AOERMAN

A u t o m a t i c T r a n s f e r S w i t c h

AOERMAN
SHANGHAI AOERMAN ELECTRIC CO.,LTD.
ADD.: No. 38 Antai Road, Ping'an Town,
Fengxian District, Shanghai
Sales HQ.: No. 1148-402Gonghexinlu Road,
Shanghai
TEL：021-66543009 P.C：200070
http://www.aoao.com.cn
http://www.aoerman.com

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AMQ2 Series
Automatic Transfer Switch



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Taking members as the foundation of enterprises
Seeking practice and innovation

Ten years' experience has created aoerman fighting spirits for refinements
Ten years' insistence has achieved aoerman service thought for perfection.

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Company Profile

Shanghai Aoerman Electric Co., Ltd. stands out among others in the fierce market competition attribute to its concepts of revitalizing national industry as its own duty, keeping pace with the times, strengthening corporate brand by modern science and technology, winning the market by quality, meeting and maintaining the interests of consumers. In this way, we have gone through difficult and brilliant years in our indomitable struggle.

With the strategic principle of creating excellence with good quality, the company specialized in the production of ATS series, MCCB series, alarm and control system for electric fire prevention, and other low-voltage electrical products of various specifications, enough to meet the changing needs of the domestic and foreign markets.

The company has strong technical force, advanced equipment and sufficient funds. The company also attaches great importance to investment in scientific research and technological innovation. It adopts computer optimization design to speed up product development and quality improvement. With the continuous improvement of product quality, we will further expand the domestic and foreign markets by virtue of high quality, integrity management and excellent after-sales service.

The company is willing to closely cooperate with the majority of customers to create a brilliant future.

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AMQ2

Automatic Transfer Switch

Overview

As the society advances, safety of power supply has become the increasing need of people. Many occasions require two circuits of power supply to guarantee reliable power supply, which demands a product that makes reliable switching between two circuits of power supply. AMQ2 series automatic transfer switch is developed as the times require. It has two switching functions of auto-input auto-restoring and auto-input non-restoring, and is featured with novel design, perfect performance, safety, reliability, high degree of automation, wide service range, etc.

Scope of Application

AMQ2 series automatic transfer switching equipment (hereinafter referred to as switching equipment) is developed by our company adopting the latest technology, suitable for dual power supply system of AC50/60Hz, rated working voltage 380V and rated current 6A-1250A. When the normal powerfails, the switching equipment will transfer to reserve power or generator automatically to guarantee the reliability and safety of power supply. It also can make selective switching between the two lines of power supply according to the demand of loads. The product is featured with protection functions of overload, undervoltage, short-circuit, loss of phase, etc., especially suitable for the important locations where the power failure is not allowed like firefighting, airport, TV station, hospital, emporium, bank, chemical engineering, metallurgy, high-rise building, military facility and so on, to act as an important electric device to guarantee uninterrupted power supply.

Up to the Standards

IEC60947-6-1

Normal Service Conditions

Ambient air temperature should be within -5℃~+40℃, average temperature within 24h should not exceed +35℃.

Altitude of installation site should not exceed 2000m.

Relative humidity should not exceed 50% at +40℃, higher relative humidity is allowed at lower temperature condition. The average maximum relative humidity of the dampest month is 90% when the monthly average minimum temperature is 25℃. The dew on the product surface caused by the temperature change should be considered.

Class of pollution: III.

The operating site should be no strong vibration or impact, no corrosive or other harmful gas that would destroy the insulation, no heavy dust, conductive particle or explosive hazard or strong electromagnetic interference.

Model Definition

AM Q 2 - □ /□ □□□□□

- X: Fire control Y: Remote disconnection W: Passive contact OA: alarm
- R: Auto-input auto-restoring S: Auto-input non-restoring
- Intelligent type: A: grid - grid B: grid - generators
  T: terminal type
  End type: C, E, D, grid - grid (integrated type auto-input auto-restoring)
- Y: Integrated switching equipment
  F: split type switching equipment
- 3: 3-pole
  4: 4-pole
- Rated current
- Frame current
- Design No.
- Automatic transfer switch
- Enterprise code

Note: types C, E, D and W provide integrated auto-input auto-restoring only, types C and E have no fire protection, remote disconnection or passive contact.

Product Features

Adoption of high-performance singlechip program control, large screen backlight LCD display;
Strong immunity from interference, high accuracy;
Complete protective functions against overload, undervoltage, short-circuit or open-phase, it also has fault alarm function;
Start the generator automatically to finish four-pole switching;
Adjustable switching time delay, accurate operating time;
EPS fire-fighting power supply of DC24V, remote breaking, passive contact;
Small size, high breaking, short flashover, compact structure, elegant appearance;
Good anti-corrosive property, reliable power supply;
No-noise running, energy saving, simple installation, easy operation and high stability.

Characteristics

The controller carries out online detection to each phase voltage of two circuits of power supply at the same time, when the source voltage is lower than 70-80% of rated voltage, the controller will make a judgment through comparison, send the detection result to the controller panel to display by LCD directly, andgiveswitching command to the electric operating mechanismafter a time delay.

For auto-input auto-restoring switching equipment, see table 1 for its functions:in automatic control state, the power is supplied by normal power under normal power supply condition, when the normal power comes across abnormal phenomenon (any phase is undervoltage or loss of phase, detect one phase only for terminal and end type), it will transfer to the reserve power automatically after a certain time delay; when the normal power returns to regular, it will return to the normal power and supply power automatically after a certain time delay; if there is something wrong with the power supply (with controller that is equipped with alarm function), the controller will give an alarm to remind the operator to repair it in time, to guarantee long-term hot standby state of power supply, the alarm sound can be turned off by pushing the key “breaking” in the control mode.

Table 1 Control functions of auto-input auto-restoring switching equipment

Normal power	Reserve power	Control function
Normal	Normal	Power supplied by the normal power: QR is switched off, QN is switched on
Abnormal	Normal	QN is switched off after delay, QR is switched on, power supplied by the reserve power.
Return to normal	Normal	QR is switched off after delay,QN is switched on, it returns to the normal power supply.

Note: QN – circuit breaker for controlling the normal power.
QR – circuit breaker for controlling the reserve power.
Time delay of switching operation (0~30s,set at 3s if there is no special requirements).
Time delay of restoring operation (0~30s,set at 3s if there is no special requirements).

For auto-input non-restoring switching equipment, see table 2 for its functions: in automatic control state,it will transfer to the reserve power automatically after time delay when there is something wrong with the normal power, and will not switch back when the normal power returns to regular until the reserve power is failed, then it will switch back to the normal power after time delay.

Table 2 Control functions of auto-input non-restoring switching equipment

Normal power	Reserve power	Control function
Normal	Normal	Power supplied by the normal power: QR is switched off, QN is switched on
Abnormal	Normal	QN is switched off after delay, QR is switched on, power supplied by the reserve power.
Return to normal	Normal	Still supplied by the reserve power.
Normal	Abnormal	QR is switched off after delay, QN is switched on. Power supplied by the normal power.

Note: QN – circuit breaker for controlling the normal power.
QR – circuit breaker for controlling the reserve power.
Time delay of switching operation (0~30s,set at 3s if there is no special requirements).
Time delay of restoring operation (0~30s,set at 3s if there is no special requirements).

The switching equipment is mostly applied to switching two circuits power supply of power grid, also used to switch between power grid and generator. In motor-generator power system, generally, the generator is used as reserve power, other control function as shown in table 3; when the normal power fails, the generator will be started up automatically and the system will switch to generator set for power supply once the generating voltage reaches normal range (above 80% rated voltage). When the grid voltage returns to normal (above 80% rated voltage), the system will switch back to normal power for power supply again after time delay.

Table 3 Control functions of power grid – generator automatic switching equipment

Power supply of power grid	Generating power supply	Control function
Normal	Normal	Power supplied by the power grid: QR is switched off, QN is switched on
Abnormal	Normal	Generating set generates electricity.
Abnormal	Normal electricity generation	When the generating voltage reaches 80% and above of rated voltage, the generating set begins to supply power.
Return to normal	Electricity generation	QN is switched on after time delay, and returns to the power supply by the grid.

Note: QN - circuit breaker for controlling the power supply of power grid.
QR – circuit breaker for controlling the power supply of generator.
Time delay of switching operation (0~30s,set at 15s if there is no special requirements).
Time delay of restoring operation (0~30s,set at 3s if there is no special requirements).

If the load circuit comes across overload or short circuit, the circuit breaker of switching equipment will trip automatically to cut off the load power. After the fault is removed, press the key “manual” to carry out retrip to the circuit breaker, and then press the “manual” again or “automatic”, only after that, the switching equipment would supply power to the loads (it is suggested to set the control mode of the controller in the working state of "automatic" - "normal power" - "auto-restoring").

End type: the automatic controller monitors the normal power and reserve power at any time. When the normal power fails (the end type detects only one phase), it switches the load from the normal power to the reserve power within a preset time, and switches the load back to the normal power when the normal power returns to regular, it is called auto-input auto-restoring. When the normal power has a voltage loss, the circuit breaker of normal power will be switched off after time delay and that of reserve power will be switched on, and the green indicator of reserve power goes on. When the normal power returns to normal, the circuit breaker of reserve power will be switched off after time delay and restores the normal power supply, and the green indicator of normal power goes on. It is mainly applied to the end stage of distribution line, for fire control, fan, emergency lighting, water supply, etc. Products of 63A adopt miniature circuit breaker, especially suitable for lighting and small motor control equipment. Note: (YE, YD and YW have no delay function).

Structure and Working Principle

The switching equipment is composed of three-pole or four-pole circuit breaker used as main switch and electric operating mechanism with mechanical interlocking;

One set of intelligent automatic switching controller: with functions of time-delay closing, under-voltage or open-phase protection, it is able to realize automatic switching and selective switching.

One set of unique mechanical interlocking mechanism guarantees that two circuit breakers will not be switched in at the same time during switching;

One group of electric operating mechanism: used to realize automatic closing and opening of circuit breaker. It adopts the latest electric operating mechanism, with features of stable and reliable operation, small operation force, etc.

Mounting base plate: for integrated switching equipment, the mechanical interlocking mechanism and controller are all installed on the same base plate. For the separated switching equipment, the controller is separated from the base plate, and they are connected by connector, its special cable length is 2m; for the box type, the base plate of separated switching equipment is mounted in the box, and the controller is installed on the door of box body, combine into a complete set of equipment.

N - normal power; R - reserve power; QN - circuit breaker of normal power; QR - circuit breaker of reserve power.

When selecting the manual state, it is able to control “ON” and “OFF” of two circuit breakers manually, in this case, the automatic transfer function is not available.

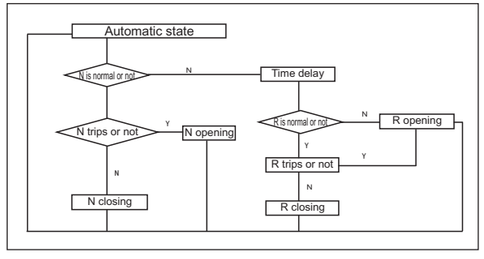
When selecting the automatic state, it enters automatic control state according to serving power of the time.

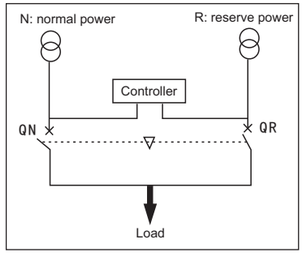
When selecting the breaking state, both two circuit breakers can be switched off.

When selecting handle pulling, just press breaking key on the controller panel to cut off the power supply. Now pull the handle to set the two circuit breakers to “ON” or “OFF”.

When selecting handle pulling for end type, just press the convex manual/automatic key to manual position. Now pull the handle to set the two circuit breakers to “ON” or “OFF”.

Principe operation block diagram of the switching equipment as follows.





Controller function table

Function \ Type	Intelligent type			End type			
	A	B	T	C	E	D	W
Manual automatic transfer	■	■	■	■	■	■	■
Auto-input auto-restoring	■	■	■	■	■	■	■
Auto-input non-restoring	■	■	■				
No-voltage transfer	■	■	■	■	■	■	■
Open-phase transfer	■	■					
Undervoltage transfer	■	■					
Time delay transfer	■	■	■	■			
Grid-grid	■	■	■	■	■	■	■
Grid-generator		■					
Fire control DC24V	■	■	■			■	■
Remote disconnection	■	■	■			■	
Passive contact	■	■	■			■	
Display function	■	■	■				
Command reset	■	■	■				
Controller structure — Integrated type	■	■	■	■	■	■	■
Controller structure — Split type	■	■					
Operating voltage and frequency of controller	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz

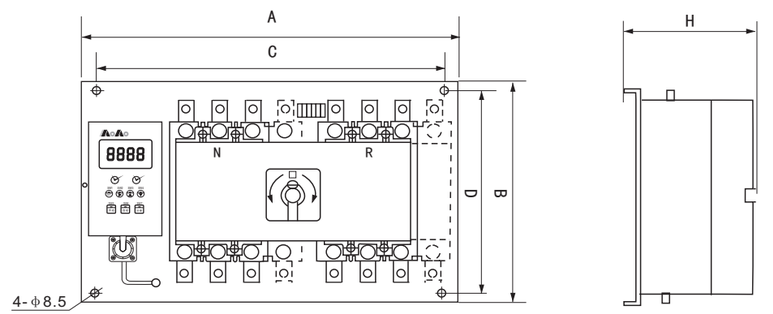
Main electrical and mechanical performances

Technical parameters \ Spec. & Model	AMQ2-63W	AMQ2-63	AMQ2-100	AMQ2-160	AMQ2-225	AMQ2-400	AMQ2-630	AMQ2-800	AMQ2-1250
Executive circuit breaker	DZ47	AMCM1	AMCM1	AMCM1	AMCM1	AMCM1	AMCM1	AMCM2	AMCM2
Frame current (A)	63	63	100	160	225	400	630	800	1250
Rated current (A)	1-63	6-63	10-100	100-160	100-225	225-400	400-630	630-800	800-1250
Rated operating voltage (V)	380V	380V	380V	380V	380V	380V	380V	380V	380V
Switch pole number	2P 3P 4P	2P 3P 4P	2P 3P 4P	2P 3P 4P	2P 3P 4P	3P 4P	3P 4P	3P 4P	3P 4P
Minimum switching time (S)	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S	1-3. 5S
Switching time	1-60S	1-60S	1-60S	1-60S	1-60S	1-60S	1-60S	1-60S	1-60S
Auxiliary contact capacity	220V/5A	220V/5A	220V/5A	220V/5A	220V/5A	220V/6A	220V/6A	220V/6A	220V/6A
ATSE level With short-circuit overload protection	CB	CB	CB	CB	CB	CB	CB	CB	CB
ATSE level Without short-circuit overload protection	PC	PC	PC	PC	PC	PC	PC	PC	PC
Use category	AC-33iB	AC-33iB	AC-33iB	AC-33iB	AC-33iB	AC-33iB	AC-33iB	AC-33iB	AC-33iB
Rated short-circuit breaking capacity(KA)	5	18	18	20	20	30	30	30	30
Structure of switching equipment	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type	Integrated type / Split type
Mechanical life (times)	5000	5000	5000	5000	5000	5000	5000	5000	5000

Product specification

specification	Executive circuit breaker	Frame current (A)	Rated operating voltage (V)	Rated current of circuit breaker (A)	Controller type
AMQ2-63W	DZ47	63	380	1~63	A、B、T、C、E、D、W
AMQ2-63	AMCM1	63	380	（6）、10、16、20、25、32、40、50、63	A、B、C、E
AMQ2-100		100	380	（10）、16、20、25、32、40、50、63、80、100	A、B、C、E
AMQ2-160		160	380	100、125、140、160、	A、B、C、E
AMQ2-225		225	380	100、125、140、160、180、200、225	A、B、C、E
AMQ2-400		400	380	225、250、315、350 400	A、B、C、E
AMQ2-630		630	380	400、500、630	A、B、C、E
AMQ2-800	AMCM2	800	380	630、700、800	A、B、C、E
AMQ2-1250		1250	380	800、1000、1250	A、B、C、E

Outline and installation dimensions



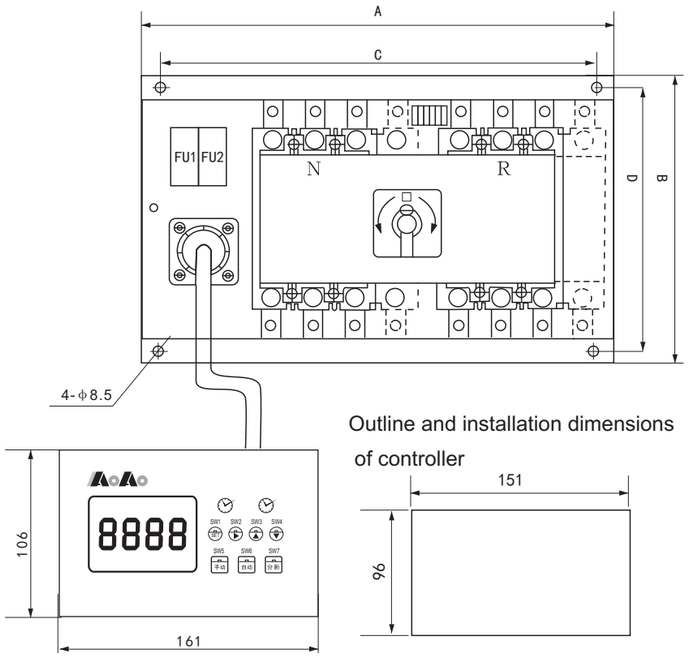
Integrated type(YA/YB 63-1250A)

unit:mm

Spec. \ Size	A（L）3P/4P	B（W）	C（L）3P/4P	D（W）	H（H）3P/4P
AMQ2-63W	410/410	210	380/380	180	120/120
AMQ2-63W/Y1	380/380	210	350/350	180	120/120
AMQ2-63	430/450	220	400/420	190	125/135
AMQ2-100	440/470	220	410/440	190	120/135
AMQ2-160	480/520	240	450/490	210	140/160
AMQ2-225	480/520	240	450/490	210	140/160
AMQ2-400	620/670	300	590/640	270	240/240
AMQ2-630	660/800	300	630/770	270	240/250
AMQ2-800	680/840	300	650/810	270	240/240
AMQ2-1250	770/840	370	740/810	340	320/320

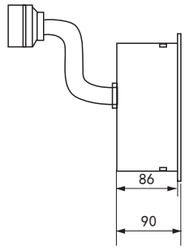
Note: 3-pole M and H-type circuit breakers shall have the same height and size as 4-pole.

Outline and installation dimensions



Overall dimension of controller

Mounting hole size of controller 151×96mm



Controller height

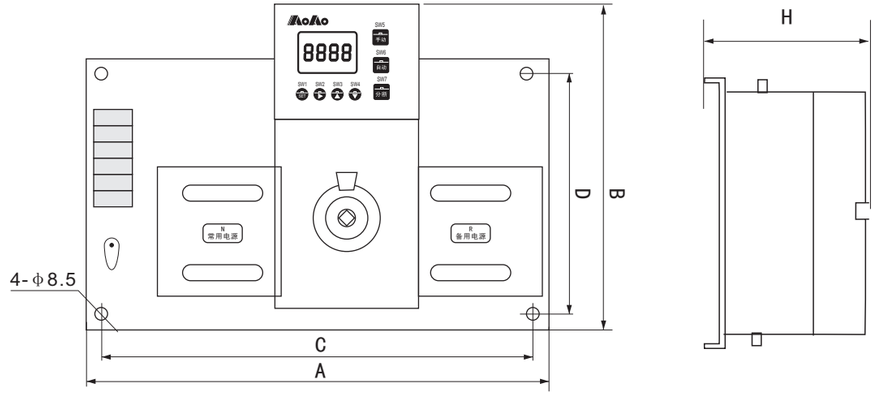
Outline and installation dimensions of controller

Split type(FA/FB 63-1250A)

Spec. \ Size	A（L）3P/4P	B（W）	C（L）3P/4P	D（W）	H（H）3P/4P
AMQ2-63W	350/350	200	320/320	170	125/125
AMQ2-63W F1	320/320	200	290/290	170	125/125
AMQ2-63	370/390	210	340/360	180	130/140
AMQ2-100	380/410	210	350/380	180	125/140
AMQ2-160	420/470	230	390/440	200	145/165
AMQ2-225	420/470	230	390/440	200	145/165
AMQ2-400	570/620	300	540/590	270	240/240
AMQ2-630	610/750	300	580/720	270	240/250
AMQ2-800	630/790	300	600/760	270	240/240
AMQ2-1250	720/790	370	690/760	340	320/320

Note: 3-pole M and H-type circuit breakers shall have the same height and size as 4-pole.

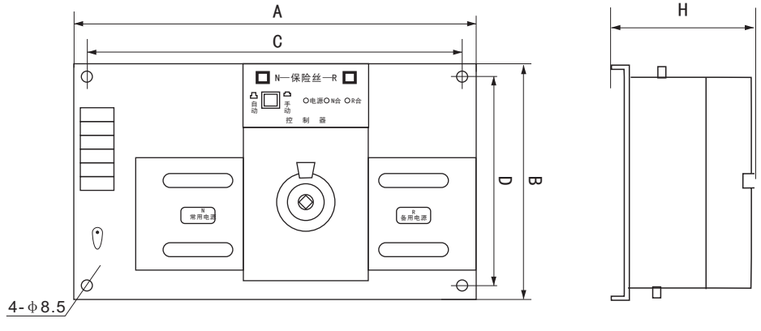
Outline and installation dimensions



Integrated type(YT 63A)

unit:mm

Spec. \ Size	A（L）3P/4P	B（W）	C（L）3P/4P	D（W）	H（H）3P/4P
AMQ2-63W	330/330	220	300/300	170	120/120

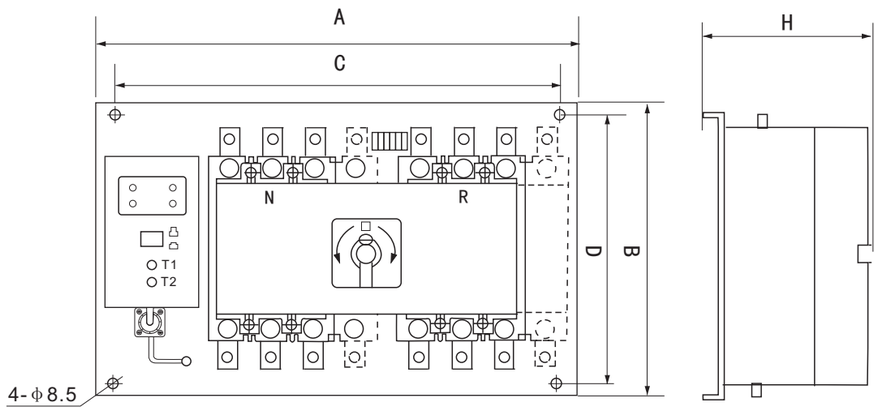


Integrated type(YD 63A)

unit:mm

Spec. \ Size	A（L）3P/4P	B（W）	C（L）3P/4P	D（W）	H（H）3P/4P
AMQ2-63W	330/330	200	300/300	170	125/125

Outline and installation dimensions



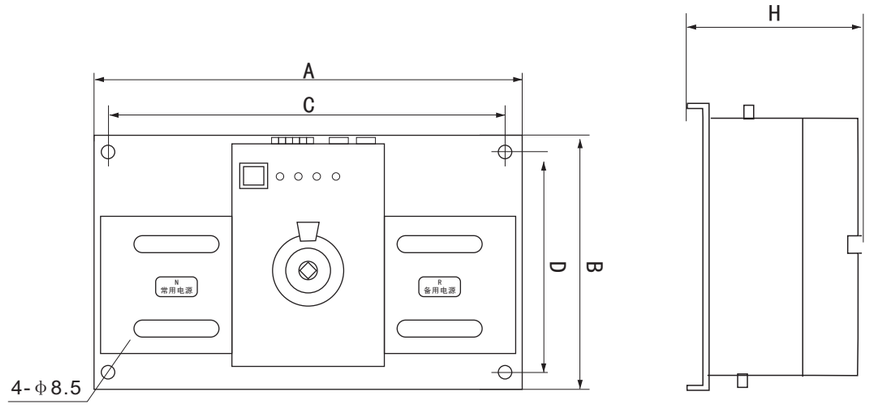
Integrated type(YC 63-1250A)

unit:mm

Spec. \ Size	A (L) 3P/4P	B (W)	C (L) 3P/4P	D (W)	H (H) 3P/4P
AMQ2-63W	410/410	210	380/380	180	120/120
AMQ2-63W /Y1	380/380	210	350/350	180	120/120
AMQ2-63	430/450	220	400/420	190	125/135
AMQ2-100	440/470	220	410/440	190	120/135
AMQ2-160	480/520	240	450/490	210	140/160
AMQ2-225	480/520	240	450/490	210	140/160
AMQ2-400	620/670	300	590/640	270	240/240
AMQ2-630	660/800	300	630/770	270	240/250
AMQ2-800	680/840	300	650/810	270	240/240
AMQ2-1250	770/840	370	740/810	340	320/320

Note: 3-pole M and H-type circuit breakers shall have the same height and size as 4-pole.

Outline and installation dimensions



Integrated type(YE 63-1250A)

unit:mm

Spec. \ Size	A (L) 3P/4P	B (W)	C (L) 3P/4P	D (W)	H (H) 3P/4P
AMQ2-63W	275	140	255	120	125/125
AMQ2-63	310/325	240	290/305	220	125/135
AMQ2-100	310/340	240	290/320	220	120/135
AMQ2-160	355/385	260	335/365	240	140/160
AMQ2-225	355/385	260	335/365	240	140/160
AMQ2-400	470/520	340	450/500	320	240/240
AMQ2-630	510/650	340	490/630	320	240/250
AMQ2-800	530/690	340	510/670	320	240/240
AMQ2-1250	620/690	410	600/670	390	320/320

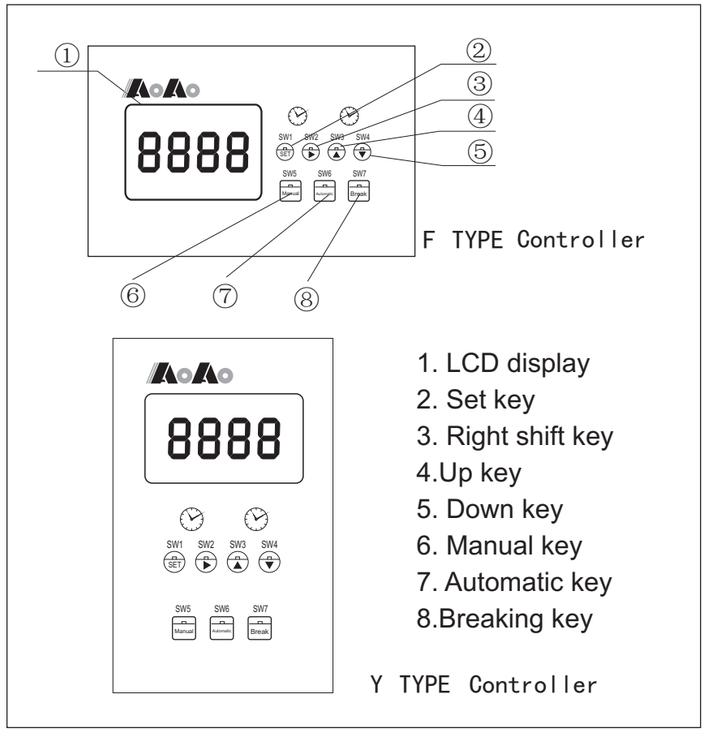
Note: 3-pole M and H-type circuit breakers shall have the same height and size as 4-pole.

Integrated type(YW 63A)

unit:mm

Spec. \ Size	A (L) 2P/3P/4P	B (W)	C (L) 2P/3P/4P	D (W)	H (H)
AMQ2-63W	148/185/220	135	128/165/200	123	120

Controller panel description



LCD display of controller

NA, NB and NC are normal power indicators; RA, RB and RC are reserve power indicators. Indicator on means normal, indicator off (flicker) means under-voltage or open-phase.

Control mode of controller

Manual key: select normal power or reserve power manually;

Automatic key: enter automatic control state according to serving power of the time.

Press (SET), (SHIFT), (UP) and (DOWN) to set the parameters, and press , and to enter password. If haven't entered into the parameter setting or password input state, the system would not give any response by pressing any one key of , and . When the new circuit board is energized for the first time, it will produce the following defaults automatically:

Default password: 9999

Default switching time:

A/T-type N-->R 3s, R-->N 3s; B-type N-->R 15s, R-->N 3s

Controller function

When the system is powered on, the MCUwill detect whether the normal power (NA, NB, NC) has power, phase loss or undervoltage. If all is normal, the system load will be switched to the normal power for power supply. If any abnormal, the corresponding measures as follows.

In automatic state, when the normal power and the reserve power are all regular, the normal power will be put into operation, and the reserve power will not be started. The system load will be powered by the normal power.

When the normal powerbecomes abnormal, the MCU will detect the current preset working state (manual, automatic, auto-restoring, non-restoring) and detect whether the reserve power is in good condition and determine whether to switch and start the reserve power to feed the system loads. See the table below:

Current power supply of loads		Current preset state of system				Current power supply is failed, whether the other one is normal or not	System treatment when the power supply is failed			Treatment of the system when the reserve power supplies power normally, while the normal power gets regular		
		Manual		Automatic			No switching	Switch to				
Normal	Reserve	Normal	Reserve	Auto-restoring	Non-restoring			Normal	Reserve	R is normal or not	No switching	Switch to
●		●				Normal	●					
						Abnormal	●					
●				●		Normal			●			
						Abnormal	●					
●					●	Normal			●			
						Abnormal	●					
	●		●			Normal	●				●	
						Abnormal	●					
	●			●		Normal		●		Normal		Normal
						Abnormal	●			Abnormal	●	
	●				●	Normal		●			●	
						Abnormal	●					
Breaking	When the system load is in state "OFF", the system will keep breaking no matter the two circuits of power supply are in "Manual" or " Automatic". The loads will be powered on only by operating the key SW5 (manual) or SW6 (automatic) to transfer the system into non-breaking state (manual -- normal power -- reserve power or automatic -- auto-restoring -- non-restoring).											

Controller parameters setting

Click (SET) to enter setting state. You can modify the following parameters after entering password correctly:

N-->R switching time

R-->N switching time

After setting auto-restoring/non-restoring (displayed FF F0 at 88 88 means set to non-restoring, FF F1 means set to auto-restoring), press (▶) again, the system saves the parameters setting. [In the process of setting parameters, the system does not respond to manual, automatic button or automatic switching of working mode]

The following example assumes that the password 9999, N-->R time is 4s and modified to 12s, R-->N time is originally 2s, then it is modified to 8s, auto-restoring/non-restoring is originally non-restoring, and it is modified to auto-restoring.

The flowchart as follows:

Click(SET) to enter parameter setting,

1. Prompt for password

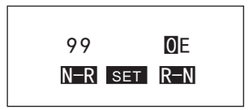
2. Click(▶), the first digit of password becomes 0 and flickers

3. Press(▲)or(▼)to enter the first digit of password

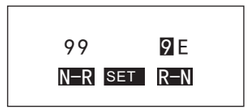
4. Press(▶) to shift, the second digit becomes 0 and flickers

5. Press (▲)or(▼) to enter the second digit of password

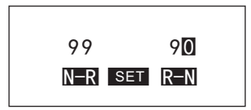
6. Press (▶) to shift, the third digit becomes 0 and flickers



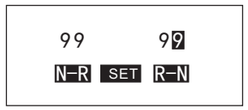
7. Press (▲)or(▼) to enter the third digit of password



8. Press (▶) to shift, the fourth digit becomes 0 and flickers



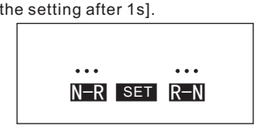
9. Press (▲) or (▼) to enter the fourth digit of password



10. Press(▶) to shift, the fourth digit does not flicker, the password input is completed.

11. Wait for 1s until the system displays dddd, indicating that the password is correct.

12. [The system displays...,indicating that the password is incorrect, the system will not respond to any operation, and automatically exit the setting after 1s].



13. If the password is entered correctly, the system displays entering N-->R time setting automatically after 1s display of dddd (the system will not respond to any operation during this period) and displays the original N-->R time, and the high-order flickers

14. Press (▲) or (▼) to modify

15. Press (▶) to shift

16. Press (▲) or (▼) to modify

17. Press(▶) to confirm, the low-order does not flicker

18. The system displays entering R-->N time setting automatically after 1s (the system will not respond to any operation during this period) and displays the original R-->N time, and the high-order flickers

19. Press(▶) to shift (as the median and high-order in this example do not change, we need not (▲)(▼)to modify them)

20. Press(▲)or(▼) to modify

21. Press(▶) to confirm, the low-order does not flicker

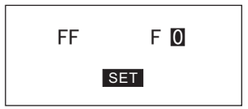
22. Press(▶) to confirm

23. Press(▶) to confirm

24. Press(▶) to confirm

25. Press(▶) to confirm

26. The system displays original setting value of auto-restoring/non-restoring after 1s (the system will not respond to any operation during this period)



27. Press(▲) or (▼) to modify, it only switches between 0 and 1 here.

Note: 0 means non-restoring,
1 means auto-restoring

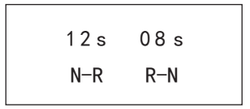
28. Press(▶) to confirm, it does not flicker

29. At this moment, only the SET is flickering, indicating that the setting is modified and the input is completed. The system will savethe new parameters into the EEPROM automatically by pressing(▶)

30. Save correctly

31. Error indication when writing E^2ROM (such as EEPROM is not soldered or is damaged, etc.)

32. Automatically switch to normal work display after 1s



Note: [In the setting process, press to shift directly if a digit does not need to be modified]

Operation and Wiring

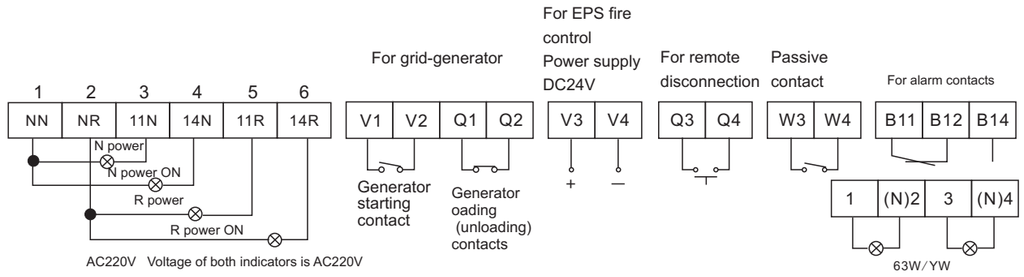
The incoming/outgoing lines and the neutral line of normal power and reserve power should be connected well according to the actual design of the circuit. In order to ensure safe use, the bottom plate of the switching equipment must be reliably grounded. Outgoing terminals of two sets of circuit breaker can be connected in parallel, but the phase sequence must be accordant.

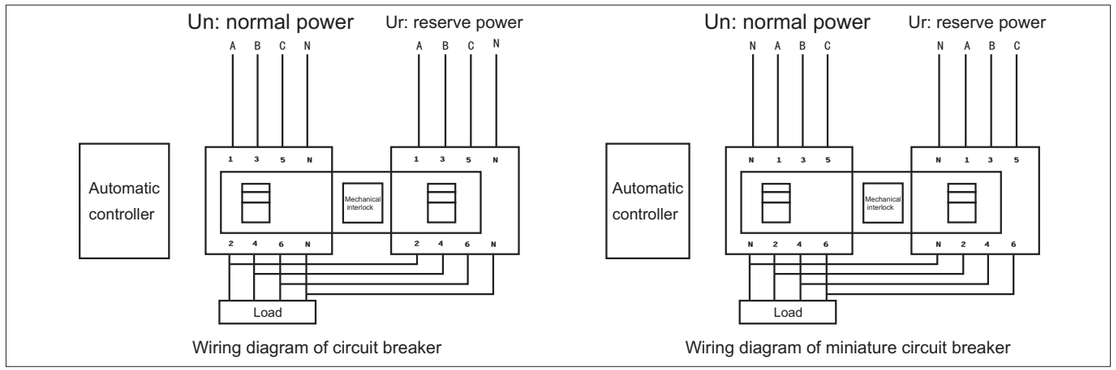
When it is a 3-pole circuit breaker, (zero wires of) normal power and reserve power must be connected to the (zero wire) terminal N of switching equipment, firmly connected with the neutral line of power grid, sectional area of electric wire should be ⩾2.5mm2, otherwise, it is unable to work normally.

The operating handle of switching equipment is used for emergency operation. The handle of 63-250 type is located at the side surface of mechanical interlock. (It can be used only when the key “breaking” in the control mode is in breaking state, and for end type, also need to press the automatic/manual key and let it locate in “0” manual state).

When the line is well connected, control mode of the intelligent controller is set at “automatic” “normal power” and “auto-restoring”, press corresponding keys as needed. For end type, the manual/automatic key (red) on controller panel is in automatic position “I”, the switching equipment is in automatic operation, and it can start working when the equipment is powered on.When the voltage of normal power is regular, regardless of whether the QR is in "ON" or "OFF" state, the switching equipment will conduct QRswitching off and QNswitching on after time delay. When the normal power fails and there is voltage loss, the switching equipment will conduct QNswitching off and QRswitching on after time delay.

The user can easily observe the operation by the external indicator light of the terminal. See the figure below for wiring.





Installation and Adjustment

Mechanical interlocking debugging: prior to installing the switching equipment, please debug the mechanical interlock first. When one circuit breaker is in the closing state, pull the handle of the other circuit breaker with the normal operation force to try to switch in it, and it shall be fail due to thefunction of mechanical interlocking.Test two circuit breakers alternately, the mechanical interlocking function shall be reliable and stable.

Installation of the body of switching equipment: after fixing the body of switching equipment, select conductors with suitable section area according to the magnitude of rated current, to connect the input and output terminals of circuit breaker. Note: the phase sequence of input terminals of two circuit breakers must be accordant, for four-pole circuit breaker, its zero wire need not to be connected additionally, but for three-pole circuit breaker, please connect its zero wire to terminal N of switching equipment.

Installation of split type automatic controller: fix the automatic controller to the panel that has holes in it with two supports.

Check the special plug of controller to see whether it has been plugged in the special socket of switching equipment firmly (note: align the direction and then plug in).

Check the contact parts of electrical appliance to see whether they have been pressed reliably, and whether the fuse tube is perfect.

When conducting withstand voltage test, pull out the controller plug first to protect the controller from being broken down. And fully screw in the connector plug again after the test.

Power on the equipment, if the voltage of both normal power and reserve power is in the normal range, the indicator lamp on LCD panel will go on, if the normal power or reserve power has undervoltage or open-phase, the undervoltage indicator of corresponding phase will flicker, find out the cause.

Press the key “manual” to select normal power and reserve power; press the key “automatic”, it will enter into the automatic control state according to the power supply in service of the time; press “breaking”, all loads of two circuits will be disconnected.

Symptom and Remedy

No response after starting up, the electric operating mechanism does not work by pressing the keys in control mode of controller, please check the connection condition of power line of circuit breaker as well as the special cable. Connect the three-phase power supply and neutral line firmly and reliably, insert and tighten the connector of cable.

After power on, each phase voltage is normal, but the panel displays under voltage, please check to see whether the power supply of circuit breaker has been well connected, whether there is open-phase phenomenon.

After power on, the controller has been charged, but the electric operating mechanism does not work, please check whether the two fuse tubes on switching equipment are burnt out due to too heavy current of electric operating mechanism.If yes, just change them.

If the fuse tubes are burnt out often, please check whether the electric operating mechanism is blocked, and adjust it properly.

Through aforementioned adjustment, when the circuits have been connected firmly, the whole machine can be energized, and the normal working system can be put into use immediately, it is advised to set control mode of controller to the working state of “auto”, “normal” and “auto-restoring”, then select the working state according to users requirements, to press the corresponding keys.

Warranty Period and After-sale Service

The product is manufactured under a perfect quality control system. For the sake of smooth operation, please refer to the warranty period and after-sale service hereinafter:

Please carry out periodic inspection and maintenance to the switching equipment according to the requirements of circuit breaker and electric operating mechanism. The automatic controller is maintenance free under normal operating conditions.

The product left unused for long term should be protected from moisture or dust, and should be well debugged according to the abovemen-tioned content before putting into operation.

Warranty period: On the premise of abiding by the storage and operation stipulations, the products enjoy “three-guarantee” service for 12 months (but not exceed 18months since the delivery date). During the “three-guarantee” period, users should debug, use and maintain the product according to the operation instructions strictly, and we will provide free maintenance and even replacement for fault product with intact seal caused by manufacturing problem in this period.

However, we would require paid maintenance or replacement for fault causes as follows even within the warranty period.

Wrong operation, unauthorized modification or unreasonable maintenance, etc.

Operated beyond the standard specifications.

After purchased, the product is damaged due to falling or installation, etc.

Earthquake, fire, lightning strike, abnormal voltage, other Act of God or secondary disasters, etc.

After-sale service:

Please contact with the supplier or our after-sale service department if there is something wrong with the product;

Repair or replacement in warranty period: We will provide free maintenance and even replacement for fault product caused by manufac-turing problem;

Repair or replacement out of the warranty period: Provide paid maintenance for that can maintain the function; or provide replacement at user’s charge.

Note: it is recommended to debug or conduct switching once every three months.

Order Guide

Please specify the following information in the order:

Product name, model, specification, rated current, number of poles (three or four poles); switching equipment structure (integrated or split); control type (grid-grid or grid-generator, terminal type, end type); switching method (auto-input auto-restoring or auto-input non-restoring); accessory code (X: fire control; Y: remote disconnection, W: passive contact; OA: alarm)

Special specifications or any imported moulded-case circuit breakeris available at request, please specify in the order.

The intelligent switching equipment controller is controlled by a single-chip microcomputer program. The setting parameters are set by the company according to the performance of different product models.Please contact our technical department or agent if need to modify the parameters. (Factory default setting for working state is "automatic", "normal power" and "auto-restoring").

The products are subject to change due to further improvement of technologies without notice. The copyright and the final interpretation right shall be vested in Shanghai Aoerman Electric Co., Ltd. Please recognize the trademark AOERMAN and say no to counterfeit.