is padlock at the "opening" position 2. Slideway or breaker body isn't pulled into its position	1.Take away the padlock 2.Pull the slideway or breaker body into its position
Drawer-type breaker can't be drawn out at the "opening" position	1.Handle isn't pulled out 2.Breaker is not totally at the "opening" position	1.Pull out the handle 2.Keep the circuit breaker totally at "opening" position
Drawer-type breaker can't reach the "making" position	1. Something drop into the drawer base, and lock the mechanism or mechanism fault happens. 2. Breaker body not match with the frame-size rated current of drawer base	1. Check and clean the drawer base, or contact with manufacturer 2. Match the body with relevant drawer base
No display on intelligent release panel	1. Release isn't connected with power 2.There is fault with release	1.Check the power is connected or not 2.Cut off the power, then connect again. Otherwise contact with manufacturer
	Closing electromagnet: 1. Rated control voltage is less than 85%Us; 2. Electromagnet is damaged	1. Check the electromagnet power voltage shouldn't be less than 85%Us. 2. Replace the closing electromagnet.
Fault indicator still shining after pressing the clear button	Fault happened with intelligent release	Cut off the power, then connect again. Otherwise contact with manufacturer