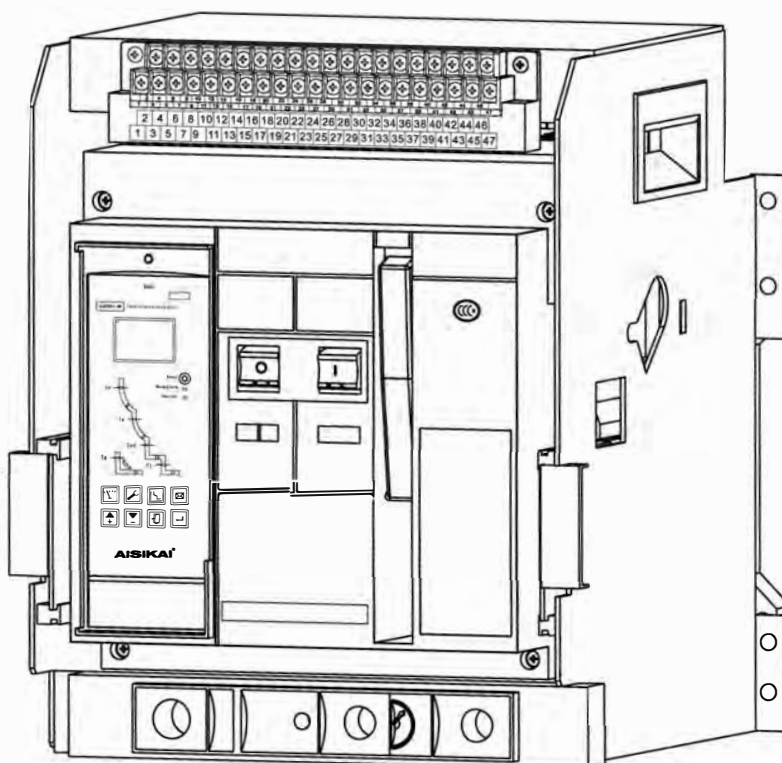


ASKW1 TYPE AIR CIRCUIT BREAKER

INSTRUCTIONS V2.5



UNIVERSAL CIRCUIT BREAKERS

1. Overview

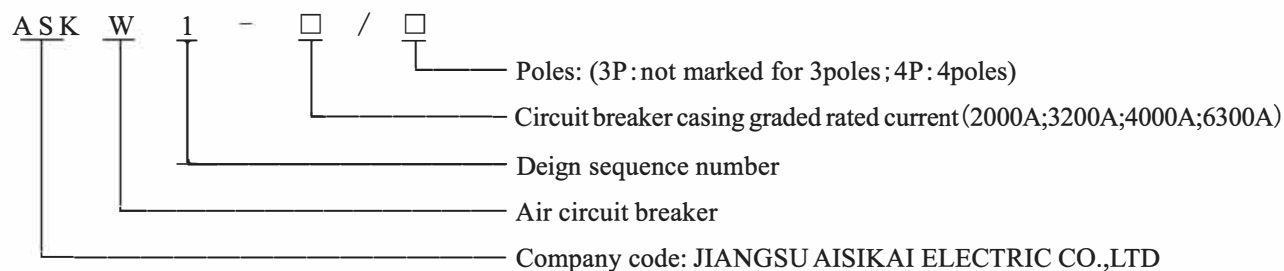
1.1 Use and applied range

ASKW1 series intelligent type universal circuit breaker(hereinafter referred to as “circuit breaker”) is suitable for AC50Hz , rated voltage up to 660V(690) and below, rated current 400A-6300A of the distribution network used to distribute power and protect circuits and power supply equipment against overload, under-voltage, short circuit, single-phase ground fault. Circuit breaker protection with intelligent, selective protection of precision, improve the reliability of power supply, avoid unnecessary power outages. At the same time with an open communication inter-face for four remote, meet the requirements of the system centers and automation systems. The circuit breaker at an altitude of 2000 meters pulse pressure 8000V (different altitude correction according to the standard, no more than 12000V). The circuit breaker without in Intelligent Release and sensor can be used for isolation, mark as $\frac{\quad}{\quad}$.

1.2 Standard

Circuit Breaker meets the requirement specified in GB14048.2 “low-voltage switchgear and control equipment low-voltage circuit breakers”and IEC947-2 “low-voltage switchgear and control equipment circuit breaker”.

2. Model and meaning



- Intelligent controller: H type(communication),M type(normal intelligent)

3. The normal working conditions and installment conditions

3.1 The temperature of air around: -5°C ~ $+40^{\circ}\text{C}$, the average value within 24h shall not exceed $+35^{\circ}\text{C}$;

Ps: when the working condition is in lower limit of -10°C or -25°C , users shall demonstrate to our factory.

When the upper limit is higher than $+40^{\circ}\text{C}$ or the lower limit is lower than -10°C or -25°C , users shall negotiate with our factory.

3.2 Altitude : $\leq 2000\text{m}$

3.3 Air Conditions: Mounting site, relative humidity not At exceed 50% at the max temperature of $+40^{\circ}\text{C}$, higher relative humidity is allowable under lower temperature, RH could be 90% at $+20^{\circ}\text{C}$,special measures should be taken to occurrence of dews. If it is over the regulation, then users shall negotiate with our factory.

3.4 Protection level: IP30

3.5 Use type: B

3.6 Installment type: Circuit breaker rated voltage $\leq 660\text{V}(690)$ and under-voltage release, primary coil of mains transformer are used for installment IV; Support circuit and control circuit are used for installment III.

3.7 Conditions of installment: Circuit breaker shall be installed as the instruction, the orthogonal rake of circuit breaker shall be no more than 5° (the orthogonal rake of mine circuit breaker shall be no more than 15°) .

4. Main technical parameters of circuit breaker

4. 1 Circuit Breaker Basic Parameter in table 1

Table 1

Model	Shell grade rated current Inm A	Rated current In A	Rated impulse withstand voltage Uimp kV	Rated voltage Ue V	Rated limit short circuit breaking capacity Icu kA 0-∞s		Rated operating short circuit breaking capacity Ics kA 0-∞s		Rated short time withstand current Icw kA (1s) delay 0.4s 0-∞s		Power loss (In) W	
					400V	690V	400V	690V	400V	690V	Fixed	Drawer
ASKW1-2000	2000	630	12	AC 50Hz /60Hz 400V 690V	85	55	65	55	65	55	40	80
		800									60	130
		1000									90	205
		1250									90	205
		1600									140	310
		2000									170	310
ASKW1-3200	3200	2000			100	70	80	70	80	70	170	400
		2500									260	510
		2900									320	650
		3200									420	760
ASKW1-4000	4000	3200			100	70	80	70	80	70	430	780
		3600									440	790
		4000									450	800
ASKW1-6300	6300	4000			120	120	100	100	100	100	1225	
		5000									1250	
		6300									1625	

1. Arc distance is zero. 2. In this form, the breaking capacity is same for upper in or lower in.

4. 2 The derating of circuit breaker at different temperature in table 2

Table 2

Allowed continuous working current		Ambient temperature					
		+40℃	+45℃	+50℃	+55℃	+60℃	+65℃
Applicable standards GB/T 14048.2 IEC/EN 60947-2	ASKW1-2000	630	630	630	630	610	610
		800	800	800	800	800	800
		1000	1000	1000	1000	1000	1000
		1250	1250	1250	1200	1150	1150
		1600	1600	1500	1500	1300	1300
		2000	1900	1900	1800	1700	1650
	ASKW1-3200、 ASKW1-4000	2000	2000	2000	2000	2000	2000
		2500	2400	2300	2200	2200	2200
		3200	3000	3000	2800	2800	2600
		4000	3800	3600	3400	3200	3200
	ASKW1-6300	4000	4000	4000	4000	4000	4000
		5000	5000	5000	4800	4800	4800
		6300	6000	5600	5400	5200	5100

4. 3 The derating of circuit breaker at different altitude in table 3, 4

When the altitude is higher than 2000m, the insulation characteristic, cooling characteristic, pressure etc. In atmosphere will change, the performance can be revised according to the form below:

a. Voltage

Table 3

Altitude(m)	Power frequency withstand voltage(V)	Insulation voltage(V)	Rated working voltage(V)
2000	2200	1000	690
3000	1955	800	580
4000	1760	700	500
5000	1600	600	400

b. Current

Table 4

Altitude(m)	2000	2500	3000	3500	4000	4500	5000
Rated working current(Ie)	Ie	0.93Ie	0.88Ie	0.83Ie	0.78Ie	0.73Ie	Must contact the manufacturer

5. Circuit breaker structure introduction

5.1 Overview of structure

Fixed type circuit breaker is consisted of contact system , intelligent controller, manual operating mechanism, electrical operating mechanism and mounting plate.

Drawout type circuit break is consisted of contact system , intelligent controller, manual operating mechanism, electrical operating mechanism and drawer chassis.

The circuit breaker is in 3D arrangement, with compact structure and small volume. The contact system is en-closed in the insulating base plate; each contact is separated by insulating plate to form small chambers. The intelligent controller, manual operating mechanism and electrical operating mechanism are queued in the front in order to constitute respective independent units. If one unit is broken, then we can tear down it and replace with new one.

Drawout type circuit breaker is consisted of inserted circuit breaker and drawer chassis. The track inside of drawer chassis can be draw-in and out. The inserted circuit breaker is located in the in and out drawer of track, and is connected to the main circuit through busbar of inserted circuit breaker and bridge-type contact of drawer chassis.

There are three working positions of drawout type circuit breaker: link position, test position and separation position. The positions are changed through rotating the handler in or out. The three positions are indicated by the pointer on the beam of drawer bed.

When in link position, the main circuit and secondary circuit are all switched on; when in test position, the main circuit is switched off and separated by insulating board, and only the secondary circuit is switched on to do some necessary tests; when in separation position, both main circuit and secondary circuit are switched off. The drawout type circuit breaker is with mechanical interlock, only if it is in link position or test position, the circuit breaker can be closed, and the circuit breaker in the middle of link and test position cannot be closed.

5.2 Front view of circuit breaker in Figure 1

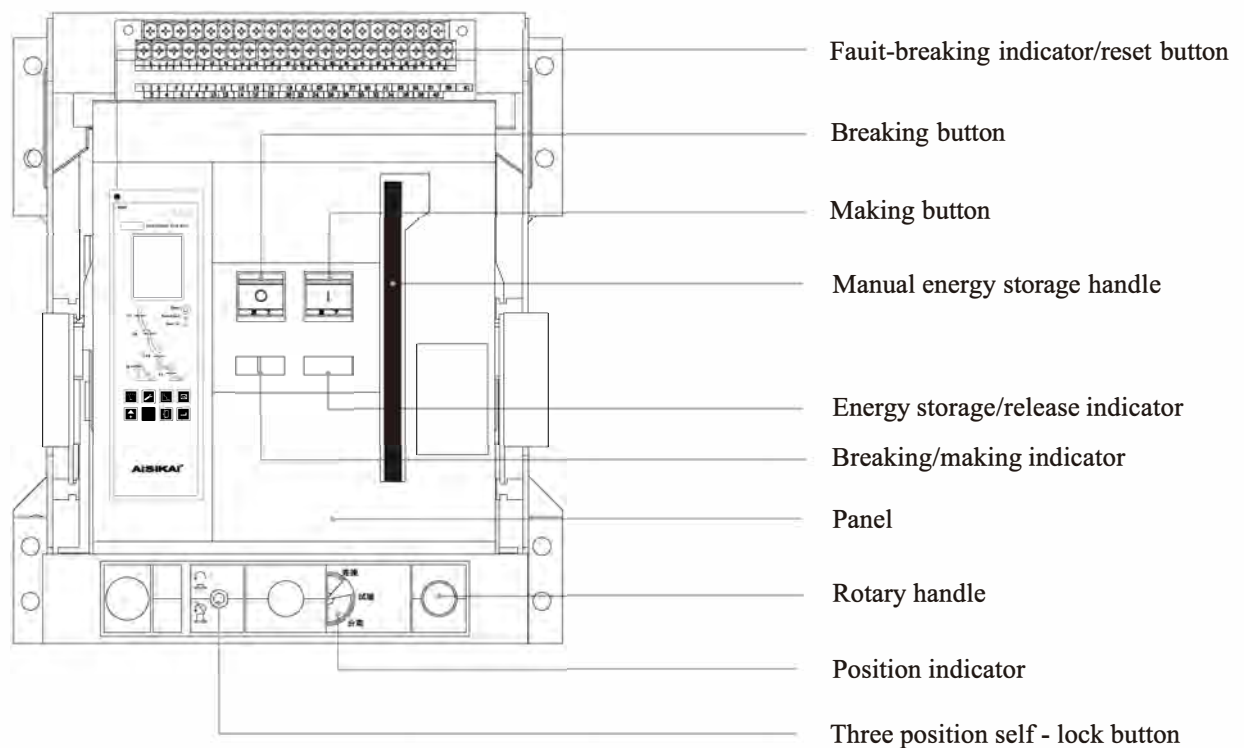


Figure 1

6. Controller panel structure and setting method

6.1 Controller panel structure in Figure 2, 3

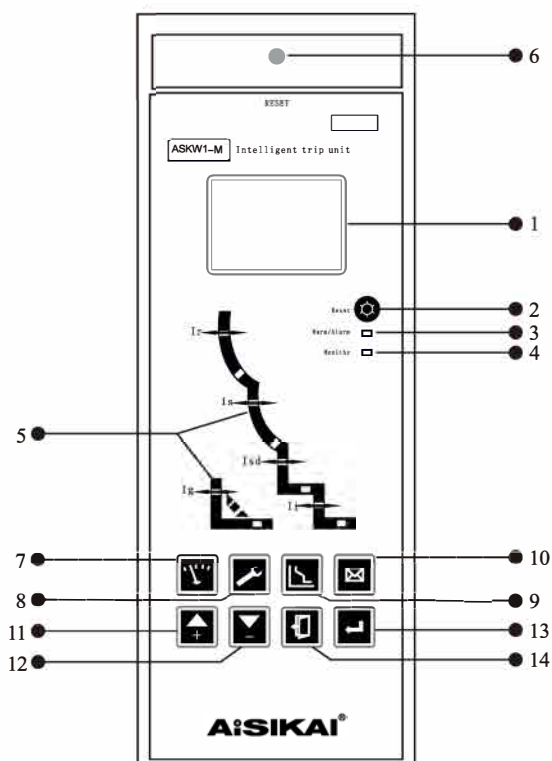


Figure 2 M-type controller

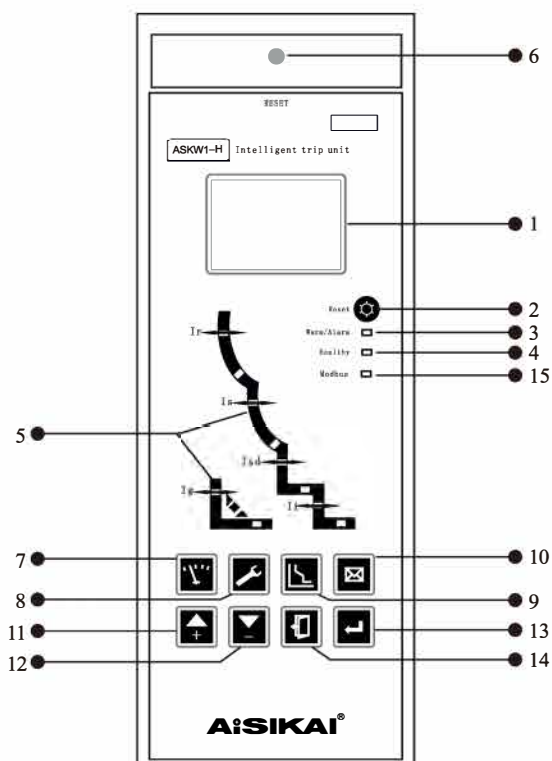


Figure 2 H-type controller

1.LCD interface display.

2.Fault and alarm reset key

3."Fault/Alarm" LED. When working normally, the LED does not light up; when the fault trips, the red LED will flash quickly; when the alarm occurs, the red LED will always light up.

4."Normal" LED always flickers as long as the controller is on and working properly.

5.Curve LED.

A red LED indicator is hidden in the curve, and the corresponding LED flashing indicates the fault type when the fault occurs. When setting the protection parameters, the LED constant brightness indicates the currently set items.

6.Reset button.

This button pops up when the fault trips or the test trips, and the circuit breaker cannot close when it is not pressed.

When the button is pressed, the fault indication is reset at the same time.

7. Measure - Function Key 1, switch to Measure Default Theme Menu.

8. Setting - Function Key 2, switch to the theme menu of parameter setting.

9. Protection - Function Key 3, switch to the theme menu of protection parameter setting.

10. Information - Function Key 4, Switch to History and Maintenance Subject Menu

11.Up - Move the menu content up at the current level or change the selected parameters up.

12. Downward - Move the menu content downward at the current level or change the selected parameters downward.

13. Exit - Exit the current level of use, enter the menu of the next level, or cancel the selection of the current parameters.

14.Selection - Enter the next menu to which the current project points; or select the current parameters; store the changes made.

15. Communication Indicator - Modbus: No communication when extinguished, communication when flashing. (Only H type has this function)

7. Secondary circuit wiring diagram in figure 4,5,6,7

7.1 M type controller basic function circuit diagram 【auxiliary switch: (standard: 4 sets of combined contacts, 36~47)】

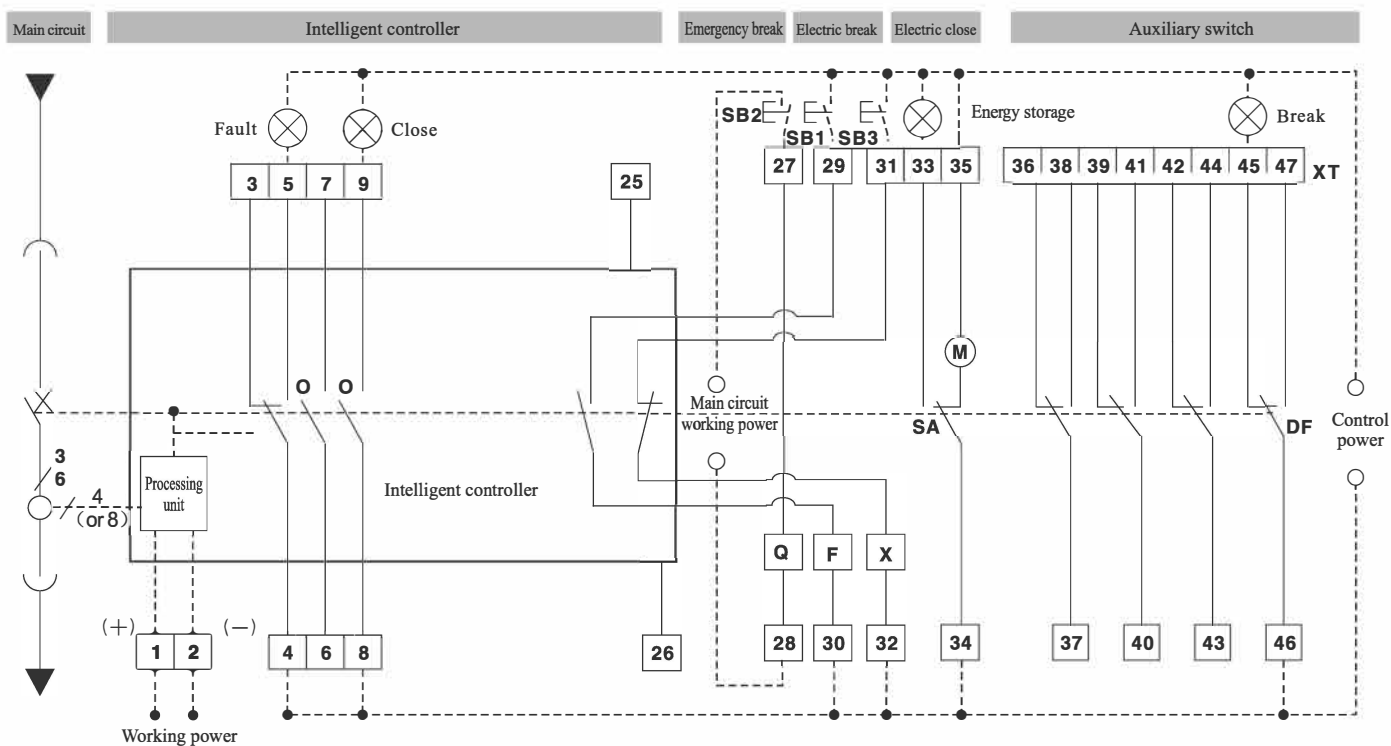


Figure 4

7.2 M type controller basic function circuit diagram (auxiliary switch: 6 sets of combined contacts, 36~53)

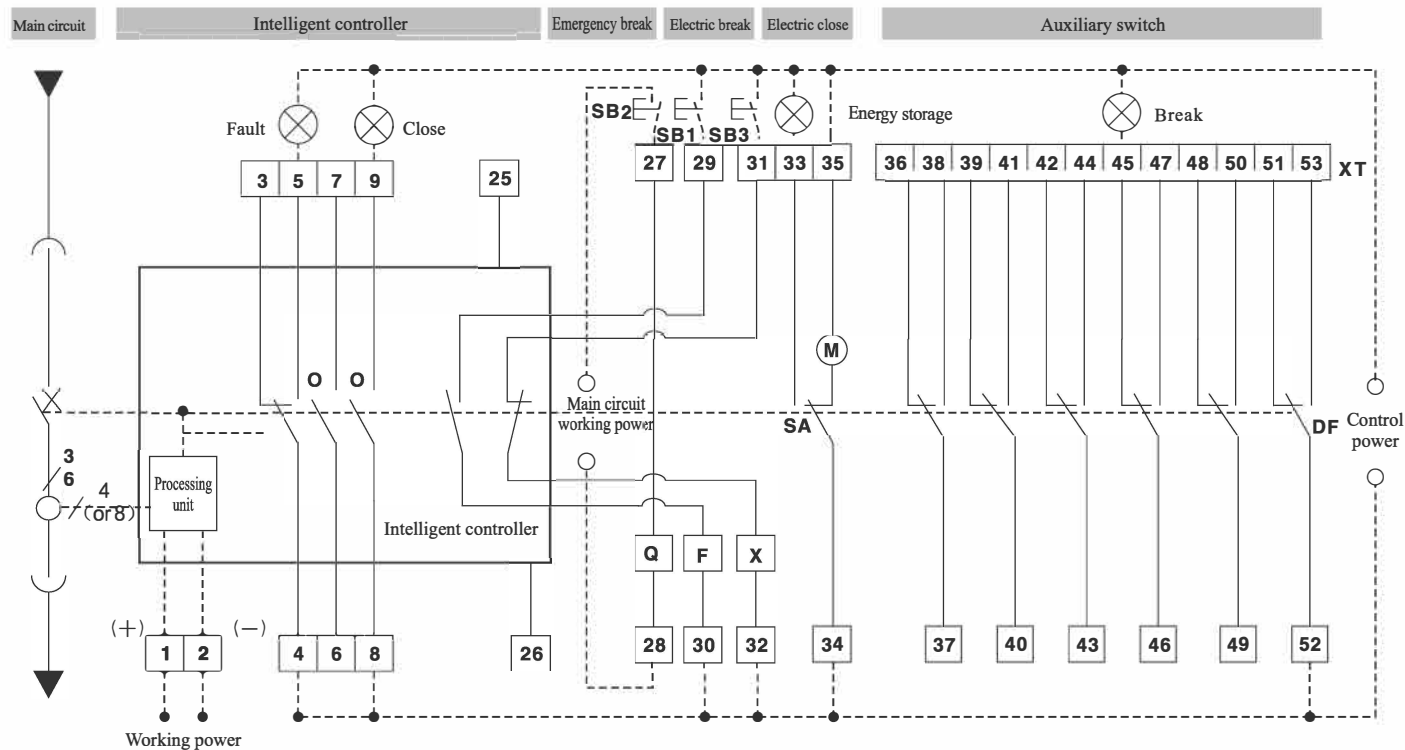


Figure 5

Intelligent controller wiring instructions

1#, 2#: Auxiliary power supply input. When using DC auxiliary power, 1# is positive

3#,4#,5#: Fault trip contact input. Contact capacity is AC380V 3A

6#,7#,8#,9#: 2 pairs of circuit breaker status auxiliary contacts. Contact capacity is AC380V 3A. 6#, 7# can output normally close contact according to customer need.

25#, 26#: Externally connect with neutral pole or grounded current transformer input

21#: N phase input;

22#, 23#, 24#: A, B, C three phases power supply input(voltmeter function need to be connected)

SB1: Shunt button (provide by user)

X: Closing electromagnetic

Q: Under-voltage trip or under-voltage delay trip

SB2: Under-voltage button(provide by user)

M: Energy storage motor

DF: Auxiliary contact

SB3: Closing button(provide by user)

F: Shunt trip

XT: Wiring terminal

O: Normally open contact

SA: Motor microswitch

⊗ :Signal lamp(provide by user)

Note: (1) If control voltage of Q,F,X,M are different from each other, they should be connected to different power supplies.

(2) Terminal #35 can be directly connected to power (automatic pre-storing energy). Alternatively, connect terminal #35 with normally open button before connecting with power (manual-controlled pre-storing energy).

(3) In this figure, circuit breaker is in the opening, not energy storing state, and the body is in connect position.

7.3 M type controller basic function circuit diagram (auxiliary switch: 4 normally open ,4 normally close, 8 independent contacts, 36~51)

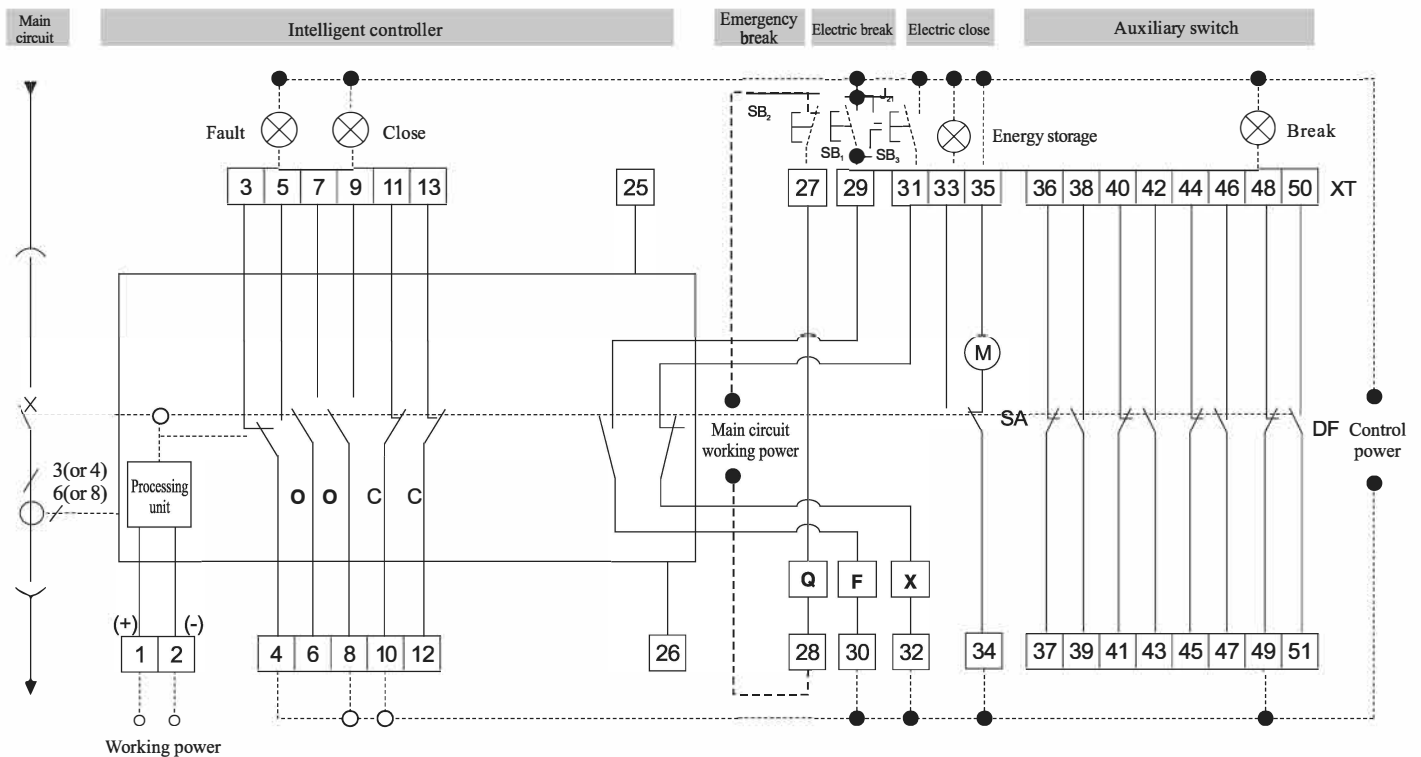


Figure 6

Intelligent controller wiring instructions

1#, 2#: Auxiliary power supply input. When using DC auxiliary power, 1# is positive

3#,4#,5#: Fault trip contact input. Contact capacity is AC380V 3A

6#,7#,8#,9#: 2 pairs of circuit breaker status auxiliary contacts. Contact capacity is AC380V 3A. 6#, 7# can output normally close contact according to customer need.

25#, 26#: Externally connect with neutral pole or grounded current transformer input

21#: N phase input;

22#, 23#, 24#: A, B, C three phases power supply input(voltmeter function need to be connected)

SB1: Shunt button (provide by user)

X: Closing electromagnetic

Q: Under-voltage trip or under-voltage delay trip

SB2: Under-voltage button(provide by user)

M: Energy storage motor

DF: Auxiliary contact

SB3: Closing button(provide by user)

F: Shunt trip

XT: Wiring terminal

O: Normally open contact

SA: Motor microswitch

⊗ :Signal lamp(provide by user)

Note: (1) If control voltage of Q,F,X,M are different from each other, they should be connected to different power supplies.

(2) Terminal #35 can be directly connected to power (automatic pre-storing energy). Alternatively, connect terminal #35 with normally open button before connecting with power (manual-controlled pre-storing energy).

(3) In this figure, circuit breaker is in the opening, not energy storing state, and the body is in connect position.

7.4 H type controller circuit diagram (optional: power module, relay module)

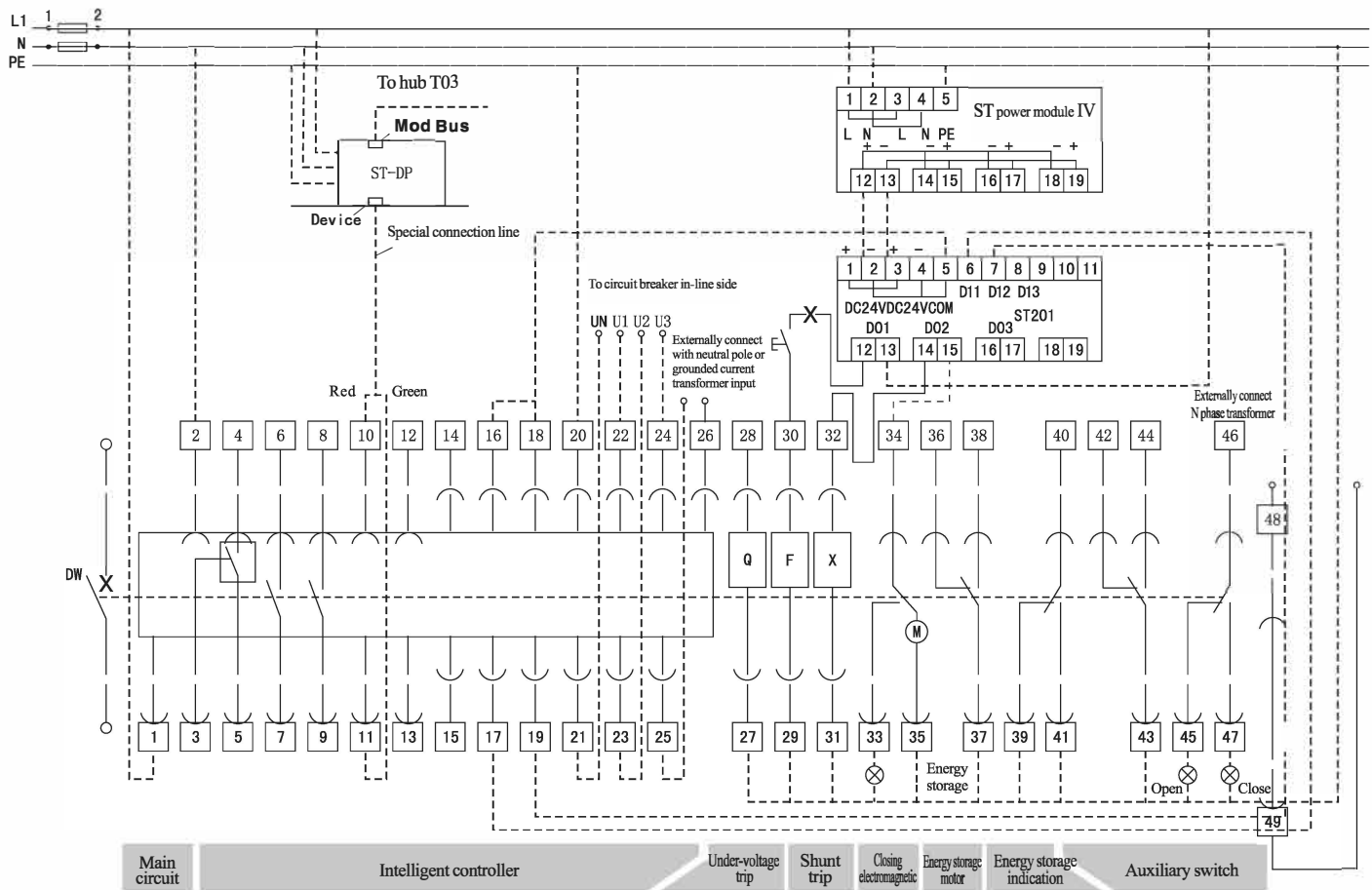


Figure 7

1#,2#: power supply input

10#: RS485 communication P terminal(single 2)

11#: RS485 communication N terminal(single 2)

12#,13#: load 1 alarm

14#,15#: load 2 alarm

16#,17#: opening signal output

18#,19#: closing signal output

20#: PE line

22#,23#,24#: A,B,C three phases power supply input terminal

ST power module IV: power module(optional part, not mandatory)

ST201: relay module(optional part, not mandatory)

Note: (1)The dotted lines are connected by the user.

(2)Refer to the figure above for the wiring of trips with auxiliary functions

(3) In this figure, circuit breaker is in the opening, energy not stored state, and the body is in connect position.