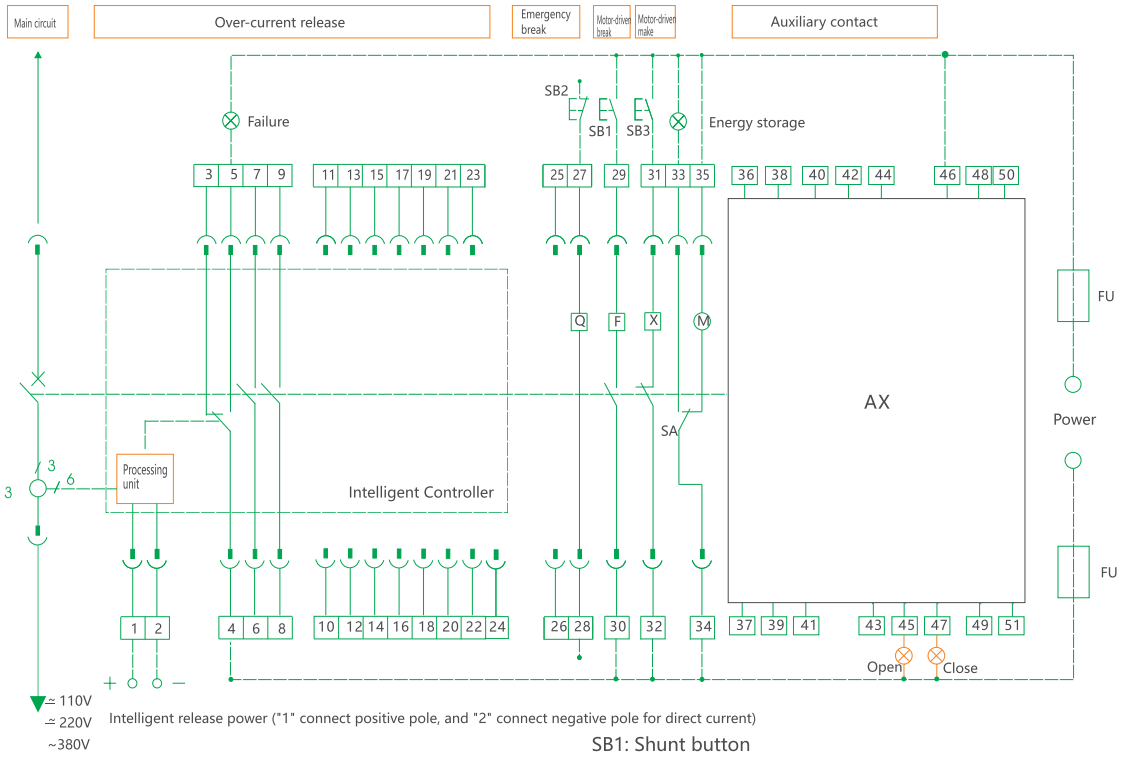
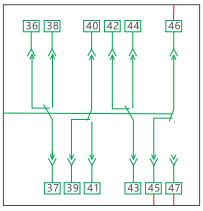


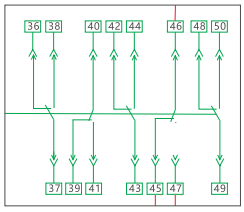
SB1: Shunt button
SB2: Under-voltage button
SB3: Making button
Q: Under-voltage release
F: Shunt release
X: Closing electromagnet
M: Energy storage motor
XT: Connection terminal
SA: Position switch
Note: If control voltage of Q, F, X is different from each other, they can be connected to different power.
1#,2#: Auxiliary power input
3#,4#,5#: Fault trip contact output(4# common terminal)
6#,7#,8#,9#: Auxiliary contact, normal open,
10#~24#: empty
25#,26#: to be connected with current transformer(selective)
27#,28#: Under-voltage release(Connected to the main circuit)
29#,30#: Shunt release
31#,32#: Closing release
33#,34#: Energy storage indicator
34#,35#: Energy storage motor
36#,51#: Auxiliary contact

The auxiliary contact modes for customer use

Ⅰ Four pairs change-over contacts

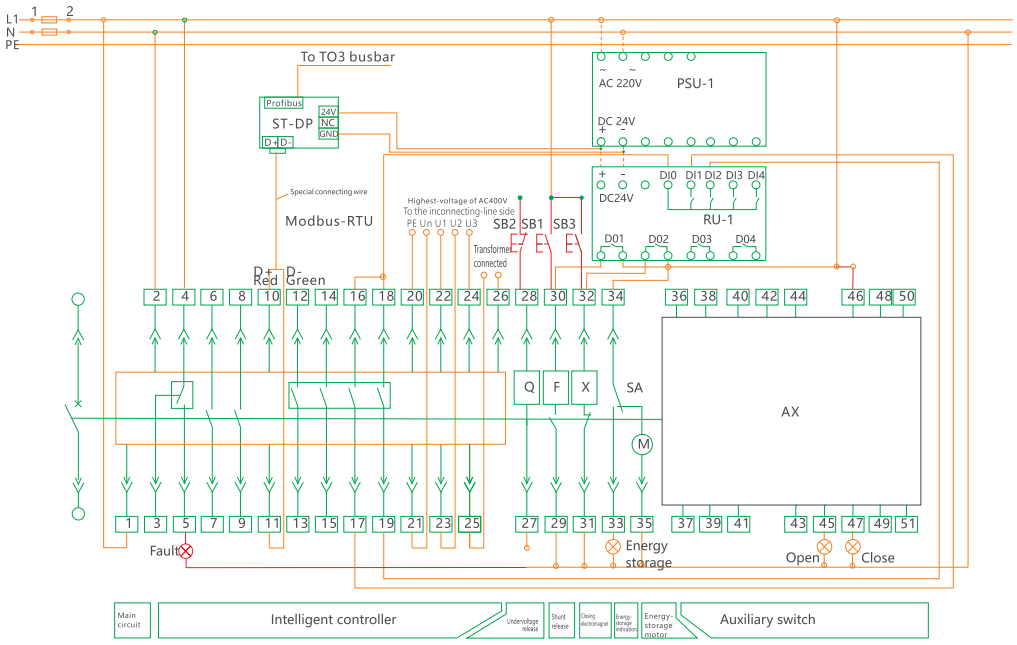


Ⅱ Five pairs change-over contacts



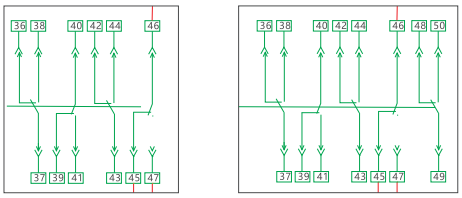
Note: 1. The lines in red should be connected by user. Add fuser to protect control circuit.
2. 6#-7# can be used as output NC contacts upon request.
3. Terminal 35# can be directly connected to power (automatically store energy in advance); or connected to NO button in series before being connected to power. If 33# is needed, connect it with indicator in series, otherwise the micro-switch inside the motor might be damaged.
4. The 21#~24# is only for wiring with function meter display. (Excluding the special wiring).
5. Wiring diagram shows: the circuit loop no power, ACB is opening and in connection location, the operating mechanism has no power.

Figure 37.The secondary circuit wiring for NA1-2000X~6300X with standard type (M/3M) intelligent controller, and instantaneous under-voltage release or self-priming time-delay under-voltage release.



The auxiliary contact modes for customer use

Ⅰ Four pairs change-over contacts Ⅱ Five pairs change-over contacts



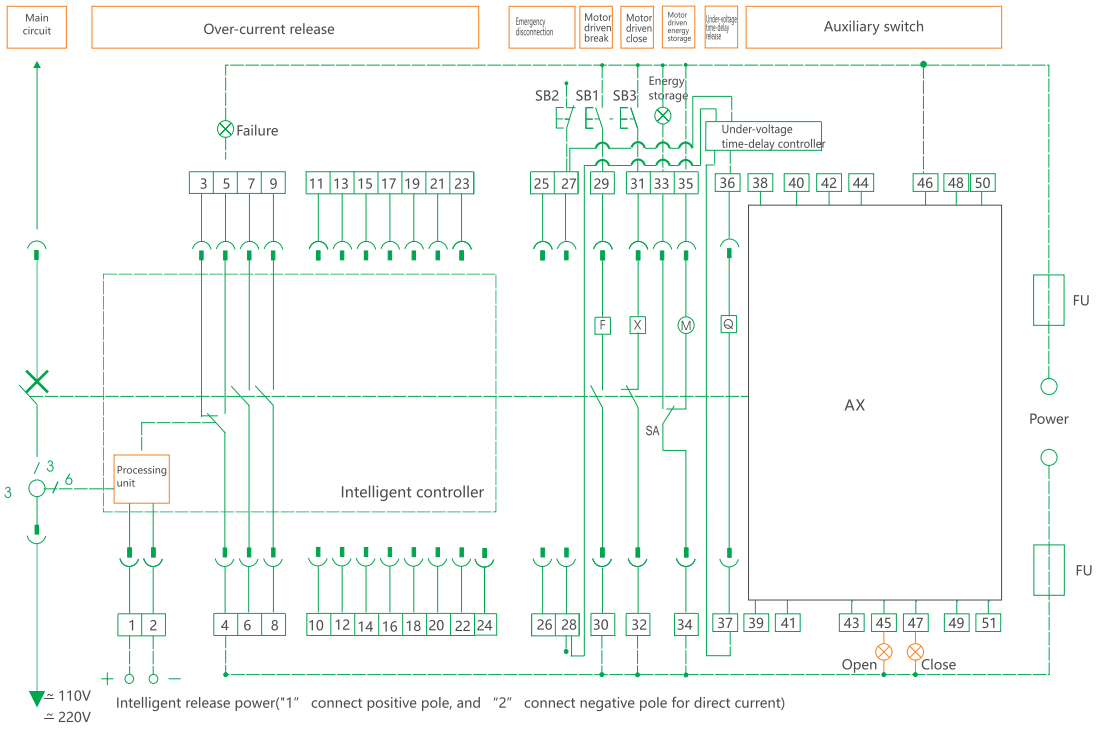
SB1: Shunt button; SB2: Under-voltage button
SB3: Making button; Q: Under-voltage release
F: Shunt release; X: Closing release
M: Energy storage motor; XT: connection terminal
SA: Position switch
1#, 2#: Intelligent controller power input
Note: When the power supply of the intelligent controller is AC power, the 1#~2# connects to the AC power directly. When the power supply is DC power, forbid connecting the 1#~2# to the DC power directly. Add a DC power supply module, then the DC power connect to the input terminal of the DC power supply module, and the 1#~2# connect to the output terminal of the DC power supply module, or else the intelligent controller will be damaged.

3#,4#,5#: Fault trip contact output(4# common terminal)
6#,7#,8#,9#: Auxiliary contact (normal open)
10#~11#: communication output
12#,13#: Signal alarm of load 1 output; 14#,15#: Signal alarm of load2 output
16#,17#:Breaking signal output; 18#,19#:Making signal output
20#: PE line; 21#: N phase input terminal
22#,23#,24#: A, B, C three phase power input terminal (note the sequence)(highest-voltage of AC 400V)

25#26#: Connect to the N phase current transformer or the input terminal of the current leakage transformer.
The normal products without these terminals, if the customer special ordered, the cost extra added.
ST~DP: DP protocol module. There is no need for the ST-DP protocol module,
if the communication protocol is Modbus-RTV. But when the communication protocol is Profibus-DP,
the ST-DP protocol module is necessary, but the cost extra added.
ST power module IV: power converter (optional components)
ST201: Magnify the signal capacity of the controller. (optional components) If the customer special ordered,
the cost extra added.
27#,28#: Under-voltage release(Connected to the main circuit); 29#,30#: Shunt release
31#,32#: Closing release; 33#,34#: Energy storage indicator
34#,35#: Energy storage motor; 36#~51#: Auxiliary contact

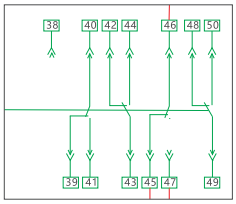
Note:1. The lines in red should be connected by user. Add fuser to protect control circuit.
2. Refer to the figure above for releases with optional functions
3. UN and U2 are short circuited in three-phase three-wire system (please specify in order if voltage exceeds 400V)
4. Terminal 35# can be directly connected to power (manually store energy in advance); or connected to NO button in series before being connected to power. If 33# is needed, connect it with indicator in series, otherwise the microswitch inside the motor might be damaged.
5. Wiring diagram shows: the circuit loop no power, ACB is opening and in connection location, the operating mechanism has no power.

Figure 38.The secondary circuit wiring for NA1-2000X~6300X with standard type (3H) intelligent controller, and instantaneous under-voltage release or self-priming time-delay under-voltage release.



The auxiliary contact modes for customer use

I Four pairs change-over contacts

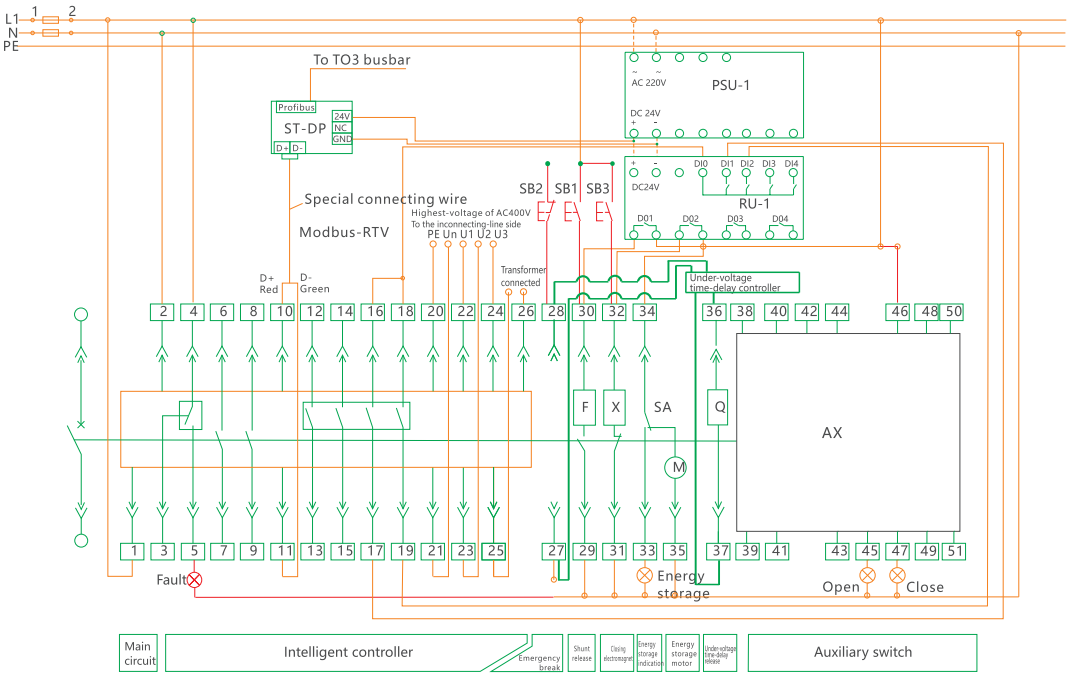


SB1: Shunt button SB2: Under-voltage button SB3: Making button
Q: Under-voltage time-delay release F: Shunt release
X: Closing electromagnet M: Energy storage motor
XT: Connection terminal SA: Position switch
Note: If control voltage of Q, F, X is different from each other, they can be connected to different power.

1#,2#: Auxiliary power input
3#,4#,5#: Fault trip contact output(4# common terminal)
6#,7#,8#,9#: Auxiliary contact (normal open)
10#~24#: empty
25#,26#: to be connected with current transformer(selective)
27#,28#: Under-voltage release(Connected to the main circuit)
29#,30#: Shunt release
31#,32#: Closing release
33#,34#: Energy storage indicator
34#,35#: Energy storage motor
36#,37#: Under-voltage time delay release
38#~51#: Auxiliary contact

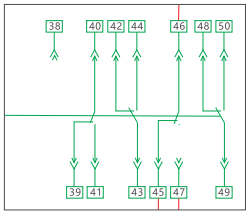
Note: 1. The lines in red should be connected by user. Add fuser to protect control circuit.
2. 6#-7# can be used as output NC contacts upon request.
3. Terminal 35# can be directly connected to power (automatically store energy in advance); or connected to NO button in series before being connected to power (manually store energy in advance). If 33# is needed, connect it with indicator in series, otherwise the micro-switch inside the motor might be damaged.
4. When using emergency breaking button to break the circuit breaker, the circuit breaker will breaker after the setup under-voltage delay period if it is equipped with delay function.
5. One under-voltage delay controller can only be connected to one under-voltage delay release
6. The 21#~24# is only for wiring with function meter display. (Excluding the special wiring).
7. Wiring diagram shows: the circuit loop no power, ACB is opening and in connection location, the operating mechanism has no power.

Figure 39.The secondary circuit wiring for NA1-2000X~4000X/3 with standard type (M/3M) intelligent controller, with helped-type time-delay under-voltage release.



The auxiliary contact modes for customer use

I Four pairs change-over contacts



SB1: Shunt button; SB2: Under-voltage button
SB3: Making button; Q: Under-voltage release
F: Shunt release; X: Closing release
M: Energy storage motor; XT: Connection terminal
SA: Position switch
1#, 2#: Intelligent controller power input
Note: When the power supply of the intelligent controller is AC power, the 1#~2# connects to the AC power directly. When the power supply is DC power, forbid connecting the 1#~2# to the DC power directly. Add a DC power supply module, then the DC power connect to the input terminal of the DC power supply module, and the 1#~2# connect to the output terminal of the DC power supply module, or else the intelligent controller will be damaged.

3#,4#,5#: Fault trip contact output(4# common terminal)
6#,7#,8#,9#: Auxiliary contact (normal open)
10#~11#: Communication output; 12#,13#: Signal alarm of load 1 output
14#,15# : Signal alarm of load 2 output; 16#,17#: Breaking signal output; 18#,19#: Closing signal output
20#: PE line; 21#: N phase input terminal
22#,23#,24#: A, B, C three phase power input terminal (note the sequence)(highest-voltage of AC400V)
25#,26# Connect to the N phase current transformer or the input terminal of the current leakage transformer.
The normal products without these terminals, if the customer special ordered, the cost extra added.
ST~DP: DP protocol module. There is no need for the ST-DP protocol module,
if the communication protocol is Modbus-RTV. But when the communication protocol is Profibus-DP,
the ST-DP protocol module is necessary, but the cost extra added.
ST power module IV: power converter (optional components)
ST201: Magnify the signal capacity of the controller. (optional components)
If the customer special ordered, the cost extra added.
27#,28#: Under-voltage release(Connected to the main circuit); 29#,30#: Shunt release
31#,32#: Closing release; 33#,34#: Energy storage indicator
34#,35#: Energy storage motor; 36#,37#: Under-voltage time delay release
38#~51#: Auxiliary contact

Note:1. The lines in red should be connected by user; b. Refer to the figure above for releases with optional functions; c. UN and U2 are short circuited in three-phase three-wire system (please specify in order if voltage exceeds 400V).
2. When using emergency breaking button to break the circuit breaker, the circuit breaker will breaker after the setup under-voltage delay period if it is equipped with delay function.
3. One under-voltage delay controller can only be connected to one under-voltage delay release.
4. Terminal 35# can be directly connected to power (automatically store energy in advance); or connected to NO button in series before being connected to power (manually store energy in advance). If 33# is needed, connect it with indicator in series, otherwise the micro-switch inside the motor might be damaged.
5. 21#, 22#, 23# and 24# voltage sampling wires are not available for H type.
6. Wiring diagram shows: the circuit loop no power, ACB is opening and in connection location, the operating mechanism has no power.

Figure 40.The secondary circuit wiring for NA1-2000X~4000X/3 with standard type (H) intelligent controller, with helped-type time-delay under-voltage release.

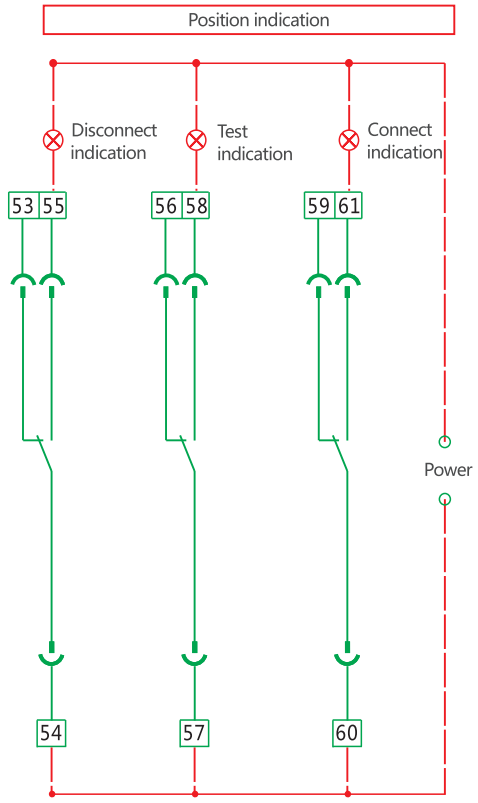


Figure 41.Wiring diagram of position signal device

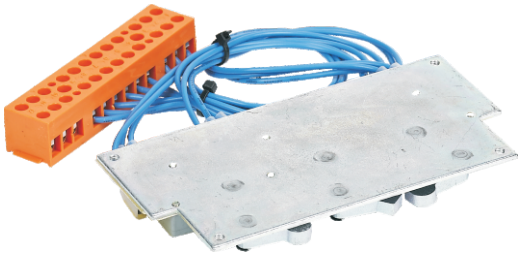


Figure 42.Position signal

Operational requirements:

1. There are three available drawer seat positions: "Disconnected", "Test" and "Connected". All or part of these positions can be used depending on specific order.

2.When changing the position of drawer-type circuit breaker body from "Drawout" to "Disconnected", the 53# and 54# terminals should be switched from connect to disconnect, while the 54# and 55# terminals should be switched from disconnected to connected.

3. When changing the position of drawer-type circuit breaker body from "Disconnected" to "Test", the 56# and 57# terminals should be switched from connected to disconnected, while the 57# and 58# terminals should be switched from disconnected to connected. There should be a sufficient safety distance between the Busbar of circuit breaker body and the drawer seat bridge contact, and make sure the circuit breaker can break and make reliably.

4. When changing the position of drawer-type circuit breaker body from "Test" to "Connected", make sure there is no clearance in secondary circuit for 1000 type.As for 2000~6300 type, keep rotating the handle after you clear a click sound but no more than 1.5 circle. The 59# and 60# terminals should be switched from disconnect to connect, while the 60# and 61# terminals should be switched from disconnected to connected. Make sure the Busbar of circuit breaker body is securely inserted into the drawer seat bridge contact and can carry main circuit current reliably.

5. When changing the position of withdrawable circuit breaker body from "Connected" to "Test", the 56# and 57# terminals should be switched from connect to disconnect, while the 57# and 58# terminals should be switched from disconnect to connect. There should be a sufficient safety distance between the Busbar of circuit breaker body and the drawer seat bridge contact, and make sure the circuit breaker can break and make reliably.

6. When changing the position of drawer-type circuit breaker body from "Test" to "Disconnected", the 53# and 54# terminals should be switched from connect to disconnect, while the 54# and 55# terminals should be switched from disconnect to connect. You cannot draw out the body at this moment. You need to keep rotating the body to "Disconnect" position until the handle could not move ahead., then you can pull out the body. After you pull out the body, the 53# and 54# terminals should be switched from disconnect to connect , while the 54# and 55# terminals should be switched from connect to disconnect.

7. When chaning the position of drawer seat, you must not stop until the indicator points at "Disconnect", "Test" or "Connect" position, otherwise the indicator will not be able to indicate the exact position of the circuit breaker body in drawer seat.

Attachment:

Table 14 Position signal contact capacity

Rated voltage (V)	Rated thermal current Ith(A)	Rated operating current Ie(A)	Rated control capacity
AC230	5	1.3	300VA
AC400	5	0.75	300VA
DC220	5	0.25	60W
DC110	5	0.55	60W

7.6 Electric break and make operations

a. Make: When the circuit breaker is under energy storage and disconnected status (make sure the undervoltage release is closed), apply rated voltage on the make electromagnet to make the circuit breaker.

b. Break: When the circuit breaker is under connected status, apply rated voltage on the shunt release to break the circuit breaker.

8 Maintenance, Handling

8.1 Safety Precautions

The following operations must be performed in sequence before the maintenance and overhaul of the circuit breaker:

a. Open the circuit breaker to ensure that the circuit breaker is in the open state;

b. Disconnect the upper level knife switch to ensure that the main circuit and the secondary circuit are not energized;

c. Energy release and breaking of the circuit breaker to ensure that the circuit breaker is in the energy release and breaking state;

d. All components that may be touched by the staff must be unpowered.

Table 15 Maintenance and overhaul cycle

Conditions	Environment	Maintenance cycle	Overhaul cycle	Remarks
General environment	The air is kept clean and dry without corrosive gases, the temperature is between -5ºC to +40ºC, and the humidity meets 3.1.3 operating conditions in the manual.	Once every six months	Once a year (once every six months if installed for more than three years)	In line with IEC/EN 60947-2 General environmental conditions requirements
Harsh environment	-5ºC to -40ºC or 40ºC～65ºC, or humidity≥90%	Once every three months	Once every six months (once every three months if installed for more than three years)	
	A place with much dust and corrosive gases	Once a month	Once every three months	
Note: The circuit breaker must be checked after breaking of the short-circuit current.				

8.3 Maintenance of Circuit Breaker

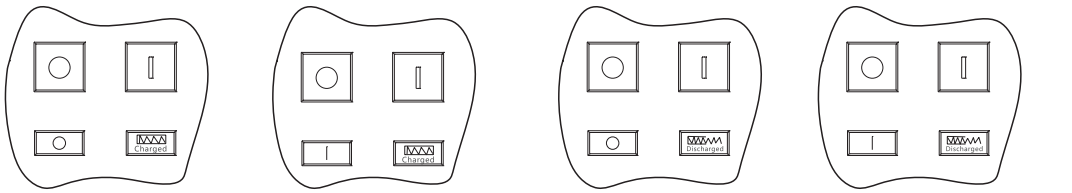
8.3.1 Regularly remove foreign objects (such as tools, wire ends or debris, metal foreign objects, etc.) from the power distribution cabinet.

8.3.2 Regularly remove dust from the circuit breaker to keep the circuit breaker well insulated.

8.3.3 Check whether the spring washer of the connecting bolt and grounding bolt of the main circuit is flattened and the connection is firm.

8.3.4 Check whether the making and breaking indications are correct and reliable. See Figure 44.

Figure 43.Remove foreign objects and dust



44-a Breaking+energy storage 44-b Making+energy storage 44-c Breaking+energy release 44-d Making+ energy release

Figure 44.Making and breaking indications

8.4 Overhaul of Circuit Breaker

8.4.1 Connection and Installation Inspection

It is recommended to refer to the requirements in Table 17 for the torque force of the main circuit and secondary circuit.

Table 16 Recommended reference table for the torque force of fasteners

Fastener specifications	Torque requirements (N · m)
M3	0.4-0.5
M4	1.2-1.7
M8	16-26
M10	36-52
M12	61-94

8.4.2 Insulation Performance Testing

The insulation resistance between phases or between a phase and the ground is required to be 20MΩ or greater.

The insulation resistance test must be performed before power is applied again after overhaul and a long period of power off (≥ 7 days).

8.4.3 Operational Characteristic Inspection

Connect the accessories to the corresponding rated voltage according to the nameplate on the shield and perform the following operations:

Electric energy storage, making and breaking operations, cycled 5 times;

Manual energy storage, making and breaking operations, cycled 5 times;

The circuit breaker is required to store, close and open normally.

Note: The main circuit must be unpowered; if there is an undervoltage release, it must be applied with a rated voltage first.

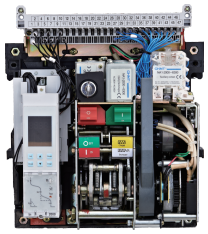
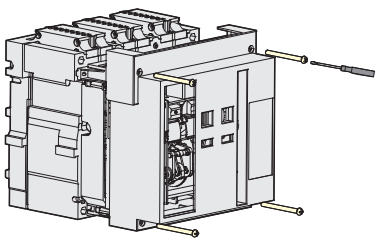


Figure 45.Parameter requirements and operation diagram

8.4.4 Circuit Breaker Component Inspection

8.4.4.1 Shield Removal



• Remove the four bolts of the circuit breaker that fix the panel and take off the shield

Figure 46.Shield Removal

8.4.4.2 Operating Mechanism Inspection

Check the parts of the mechanism for breakage and whether the fasteners are tight.

Remove dust, and evenly apply oil (7012 low-temperature grease or similar solid grease) to each rotating part.

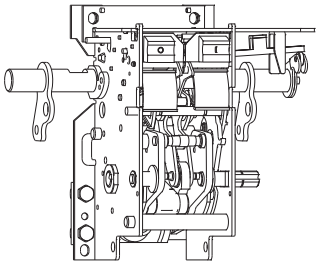


Figure 47.Operating mechanism

8.4.4.3 Inspection of Intelligent Controller

- 1. Press the "Set" button to enter the parameter setting interface "Pro".
- 2. Press the "Enter" button to enter the protective parameter setting and query interface.
- 3. Press the "▲" or "▼" button to in turn select the display of protective parameter setting details.
- 4. Press the "Reset" button to return to the upper-level menu or exit from the interface.

Simulated test tripping function

Note: For detailed operation instructions, see 12.1.5

Figure 48.Parameter settings meet site requirements

• Press the "Test" button to simulate the tripping test.

49-a Simulation test

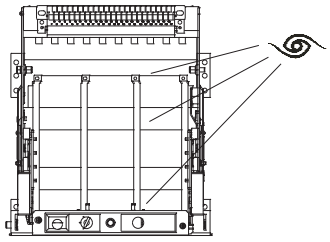
• Press the orange "Reset" button on the face shield to return to normal state.

49-b Reset operation

Figure 49.Simulation test of tripping function

8.4.4.4 Inspection of Drawer Seat (tested after removing the body, taking NA1-2000X as an example)

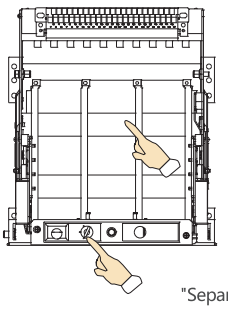
a. Check for foreign objects inside



• Check whether there are foreign objects in the inside of the drawer seat, such as screws, thread ends, iron filings, etc. If yes, remove them.

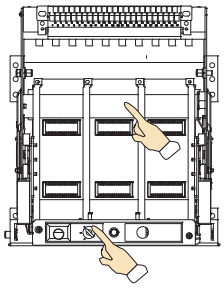
Figure 50.Inspection of foreign objects inside the drawer seat

b. Check whether the arc-proof plate opens and closes normally and whether the insulation contact has deformation or oxidation



"Separation"

• Shake to the separation position. The arc shield is as shown on the left.

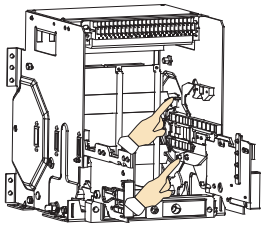


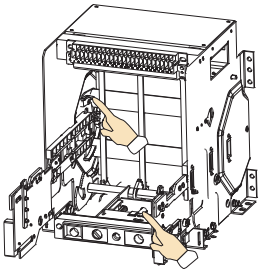
"Connection"

• Shake to the connection position for NA1-2000X-6300X series. Press the partition to open the connecting rod for NA1-1000X series. The arc shield is as shown on the left. Check whether there are deformation, misalignment and oxidation on the bridge contacts of each phase. If yes, replace it.

Figure 51.Inspection of arc-proof plate and contact of drawer seat

c. Turn the friction parts and evenly apply oil there





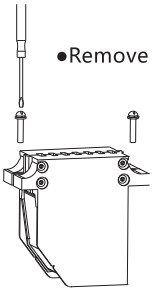
• Evenly apply 7012 low temperature grease or similar solid oil on the positions indicated on the left for lubrication.

Figure 52.Inspection of rotating parts of drawer seat

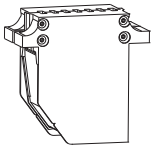
8.4.4.5 Inspection of Arcing chamber (taking NA1-2000X-6300X as an example)

Check grid pieces and arc striking pieces for defects, and check the arc chute for breakage. If any, timely replace and remove dust, corrosion layer and arcing point in the room. If corrosion and rust are serious, replace in time.

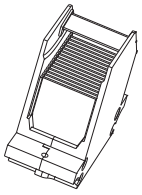
Note: The circuit breaker must be checked after breaking of the short-circuit current.



●Remove the fixing bolts



●Take out the arc chamber.



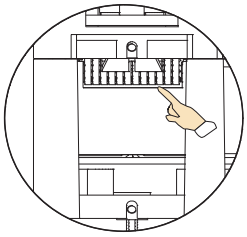
●Check chamber comditions

Figure 53.Inspection of Arcing chamber

8.4.4.6 Inspection of Main Contact (taking NA1-2000X-6300X as an example)

a. The overtravel is required to be greater than equal to 2 mm

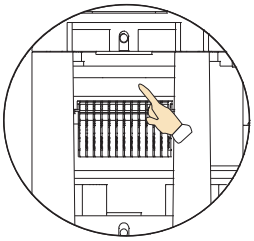
b. Remove dust, corrosive layer and particular burnt materials



- Manually make the product and observe the overtravel of the main contact

Note: Please replace the contact if reached the position shown in the figure .

Figure 54.Inspection of overtravel of the main contact



- Break the product and the main contact is in the position indicated on the left. Check whether there is dust, granular burnt material and oxidized corrosion layer on the contact. If yes, clean up dust in time.

Figure 55.Inspection of contact surface

Note: The circuit breaker must be checked after breaking of the short-circuit current.

8.4.4.7 Inspection of Secondary Circuit

Check the casing for damage.

Use the universal meter to check the contact between the secondary circuit of the drawer body and the secondary circuit of the drawer seat, and whether the contacts are in good contact at the "Test" and "Connection" positions and whether the wiring screws are tight and the wire insulation is intact.

Figure 56.Inspection of secondary circuit

8.5 Replacement of Undervoltage Release, Shunt Release and Closed Electromagnet Accessories

The following operations must be performed before replacing the accessories:

Cut off all power and ensure that the power supply to the main circuit and secondary circuit is Unpowered on.

The circuit breaker is in the energy release breaking state

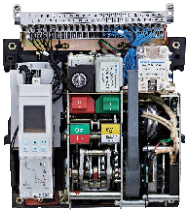


Figure 57.Fixed type accessories

8.5.1 Replacement of Fixed type accessories

Remove the penal fixing bolts and remove the penal

Untie the cable tie and remove the wiring wires

Remove the fixed accessory mounting screws

Remove and replace the accessory

Figure 58.Drawer Accessories

8.5.2 Replacement of Drawer Accessories

Shake out the body to the separation position and remove the body

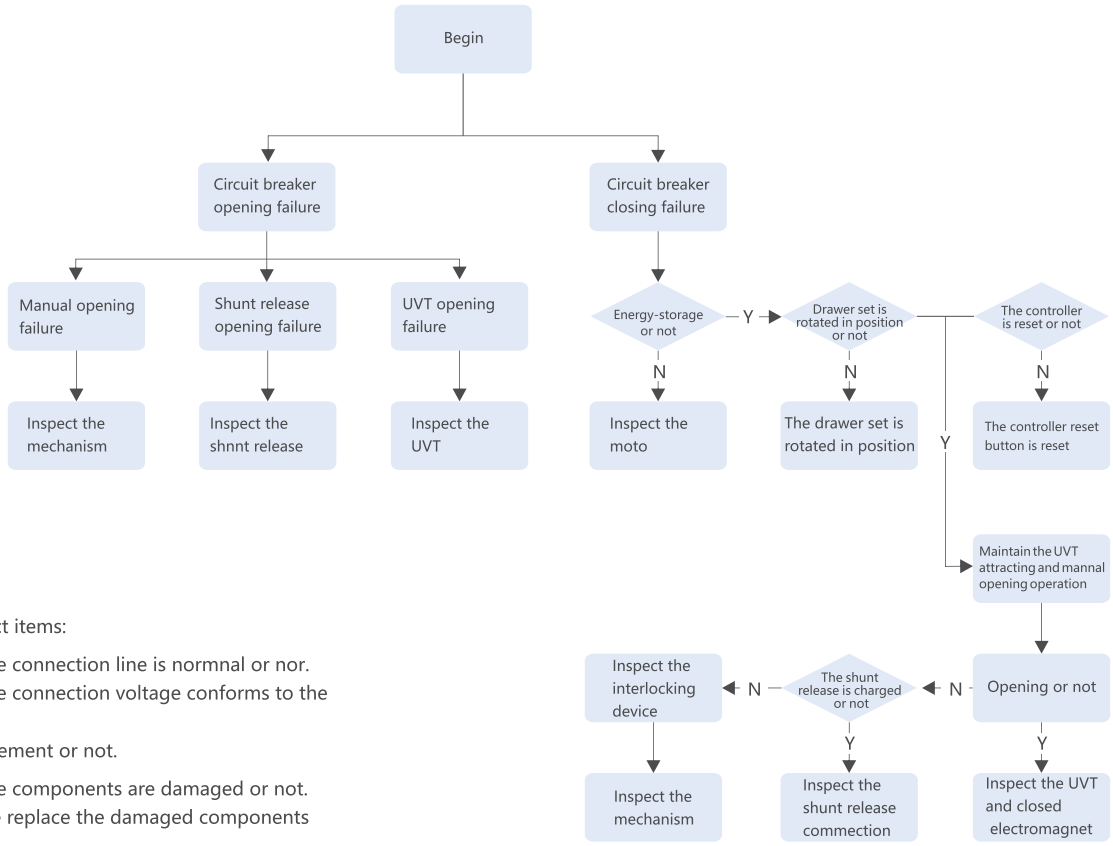
Remove the penal fixing bolts and remove the penal

Untie the cable tie and remove the wiring wires

Remove the fixed accessory mounting screws

Remove and replace the accessory

9 Analysis and Elimination of Faults



Inspect items:

1、The connection line is normnal or nor.
2、The connection voltage conforms to the

requirement or not.

3、The components are damaged or not.
please replace the damaged components

9.2 Fault Trip Analysis

Identification of fault causes

Fault identification through intelligent controller indication

· Presss the "Reset" button till it returns to the default display interface.

· Press the "Check" button to enter the query menu interface; Press the "Enter" button to enter the failure query menu interface; press the "▾" and select the failure record frequency to be viewed, and press the "Enter" button again to query the failure details.

· Presss the "Reset" button to exit from or return to the upper-level menu.

Note: The live making operation is prohibited before the fault is eliminated.

Figure 59.Identification of fault causes

9.3 Common Fault Causes and Solutions Shown in table 17 .

Table 17 Fault analysis and repair

Problem	Cause	Solution
Circuit breaker trip	Overload fault trip (I_R indicator on)	1. Check the breaking current value and operation time on the intelligent controller; 2. Analyze the conditions of the load and grid; 3. If there is overload, eliminate the overload fault; 4. If the actual running current does not match the long delay operation current setting value, modify the long delay operation current setting value according to the actual running current to achieve appropriate matching protection; 5. Press the Reset button and reclose the circuit breaker.
	Short circuit fault trip (Isd or Ii indicator on)	1. Check the breaking current value and operation time on the intelligent controller; 2. If there is short circuit, find and eliminate short circuit fault; 3. Check the setting value of the intelligent controller; 4. Check the integrity of the circuit breaker; 5. Press the Reset button and reclose the circuit breaker.
	Ground fault trip (Ig indicator on)	1. Check the breaking current value and operation time on the intelligent controller; 2. If there is ground fault, find and eliminate the ground fault; 3. Modify the ground fault current setting value of the intelligent controller; 4. If there is no ground fault, check whether the fault current setting value matches the actual protection; 5. Press the Reset button. Reclose the circuit breaker.
	Mechanical interlocking operation	Check the working status of the two circuit breakers with mechanical interlocks.
	Undervoltage release is faulty: a. The rated working voltage is less than 70% Ue; b. The undervoltage release control unit is faulty.	1. Check whether the undervoltage release is powered on; 2. The power supply voltage of the undervoltage release must be 85% Ue or higher; 3. Change the control unit of the undervoltage release.

Continued table 17

Problem	Cause	Solution
The circuit breaker cannot be closed	The intelligent controller is not reset	Press the Reset button (on the raised panel) and remake the circuit breaker.
	Poor contact in the secondary circuit of the drawer circuit breaker	Shake the drawer circuit breaker to the "On" position (clattering is heard).
	The circuit breaker has not stored energy	Check whether the secondary circuit is connected: 1. The motor control power supply voltage must be 85% Ue or higher; 2. Check the motor energy storage mechanism. If there is any fault, contact the manufacturer to replace the motor operating mechanism.
	Mechanical interlocking operation; the circuit breaker has been locked	Check the working status of the two circuit breakers with mechanical interlocks.
	Closed electromagnet: a. The rated control voltage is less than 85% Us; b. The closed electromagnet is faulty and damaged.	1. The power supply voltage of the closed electromagnet must be 85% Us or higher; 2. Replace the closed electromagnet.
Tripping after the circuit breaker is closed (fault indicator is on)	1. Trip immediately: The short circuit current is closed; 2. Delayed trip: The overload current is closed.	1. Check the breaking current value and operation time on the intelligent controller; 2. If there is short circuit, find and eliminate short circuit fault; 3. If there is overload, find and eliminate the overload fault; 4. Check the integrity of the circuit breaker; 5. Modify the current setting value of the intelligent controller; 6. Press the Reset button and remake the circuit breaker.
The circuit breaker cannot be disconnected	1. The circuit breaker cannot be manually disconnected locally: The mechanical operating mechanism is faulty; 2. The circuit breaker cannot be electrically disconnected remotely: a. The mechanical operating mechanism is faulty; b. The shunt release power voltage is less than 70% Us; c. The shunt release is damaged.	1. Check the mechanical operating mechanism. If there is any fault such as a stuck, contact the manufacturer. 2.a. Check the mechanical operating mechanism. If there is any fault such as a stuck, contact the manufacturer; b. Check whether the shunt release power voltage is less than 70% Us; c. Replace the shunt release.
The circuit breaker cannot store energy	1. Cannot store energy manually; 2. Cannot store energy electrically: a. The control power voltage of the rated control electric energy storage device is less than 80% Us; b. The energy storage device has a mechanical failure.	1. The energy storage device has a mechanical failure. Contact the manufacturer. 2.a. Check whether the control power supply of the electric energy storage device is 85% Us or higher; b. Check the energy storage device machinery and contact the manufacturer.
The handle cannot be inserted into the drawer seat to Shake in and out the body (Drawer breaker)	1. There is a padlock in the off position. 2. The plugging rail or the circuit breaker body is not fully inserted	1. Remove the padlock 2. Push the rail or circuit breaker to the end.

Continued table 17

Problem	Cause	Solution
The drawer circuit breaker cannot be pulled out in the "Off" position	1. The handle is not pulled out. 2. The circuit breaker does not fully reach the "Off" position.	1. Pull out the handle. 2. Fully shake the circuit breaker to the "Off" position.
The drawer circuit breaker cannot be shaken to the "on" position	There is a problem such as some foreign objects fall into the drawer seat and stick the shake mechanism or the shake mechanism jump over teeth.	Check and remove foreign objects. If the circuit breaker still cannot be shaken in, contact the manufacturer.
	The frame rated current of the circuit breaker body does not match that of the drawer seat.	Select the circuit breaker body and drawer seat with the same frame rated current.
The intelligent controller screen has no display	1. The intelligent controller is not connected to the power supply. 2. The intelligent controller is faulty. 3. The rated control power supply voltage is less than 85% Us.	1. Check whether the intelligent controller has been connected to the power supply. If not, connect to the power supply immediately. 2. Turn off the control power of the intelligent controller and then send power. If the fault persists, contact the manufacturer. 3. The power supply voltage of the intelligent controller must be 85% Us or higher.
The fault indicator of the intelligent controller is on and is still on after pressing the "Back" button.	The intelligent controller is faulty	Turn off the control power of the intelligent controller and then send power. If the fault persists contact the manufacturer.

10 Environmental Protection

In order to protect the environment, when this product or its components are scrapped, please dispose of them as industrial waste, or hand them over to the recycling station for classified disassembly, recycling and reuse according to the relevant local regulations.

11 Ordering specification

Customer: Tel: Date:

Quantity:

Model		☐NA1-1000X	☐NA1-2000X ☐NA1-2000XN ☐NA1-2000XH	☐NA1-3200X ☐NA1-3200XN	NA1-4000X	☐NA1-6300X ☐NA1-6300XN
Rated current In (A)		☐200 ☐400 ☐630 ☐800 ☐1000	☐630 ☐800 ☐1000 ☐1250 ☐1600 ☐2000	☐2000 ☐2500 ☐3200	☐4000	☐4000 ☐5000 ☐6300(no four poles)
Installation mode		☐ Drawout type ☐Fixed type (Note: no fixed type when In> 4000A)				
Number of poles		☐ Three poles ☐Four poles				
Intelligent Controller		Protection function			Auxiliary functions	Optional function
	☐ M type Standard (Default configuration)	1. ☐ Ir overload long delay, Isd short-circuit short delay inverse time + definite time, Ii transient short-circuit, Ig single-phase grounding 4-section protection 2. ☐ Ir overload long delay, Isd definite time short-circuit short delay,Ii transient short-circuit, Ig single-phase grounding 4-section protection			1. Ammeter function 2. Self-diagnostic function 3. Tuning function 4. Test function 5 Display function	/
	☐ 3M type Multifunctional (Optional configuration)	1. ☐ Ir overload long delay, Isd short-circuit short delay inverse time + definite time, Ii transient short-circuit, Ig single-phase grounding 4-section protection 2. ☐ Ir overload long delay, Isd definite time short-circuit short delay,Ii transient short-circuit, Ig single-phase grounding 4-section protection				☐ Voltage display ☐ Frequency display ☐ Power Factor show ☐ Active power display ☐ Load monitoring function Note: For the specific optional function, refer to List of controller functions in the sample (The cost of optional functions will be calculated additionally).
	☐ 3H-type Communication type (Optional configuration)	1. ☐ Ir overload long delay Isd short-circuit short delay inverse time +definite time Ii transient short-circuit, Ig single-phase grounding 4-section protection 2. ☐ Ir overload long delay, Isd definite time short-circuit short delay, Ii transient short-circuit, Ig single-phase grounding 4-section protection 3. ☐ with PROFIBUS-DP communication protocol ☐ with MODBUS communication protocol				
	Notes: Protection function Settable range and conventional factory tuning	Ir long delay current setting range: (0.4 to 1) In Overload 1.5Ir action time setting range: 15,30,60 ..... 480s	! Conventional factory tuning: overload long delay 1.0In ! Conventional factory tuning: overload 1.5Ir; action 15s			
		Isd short delay current setting range: (1.5 to 15) Ir; short delay action time (0.1 ~ 0.4) s	! Conventional factory setting: short delay current 8Ir ; ! Conventional factory tuning: Short delay action time 0.4s [Note: 3M, 3H for (1.5 to 15) Ir]			
		Ii instantaneous current setting range: 1.5In ~ 50kA/65kA/75kA ! Conventional factory tuning: 12In [Note: 3M, 3H for (1.5In~50kA/65kA/75kA)				
		Ig earthing protection current setting range: (0.2 to 0.8) In; the earthing protection time setting range: (0.1to0.4)s ! Conventional factory setting: 0.5 In; OFF				
	Controller power	☐AC380V,☐AC400V,☐AC220V,☐AC230V,☐AC127V,☐DC220V,☐DC110V				(Optional)
Electrical accessories	Under voltage release	☐AC110V,☐AC220/230V,☐AC380/400V,☐Order____V ,☐Non-undervoltage ☐ Helped＆instantaneous ☐ Helped＆delay__s (Inm=2000A~4000A, 1 s, 3 s, 5 s, non-adjustable); ☐ self-priming＆instantaneous ☐ self-priming＆delay __s (Inm≥2000A, 0.3 s~7.5 s,adjustable); Note: Inm=1000A no Helped priming type, delay time 1 s, 3 s, 5 s, 7 s,non-adjustable.				(No AC110V for NA1-1000X)
	Shunt release	☐ intermittent (only for Inm≥2000A and default)	☐AC110V,☐AC220/230V,☐AC380/400V,☐DC110V,☐DC220V			
	Closing electromagnet	☐ pulse (must select in automatic control system)	☐AC110V,☐AC220/230V,☐AC380/400V,☐DC110V,☐DC220V			
	Electric motor	☐AC110V,☐AC220/230V,☐AC380/400V,☐DC110V,☐DC220V				
Special requirements	Interlock device (surcharge)	Mechanical linkage: ☐ Link interlock ☐ Cable interlock Door interlock: ☐ Switch body position door interlock(drawer-type) ☐ Switch on/off state door interlock				(Optional)
	Accessories (surcharge)	Button lock: ☐Panel products on/off button lock Key lock: ☐1 lock 1 key ☐2 locks 1 key ☐3 locks 1 key ☐ 3 locks 2 keys ☐5 locks 3 keys ☐Special custom__lock__ key External transformer: ☐External N phase transformer [(3P+N)T type ☐External leakage zero sequence current transformer (E mode) ☐External ground current transformer (W) Module: ☐ PSU-1 Power module ☐RU-1 relay module ☐ST-DP protocol converting module ☐Position signaling devices (☐Connected ☐Test ☐Unconnected) ☐Mechanical counting device				(Optional)
	The main circuit connection	☐Horizontal connection (default) ☐Vertical connection (with L vertical bus-bar) ☐Rotation busbar horizontal connection (Drawer In ≤ 3200) ☐Rotation busbar vertical connection (drawer-type In ≤ 3200)				(Optional)

Note: The casing current, rated current and auxiliary control voltage must be specified when ordering!
Note: 1) Please mark "√" or fill figure in the relative " ☐" if no mark, we will provide according to conventional.
Note: 2) The operational fuction of the intellgent controller and special requirements require additional costs.

Tel.:0577-62877777-6213 Fax :0577-62877777-6288


NA1-6300X


NA1-4000X


NA1-3200X


NA1-2000X


NA1-1000X

Configuration instructions

1. NA1-2000X~6300X fundamental configurations
   a. Motor-driven:
   Under-voltage instantaneous release;
   Shunt release;
   Closing electromagnet;
   4 suits of transform contact;
   Motor driven operating mechanism;
   M-type Intelligent Controller;
   Horizontal wiring of main circuit;
   Doorcase;
   Element of main circuit;
   Operating instructions of M-type Intelligent Controller
   Operating instructions of Air Circuit Breaker;
   Packing box;

   b. Manual:
   Under-voltage instantaneous release;
   4 suits of transform contact;
   M-type Intelligent Controller;
   Horizontal wiring of main circuit;
   Doorcase;
   Element of main circuit;
   Operating instructions of M-type Intelligent Controller
   Operating instructions of Air Circuit Breaker;
   Packing box;

3. NA1-2000X~6300X operational configuration (additional costs)
   Nonadjustable under voltage delayed release (1s, 3s, 5s);
   Connecting-rod type mechanical interlock (for drawout type);
   Wire-cable mechanical interlock; Button lock; Key lock;
   Door interlock'Locking device;
   External current transformer earthing protection;
   Vertical busbar;
   Rotating busbar (IN≤3200);
   3NO (normal open) and 3NC (normal close) contacts;
   4NO and 4NC contacts; 5 groups changeover contacts;
   3 groups changeover contacts; H type intelligent controller;
   Position signal; Counter; Protecting cover (NA1-

2. NA1-1000X fundamental configurations
   a. Motor-driven:
   Under-voltage instantaneous release;
   Shunt release;
   Closing electromagnet;
   Motor driven operating mechanism;
   4 normal open and 4 normal close auxiliary contacts;
   M-type Intelligent Controller;
   Closing and breaking push button lock;
   Horizontal wiring of main circuit;
   Doorcase;
   Element of main circuit;
   Operating instructions of Air Circuit Breaker;

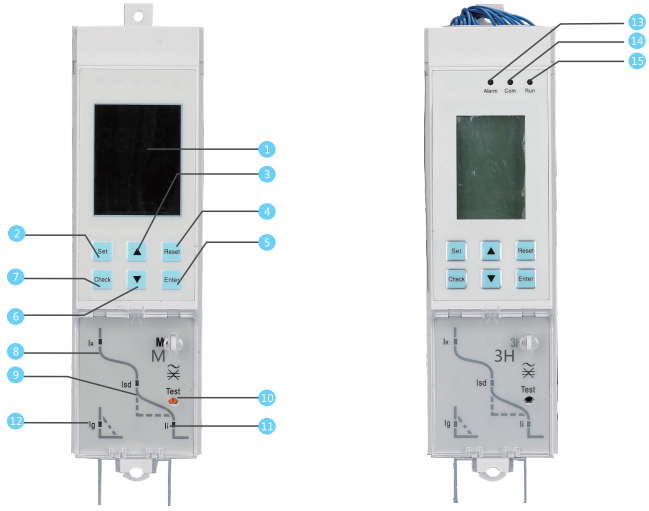
   b. Manual:
   Under-voltage instantaneous release;
   4 normal open and 4 normal close auxiliary contacts;
   M-type Intelligent Controller;
   Horizontal wiring of main circuit;
   Closing and breaking push button lock;
   Doorcase;
   Element of main circuit;
   Operating instructions of Air Circuit Breaker;
   Packing box;

4. NA1-1000X operational configuration (additional costs)
   Under voltage delayed release; wire-cable mechanical interlock;
   key lock; External current transformer earthing protection;
   Vertical busbar; 6 groups changeover contacts;
   H type intelligent controller; Phases barrier, position signal

12 Appendix

12.1. Intelligent controller and Protection Features

12.1.1 The user interface of M / H and 3M / 3H intelligent controller is shown in Figure 60



60-a M/H control　　60-b 3M/3H control

1. Display window
   Display current value, setting value, tripping time and so on
2. "Set"
   Switch to setting menu
3. "Up"
   Change the marquee or the selected parameter
4. "Return"
   Escape from this grade and return to upper menu or cancel the current selected parameter
5. "Enter"
   Enter into the next menu directed by the current item, or select current parameter and store modifications
6. "Down"
   Change the marquee or the selected parameter
7. "Check"
   Switch to query menu
8. "Ir" light
   Overload long delay fault indication
9. "Isd" light
   Short-circuit Short delay indication
10. "Test"
    Trip test button
11. "Ii" light
    Short-circuit instantaneous fault indication
12. "Ig" light
    Asymmetric earthing or neutral line fault indication
13. Alarm light
14. Communication light
15. Run light

Note: Method of 3M/3H controller application please refer to 3M/3H controller instruction.

Figure 60.User interface of M / H and 3M / 3H intelligent controller

12.1.2 The rated current range of frames and the minimum display current value of the controller are shown in Table 18 .

Table 18 Minimum display current of the controller

Frame	Rated current range	Minimum display current of the controller
1000	200-400	40
1000	630-1000	80
2000	630-2000	80
≥3200	≥2000	160

12.1.3 Controller functions are shown in Table 19 .

Table 19 List of controller functions

Model	M	3M	3H
Functions	1. Four-stage overcurrent protection (overload, short delay, instantaneous, and ground); grounding protection act as vector sum (T model);	1. Include the protection functions of all M control units; 2. Human-machine	1. Include the protection functions of all 3M control units; 2. Voltage measurement and

Continued table 19

	2. Neutral phase protection 3. Current measurement function 4. Two test functions: (1) Panel direct simulation of the instantaneous release test (2) Software simulation of three-stage test of overload, grounding and operation time; 5. Fault record function: record 10 faults; 6. Alarm record function: record 8 alarms; 7. MCR switching on and off function; 8. Record of the number of operations; 9. Thermal memory function; 10. Overload pre-alarm function	interface: 128X64 liquid crystal display 3. Alarm record function: record 10 alarms;	protection; 3. Frequency measurement and protection; 4. Power measurement and protection; 5. Electrical energy, power factor and harmonic measurement; 6. Communication function: MODBUS protocol; 7. DI/DO function (optional)

12.1.4 M controller symbols and description as shown in Table 20.

Table 20 M controller symbols and description

No.	Symbol	Description
1	Ir= tr=	Represent the long delay current set value and the long delay time set value respectively
2	Isd= tsd=	Represent the short delay current set value and the short delay time set value respectively
3	Ig= tg=	Represent the ground current set value and the ground time set value respectively
4	Ii=	Represents the instantaneous current set value
5	N=	Represents the neutral pole protection parameter set value
6	TM	Represents the software simulation release status
7	TRIP	Represents the trip status
8	RUN	Represents normal operation
9	SET	Thermal represents the settable status, and flash indicates that the data can be modified
10	LIN	Represents the data storage status
11	P┣0	Represents the four-stage current protection setting interface
12	ΓES	Represents the software simulation test release setting interface
13	RLR	Represents the alarm setting or query interface
14	SYS	Represents the system setting interface (can calibrate the current and set the system frequency)
15	DBS	Represents the communication setting interface (H model)
16	DOS	Represents the DO output setting interface (H model + DO function)
17	FRU	Represents the fault record query interface
18	COU	Represents the query interface of the number of operation and the life
19	HDΓ	Represents the heat capacity query interface
20	DOC	Represents the DO status query interface
21	H	Represents therma capacity data
22	F--	Represents the fault record number
23	R--	Represents the alarm record number
24	Lg L1 L2 L3 LN	Represents the ground, A, B, C, N phases respectively
25	L ↘	The four-stage current graph. The full display indicates normal. The corresponding section flashes after the fault release, and also flashes in the fault record area.
26	ALM	Alarm indication status

12.1.5 Intelligent controller Operation and Display Description

The status of the intelligent controller can be divided into default status, setting status, query status, and Intelligent status.

(1) Default status: The default status is the measurement status where all the fault indicators are off and the controller is in non-button operation state and shows the maximum current.

In the default status, if you press "▲" or "▼" button, the L1, L2, L3, (LN) and Lg current values are displayed cyclically. Figure 61is an example.

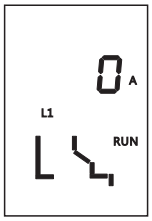


Figure 61.L1 phase current display interface

(2) Setting status: The setting status may be entered by pressing the "Set" button in the default interface. In the setting status, the current protection parameters may be queried and modified, the software simulation test release may be performed, and the overload pre-alarm, grounding alarm threshold and delay time be queried and set. In the setting status, the "SET" indicator lights up or flashes. When it flashes, data may be added or subtracted by pressing the "▲" or "▼" button. Press "ENTER" to store data. For examples, see Figure 62, Figure 63 and Figure 64.

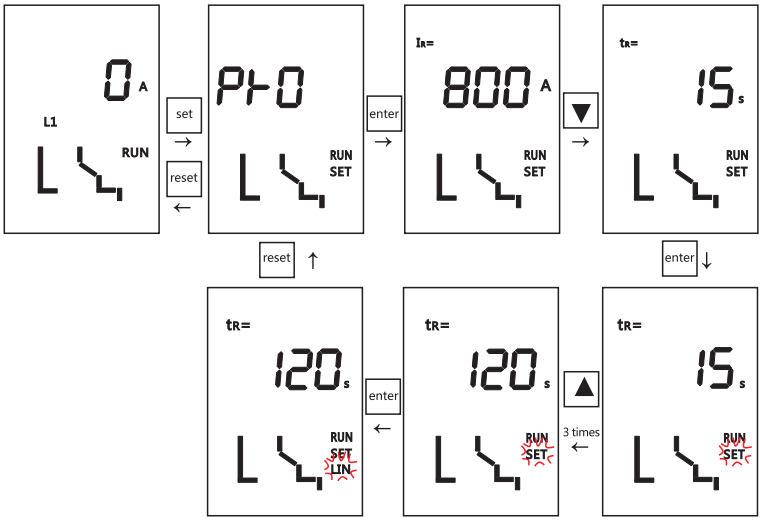


Figure 62.Modifying the long delay time value

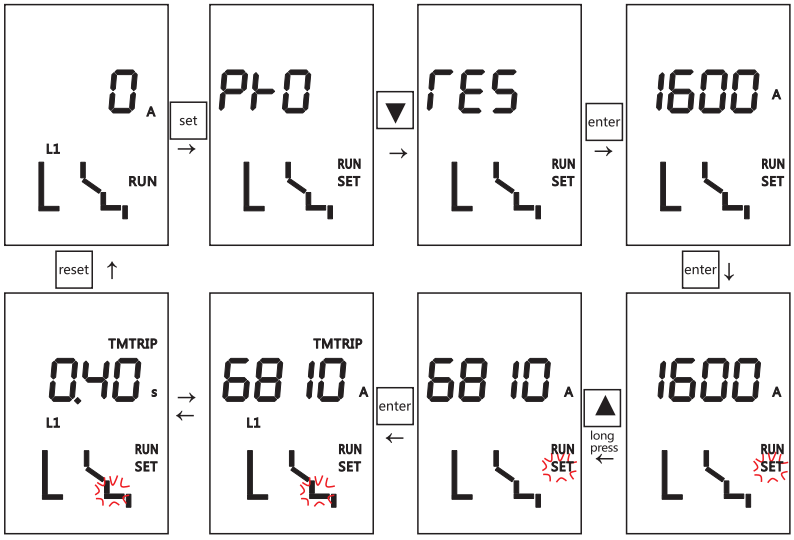


Figure 63.Software simulation short delay release test