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Automatic Transfer Switch

Ташев-Галвинг ООД
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MQ1 Dual Power Automatic Transfer Switch

General

With the development of society, people has higher requirement on reliable supply power. Lots of places use two-path power supply in order to guarantee the reliability of supply power. Under this case, we need a kind of device can reliably transfer between two-path power supply to guarantee the supply power reliably and safely. MQ1 automatic transfer switch is a special device developed for the purpose of such requirement. This product has two kind of switchover function of self-operation self-recover and self-operation non self-recovery. It is a kind of automatic transfer goods with lately design, perfect performance, high automatic degree and wide usage.

Application

MQ1 automatic transfer switch (hereinafter call as MQ1) is suitable for two-path power supply system with AC 50 HZ/60HZ, rated working voltage 400V, rated current from 6A ~ 800A. It can automatically transfer power supply to reserve power or generator when common power occurring fault so as to guarantee the reliability and safe of supply power. MQ1 has the protective function of overload, under-voltage, short circuit and lack phase which is especially suitable for using in the place where does not allow power supply failure, such as fire fighting, hospital, marketplace, military project, high-rise building, bank, TV station and so on.

Standards

- ◆ IEC 60947-1 or GB14048.1 «General Rules»
- ◆ IEC 60947-2 or GB14048.2 «Low voltage breakers»
- ◆ IEC 60947-6-1(1989) or GB14048.11 «automatic transfer switch electric»

Notice:1.Reset selection: automatic switch with restore is no code, and automatic switch without restore code is N.

2.Release type: instantaneous code is "2", and double is no code.

Working Condition

- ◆ Ambient medium temperature: less than +40℃ and more than -5℃;24 h average value less than+35℃;
- ◆ Altitude: not over 2000m;
- ◆ The max ambient air relative humidity when the maximum temperature is +40℃ does not surpass 50%, in compares under the low temperature to be possible to allow the high relative humidity, the wettest monthly average min temperature is +25℃,this monthly mean maximum relative humidity is 90%, the dew on the surface of the product must be taken into consideration because of the temperature change.
- ◆ Class of pollution: 3
- ◆ The breaker should be put in the place where there isn't any explosive medium and conductive dust and no gas, which would corrode metal or destroy the insulation.

Table. 1

Normal	Reserve	Control Function
Power	Power	Normal power supply electricity: Q2 OFF, Q1 ON
Normal	Normal	Q1 ON after time-delay and recover power supply power
Abnormal	Normal	Q2 OFF after time-delay, Q1 ON recover normal power supply power

Notice: Q1-Control Normal Power Circuit Breaker

Q2-Control Reserve Power Circuit Breaker

Switchover operation time delay (0~30S, factory default value is 3S if user has not special requirement)Return operation time delay (0~ 30s, factory default value is 3S if user has not special requirement).

Regarding to the transfer switch of self-operation non self-recovery, see Table 2 for its control function: under Auto state, when the normal power occurs fault or abnormality after a certain delay time it can automatically transfer to reserve power to supply power. When the normal power recovers normal, it failed automatically return to normal power. It only can return to normal power after a certain time-delay time when the reserve power occurs fault or abnormality.



Table. 2

Normal Power	Reserve Power	Control Function
Normal	Normal	Normal power supply electricity: Q2 OFF, Q1 ON
Abnormal	Normal	Q1 ON after time-delay and recover power supply power
Recover Normal	Normal	Still supply power from reserve power
Normal	Abnormal	Q2 OFF after time-delay, Q1 ON recover normal power supply power

Notice: Q1 —— Control Normal Power Circuit Breaker

Q2 —— Control Reserve Power Circuit Breaker

Switchover operation time delay (0~30S, factory default value is 3S if user has not special requirement)

Return operation time delay (0~ 30s, factory default value is 3S if user has not special requirement).

This switch is mainly used for switchover between two-path power supply in power network as well as power network and generator. In power network - generator supply power system, the generator usually is used for reserve power. See Table 3 for other control function: when the power network voltage is lower than 70-80% of rated voltage, it can automatically start generator. When the generator mains voltage reached to normal (above 80 % rated voltage), switch on generating power supply. After the power network voltage recovers normal (reach to above 80% rated voltage), it will cut off the load circuit from generating power after a certain time-delay, and automatically return to normal power supply.

Table. 3

Normal Power	Reserve Power	Control Function
Normal	Normal	Normal power supply electricity: Q2 OFF, Q1 ON
Abnormal	Normal	Generator group generating
Abnormal	Normal generation	Generator group will supply power once its generating voltage reach to above 80% rated voltage
Recover Normal	Generation	Q1 ON after time-delay and recover power network supply power

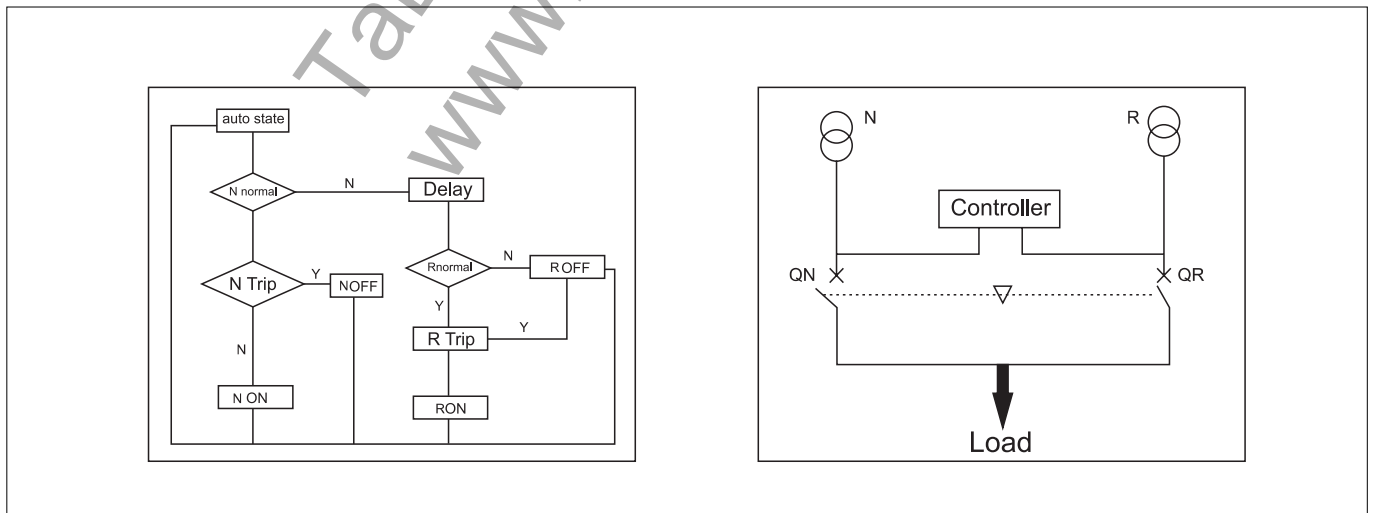
Notice: Q1-Control Normal Power Circuit Breaker

Q2-Control Reserve Power Circuit Breaker

Switchover operation time delay (0~30S, factory default value is 3S if user has not special requirement)

Return operation time delay (0~ 30s, factory default value is 3S if user has not special requirement).

Fig. 3



ATS Dual Power Automatic Transfer Switch

Main technology parameter

- ◆ The control power of the automatic controller and motor mechanism is AC230V.
- ◆ The transfer device is suitable for the system of rated working voltage is AC400V.
- ◆ The operating life of the transfer device (N-R-N cycle) is 5000 times.
- ◆ The minimum transfer time is in 1-3s.

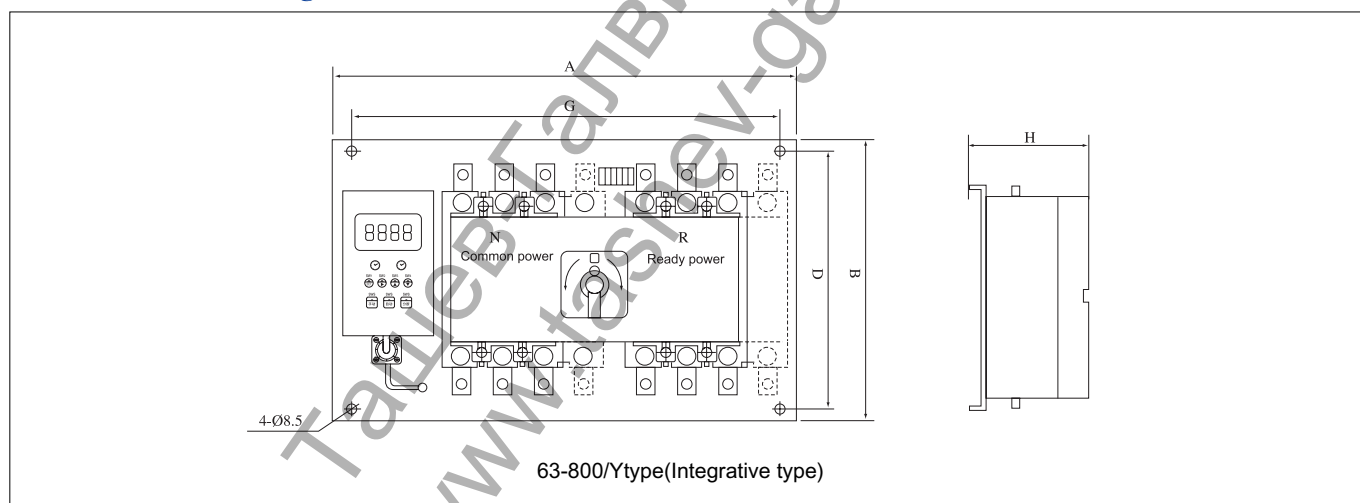
The specification

unit: mm

Type	MCCB	Frame current (A)	Rated working voltage(V)	Rated current(A)	Rated limit short circuit breaking capability(KA)	
MQ1-63W	MM5-63	63	400	6, 10, 16, 20, 25, 32, 40, 50, 63		6
MQ1-63Type	MM1-63	63	400	(6), 10, 16, 20, 25, 32, 40, 50, 63	L M	35 50
MQ1-100Type	MM1-100	100	400	10, 16, 20, 25, 32, 40, 50, 63, 80, 100	L M	35 50
MQ1-160Type	MM1-160	160	400	100, 125, 140, 160	L M	35 50
MQ1-225Type	MM1-225	225	400	100, 125, 140, 160, 180, 200, 225	L M	35 50
MQ1-400Type	MM1-400	400	400	225, 250, 315, 350, 400	L M	50 65
MQ1-630Type	MM1-630	630	400	400, 500, 630	L M	50 65
MQ1-800Type	MM2-800	800	400	630, 700, 800	S H	65 100

Notice: M type is 690V, W is MM5; L, M are MM1; S, H are MM2.

Overall and mounting dimension



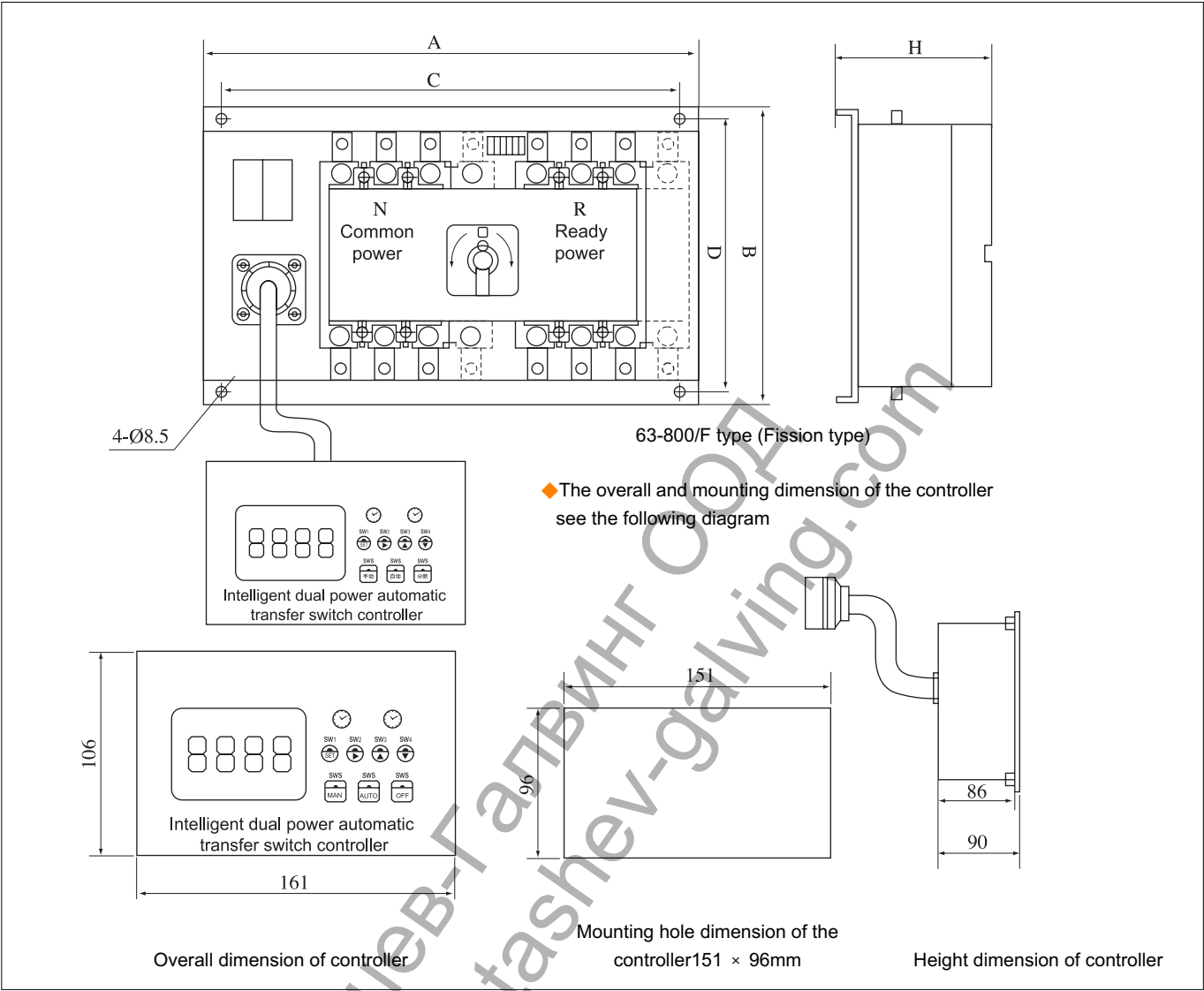
Integrative type(Y)Type

unit: mm

Dimensions Specification	A(L) 3P/4P	B(W)	C(L) 3P/4P	DW	H(H) 3P/4P
MQ1-63(W)	420/420	220	390/390	90	120/120
MQ1-63Type	440/470	220	410/440	190	125/135
MQ1-100Type	440/470	220	410/440	190	120/135
MQ1-160Type	480/520	240	450/490	210	140/160
MQ1-225Type	480/520	240	450/490	210	140/160
MQ1-400Type	620/670	300	590/640	270	235/235
MQ1-630Type	660/800	300	630/770	270	240/250
MQ1-800Type	680/840	300	650/810	270	250/250

Notice: The height of M H type of 3 poles is the same as 4 poles.

Overall and mounting dimension



Fission type(F)type

Unit: mm

Dimensions	A(L)	B(W)	C(L)	DW	H(H)
Specification	3P/4P		3P/4P		3P/4P
MQ1-63(W)	370/370	220	340/340	180	125/125
MQ1-63 type	380/410	210	350/380	180	130/140
MQ1-100 type	380/410	210	350/380	180	125/140
MQ1-160 type	420/470	230	390/440	200	145/165
MQ1-225 type	420/470	230	390/440	200	145/165
MQ1-400 type	570/620	300	540/590	270	235/235
MQ1-630 type	610/750	300	580/720	270	240/250
MQ1-800A type	630/790	300	600/760	270	250/250

Notice: The height of M H type of 3 poles is the same as 4 poles.

ATS Dual Power Automatic Transfer Switch

MQ2 Dual Power Automatic Transfer Switch

Application



MQ2 series dual power automatic transfer switch is one of adopted international ATSE technology developed by our company. It is suitable for power supply system with rated insulating voltage is AC800V, rated working voltage is AC690V, and below DC250V, and AC 50Hz/60Hz, rated working current is 20A-5000A of two-path. The transfer switch and the matching intellect display, they are main used for high building, the post and communication, coal mining, shipping, military facilities industrial assembly line etc the situation of need the interruption power supply. Under the city rapid increase power supply necessary trend, they can satisfy the higher requires of reliable power supply, the products have reliable performance, small size and easy operation etc features.

Attention: It must not do the test of insulating stand voltage for the quality guarantee.

Classification

- ◆ M2 is two steps: M2 I and M2 II
- ◆ M3 is three steps: M3 I and M3 II
- ◆ According to the transfer controller: automatic switch with restoration, automatic switch without restoration
- ◆ Transfer mode: Power network-Power network, Power network-Generator
- ◆ Intelligent controller: C: LCD dynamic display, L: internal controller, E: LED economic external controller
- ◆ Number of poles: 3,4
- ◆ According to the connection way: front panel, back panel
- ◆ Current: 20, 32, 40, 63, 80, 100, 125, 160, 200, 225,250,350,400,500,630,800,1000,1250,1600,2000, 2500,3150,4000,5000

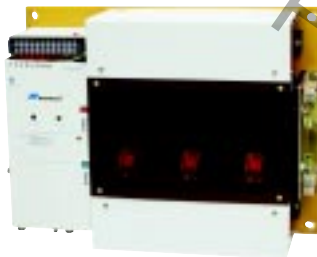


Environment conditions for operation and installation

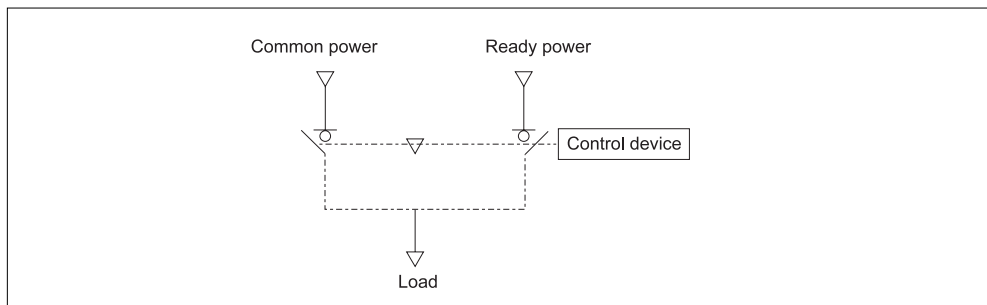
- ◆ Ambient temperature: -5°C ~ $+40^{\circ}\text{C}$, and average temperature in 24 hours below $+35^{\circ}\text{C}$ (except for special orders).
- ◆ Elevation of installation site: $\leq 2000\text{m}$
- ◆ Pollution protection: 3 grade
- ◆ The breakers used on ships and in humid tropical area can work normally without influence of humid air, salt fog and mildew.
- ◆ The breakers used on ships can operate reliably under normal vibration.
- ◆ The breaker should be installed according to stipulations on operating manual. For breakers in common use, the vertical gradient isn't more than 5°C , for that used on ships, the vertical gradient isn't more than 22.5°C .
- ◆ The breaker should be put in the place where there isn't any explosive medium and conductive dust and no gas which would corrode metal or destroy the insulation.

Main function feature

- ◆ Reliable and safe interlock.
- ◆ It has reliable connection and disconnection main circuit and second circuit function, and the setting has self-locking function.
- ◆ It has safety insulation isolate.
- ◆ Quick transfer speed, (the transfer time is 0.1s-0.2s), low malfunction, easy maintenance, and reliable capability.
- ◆ Small in volume, simple in constitution, large current and ATSE integrate.
- ◆ With the controller, the setting can transfer between the manual and automatic, and has the every protection function.
- ◆ Make sure the facility safe, it has neutral pole N input first and breaker later function, which can avoid of the abnormal voltage.
- ◆ It adopts DC instantaneous excite way.
- ◆ Electric degree: PC class.



System sketch map



Technology parameter

Type	M2 I type	M2 II type	M3 I type	M3 II type
Rated working current	20A-500A	20A-500A	20A-500A	20A-5000A
Rated limit short circuit current (according to the current degree)	12.5KA-30KA	12.5KA-25KA	12.5KA-25KA	12.5KA-25KA
Short time stand current (according to the current degree)	5-12KA	5-10KA	5-12KA	5-50KA
Transfer time (exclude the special input delay)	0.1-0.2s	0.1-0.2s	0.1-0.2s	0.1-0.5s
With controller or not	No	Yes	No	Yes
Automatically start the generator	No	Yes	No	Yes
Control mode	Automatic switch with restore Automatic switch without restore	Automatic switch with restore	Automatic switch with restore	Automatic switch with restore
Connection way	Front panel connection	Front panel connection	Front panel connection Back panel connection	Front panel connection
Rated working voltage	AC400V/690V、DC125V/250V			
Rated control voltage	AC220V			
Rated working frequency	50/60Hz			
Connection and disconnection capability	AC-33B(10le ON 8le OFF) cosF=0.35、DC-33B 1.1le ON L/R=1ms			
Electric class	PC Class			
Usage sort	AC-33B DC-33B			
Test mode	Power network-power network、Power network-- generator			
life	Electric life 2500 Number Mechanism 10000Number			
Auxiliary switch capacity	AC100V 5A、AC220V 2.5A、DC100V 0.5A			
Accessory	Protection cover(630A...), Manual specification、Product certificate、Credit card、Manual handle			
Number of pole	2、3、4			

The difference of twao steps M2 and three steps M3

- ◆ Two steps have two transfer states: power A supply \leftrightarrow power B supply, and the frame current can up to 500A
- ◆ Three steps have three transfer states: A supply \leftrightarrow middle position \leftrightarrow power B supply, and the frame current can up to 5000A.

Hand-operated methods and notice matters

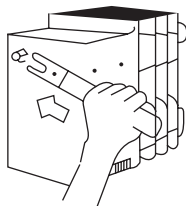
We can guarantee the switch performance of electric-drive operation, but the difference between strength, speed of the switch. When the hand-operated switches do the load switching, the contacts may be consumed and dissolved etc. If need artificial manual operation and please implement under the following condition, please avoid hand operating in other occasions.

- 1)When there is no operation power at all.
- 2)When inspect the operating mechanism and contact part, there is no load.
- 3)Damages happened and cannot action.

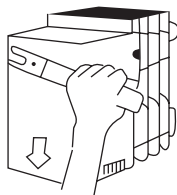
Notice: When artificial hand operating, the operating power has to be cut off.

ATS Dual Power Automatic Transfer Switch

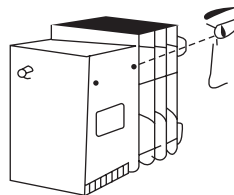
M2 Manually trip methods put in method of A B power sides



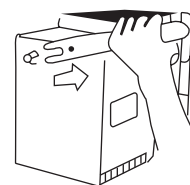
Insert the front nick of manual handhold into the left operating axis.



Pull down the handhold and that can throw in.



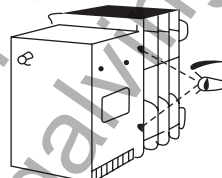
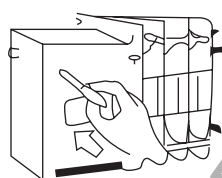
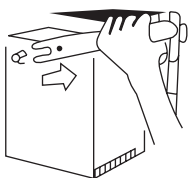
Visual inspect ON/OFF indicator to confirm throw-in.



Please take down the operating handhold after operating.

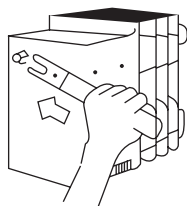
M3 hand-operated methods

◆ Hand-operated handhold

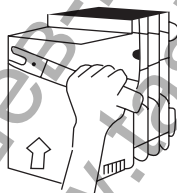


Insert the screwdriver into the left side TRIP hole and press inside, and then the switch will trip. (Please confirmed by the ON/OFF indicator if the switch is trip.)

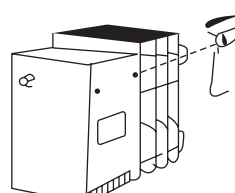
◆ A power side throw-in methods



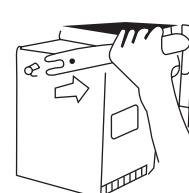
Insert the front nick of manual handhold into the left operating axis.



Pull up the handhold and that can throw in.

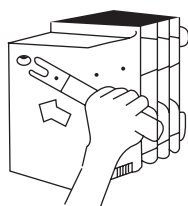


Visual inspect ON/OFF indicator to confirm throw-in.

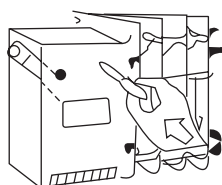


Please take down the operating handhold after operating.

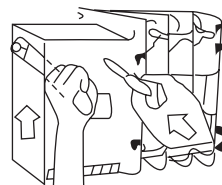
◆ B power side throw-in methods



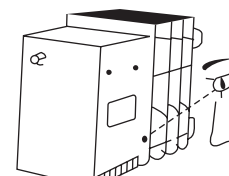
Insert the front nick of manual handhold into the left operating axis.



Insert the screwdriver into the right SELECT hole and press inside.



Keep the screwdriver in the position that press on and pull up the hand-operated handhold at the same time. That can throw in B-side switch.



Visual inspect ON/OFF indicator to confirm: throw-in. please take down the operating handhold after operating.

Two-path switch and has two separated contacts

- ◆ Have trip device, and has (OFF) position
- ◆ operating order : A → OFF → A and B → OFF → B
A → OFF → B and B → OFF → A



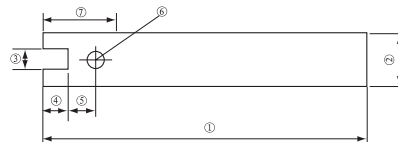
◆ Safety design

It has dustproof resin protector, and operating safety.



◆ Manual handle

See the using and selection to detail.



Inside (t) is thickness of the dope

	①	②	③	④	⑤	⑥	⑦	t
400A	210	25(26)	10.1	15	15	Ø8	50	6(7)
600A ~ 1600A	250	38(40)	16.1	20	15	Ø8	41	6(8)
2000A 3000A	320	50(52)	19.1	25	15	Ø8	50	9(11)
4000A 5000A	420	50(52)	19.1	25	15	Ø8	50	9(11)

Shutoff features:

- ◆ Depend on the operating voltage, and breaking characteristic of spring-produced strength.

M2 main technology index:

MQ2-M2										
Rated current		20A-63A			80A、100A、125A			160A、200A、225A、250A		
Poles		2	3	4	2	3	4	2	3	4
Weight(Kg)		4.5	5	5.5	5	5.5	6	6	8	10
Operating current(A)AC200V/220V		1.5	1.5	2	1.5	1.5	2	1.5	2	2.5
Capability	Short time stand current(KA)	5			5			10		
	Short time rated limit(KA)	12.5			12.5			25		
Transfer time (ms): power A side	Put in	55			55			55		
	Breaking	20			20			20		
Transfer time (ms): power B side	Put in	80			80			80		
	Breaking	20			20			20		
Rated voltage		AC400V/690V、DC125V/250V								
Put in numbers		Double put in								
Connecting way		Front panel								
Auxiliary switch		Power A sideIC、Power B sideIC、Switch capabilityAC100V:5A、AC220V:250A、DC100V:0.5A								
Life		Electrical life 2500Number、Mechanism life10000Number								
Operating recycle time		120Number/h								
Connecting and disconnecting capability		AC-33B(10Ie ON 8Ie OFF) cosø=0.35、DC-33B 1.1Ie Close 1.1Ie ON L/R=1ms								
Accessory		Protection cover、Breakthrough absorber、Manual control handheld								

Notice: 1.DC current operation situation, the structure of circuit is same, only a little part is different, please accord to DC current operation indication to operate.

2.40A 63A are out of abnormal, and contact with us about the overall dimensions.

3.the technology capability M2 350A-500A are the same as the M3 350A-500A.

ATS Dual Power Automatic Transfer Switch

M3 main technology index:

Type		MQ2-M3																	
Rated current		20A-63A			80A-125A			160A-250A			350A-500A			630A-800A			1000A		
Poles		2	3	4	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4
Weight(Kg)		4.5	6	6.5	6	6.5	7	6	8	10	11	14	18	25	33	42	29	39	49
Operating current	DC110V	3	3	4	3	3	4	3	4	5	5	5	7	6	6	6	(40)	(54)	(64)
	AC100V/110V	3	3	4	3	3	4	3	4	5	5	5	7	6	6	6	6	6	6
	AC200V/220V	1.5	1.5	2	1.5	1.5	2	2.5	2.5	2.5	2.5	2.5	3.5	3	3	3	6	6	6
Trip current	DC110V	1			1			1			1.5			2			3	2	3
	AC100V/110V	1			1			1			1.5			2			2		
	AC200V/220V	0.5			0.5			0.5			0.7			1			1		
Capability Put in	Short time stand current (KA)	5			5			10			12			15			22		
	Rated limit short circuit current(KA)	12.5			12.5			25			30			37.5			50		
Transfer time (ms): power A side	Breaking	55			55			55			60			100			115		
	Put in	20			20			20			25			30			25		
Transfer time (ms): power B side	Breaking	80			80			80			90			135			145		
	Put in	20			20			20			25			30			25		
Rated voltage		AC400V/690V、DC125V/250V																	
Put in numbers		Double put in																	
Connecting way		Front panel、rear panel															rear panel		
Auxiliary switch		Power A sideIC、Power B sideIC、switch capabilityAC100V:5A、AC220V:250A、DC100V:0.5A																	
Life		Electrical life 2500 times、Electrical life 10000times																	
Operating recycle time		120times/h																	
Connecting and disconnecting capability		AC-33B(10Ie on 8Ie off) cosF=0.35、DC-33B 1.1Ie swichin 1.1Ie on L/R=1ms																	
Accessory		Protection cover、Breakthrough absorber、Manual control handhold																	

Notice: 1.DC current operation situation, the structure of circuit is same, only a little part is different, please accord to DC current operation indication to operate.

M3 main technology index

Type		MQ2-M3													
Rated current		1250A			1600A			2000A			3150A			4000A	5000A
Poles		2	3	4	2	3	4	2	3	4	2	3	4	3	4
Weight(Kg)		31(45)	40(56)	51(66)	36(50)	47(62)	51(66)	95	115	135	110	152	192	207	265
Operating current	DC110V	6	6	6	7	8	6	8	10	12	10	12	14	16	18
	AC100V/110V	6	6	6	7	8	6	8	10	12	10	12	14	16	18
	AC200V/220V	3	3	4	3.5	4	4	4	5	6	7	7	8	8	9
Trip current	DC110V	2			2			4			4			4	4
	AC100V/110V	2			2			4			4			4	4
	AC200V/220V	1			1			1			1			1	1
Capability Put in	Short time stand current (KA)	22			25			35			50			50	50
	Rated limit short circuit current(KA)	50			55			65			80			100	120
Transfer time (ms): power A side	Breaking	115			115			140			180			200(190)	210(190)
	Put in	25			25			25			30			30	35
Transfer time (ms): power B side	Breaking	145			150			190			220			220(240)	230(270)
	Put in	25			25			25			30			30	30(35)
Rated voltage		AC400V/690V、DC125V/250V													
Put in numbers		Double put in													
Connecting way		Front panel、rear panel													
Auxiliary switch		Power A side1C、Power B side1C、switch capabilityAC100V:5A、AC220V:250A、DC100V:0.5A													
Life		Electrical life 2500 times、Electrical life 10000times													
Operating recycle time		120 times/h						30 times/h							
Connecting and disconnecting capability		AC-33B(10le on 8le off) cosF=0.35、DC-33B 1.1le swichin 1.1le on L/R=1ms													
Accessory		Protection cover、Breakthrough absorber、Manual control handhold													

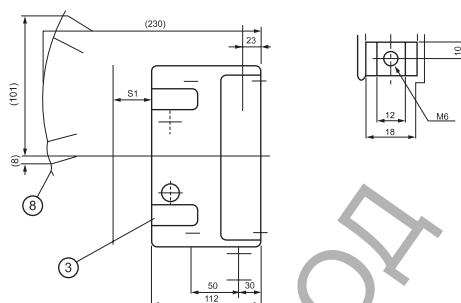
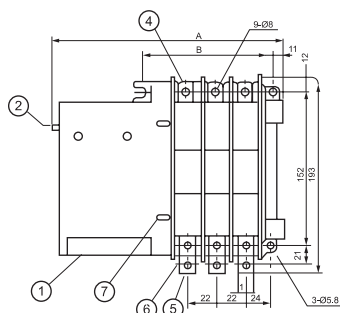
Notice: 4000A 4P, the capacity of N contact is 2000A.

ATS Dual Power Automatic Transfer Switch

M2 M3 overall and mounting dimensions:

M2、M3 20A~63A

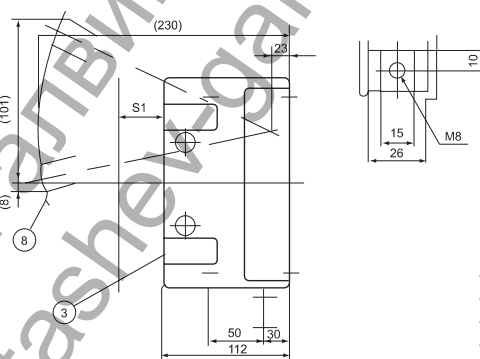
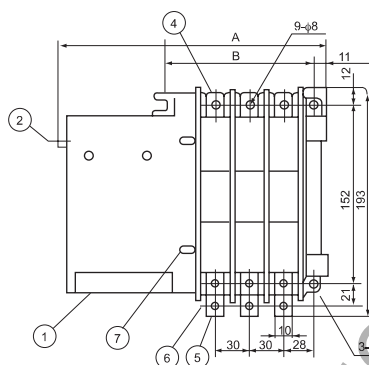
Panel safety distance (dimensions) (S1 dimensions : 30mm(400V),60mm(690V)



	A	B
2P	188	88
3P	210	110
4P	232	132

M2、M3 80A~125A

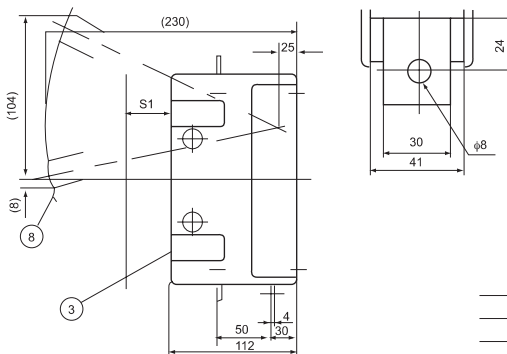
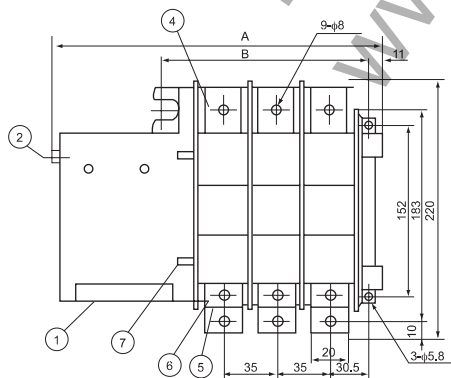
Panel safety distance (dimensions) (S1 dimensions : 30mm(400V),60mm(690V)



	A	B
2P	209	103
3P	239	133
4P	269	163

M2、M3 160A~250A

Panel safety distance (dimensions) (S1 dimensions : 30mm(400V),60mm(690V)



	A	B
2P	219	113
3P	254	148
4P	289	183

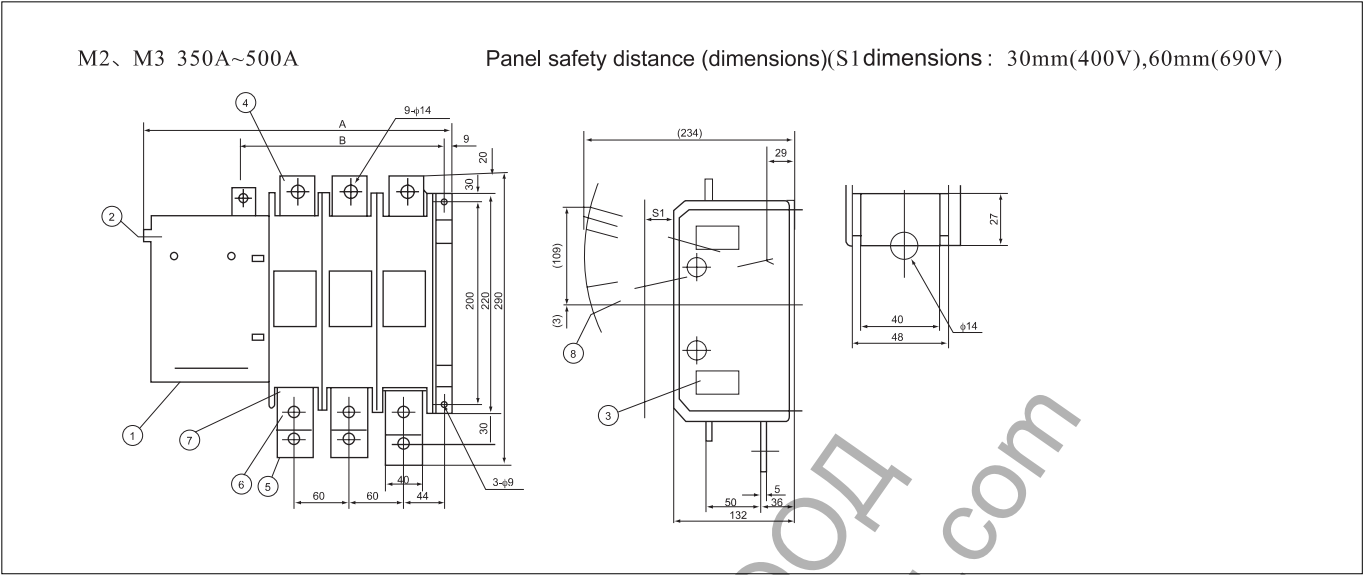
1 Operating circuit terminal
2. Hand-operated handhold entrance

3. Auxiliary switch
4. A power side main circuit terminal

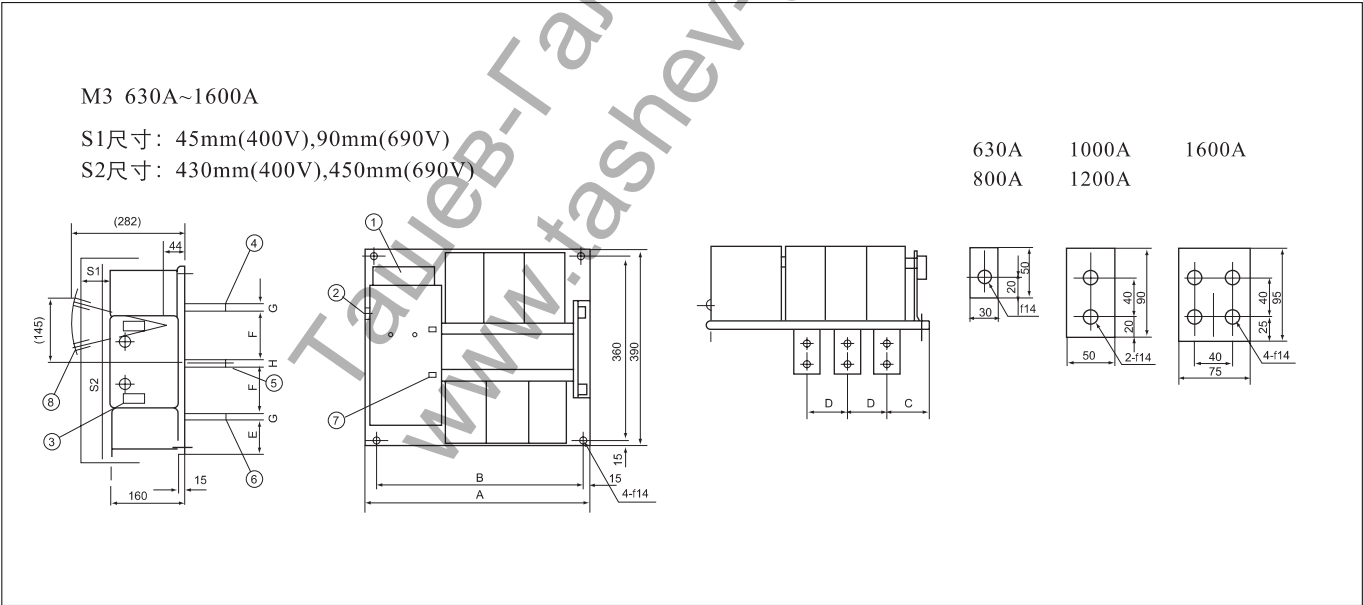
5. Main circuit terminal load side
6. B power side main circuit

7. ON/OFF selector
8. Hand-operated handhold (movable type)

M2 M3 overall and mounting dimensions:



	A	B
2P	188	88
3P	210	110
4P	232	132



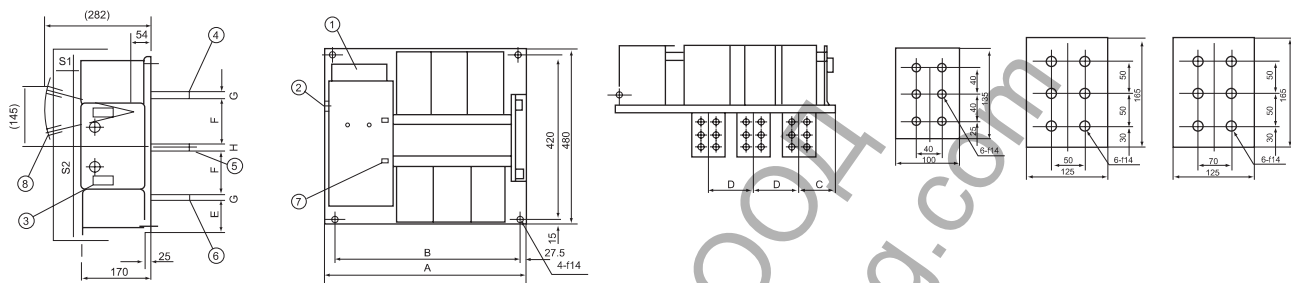
ATS Dual Power Automatic Transfer Switch

M2 II internal controller Function brief specification

M3 2000A~4000A

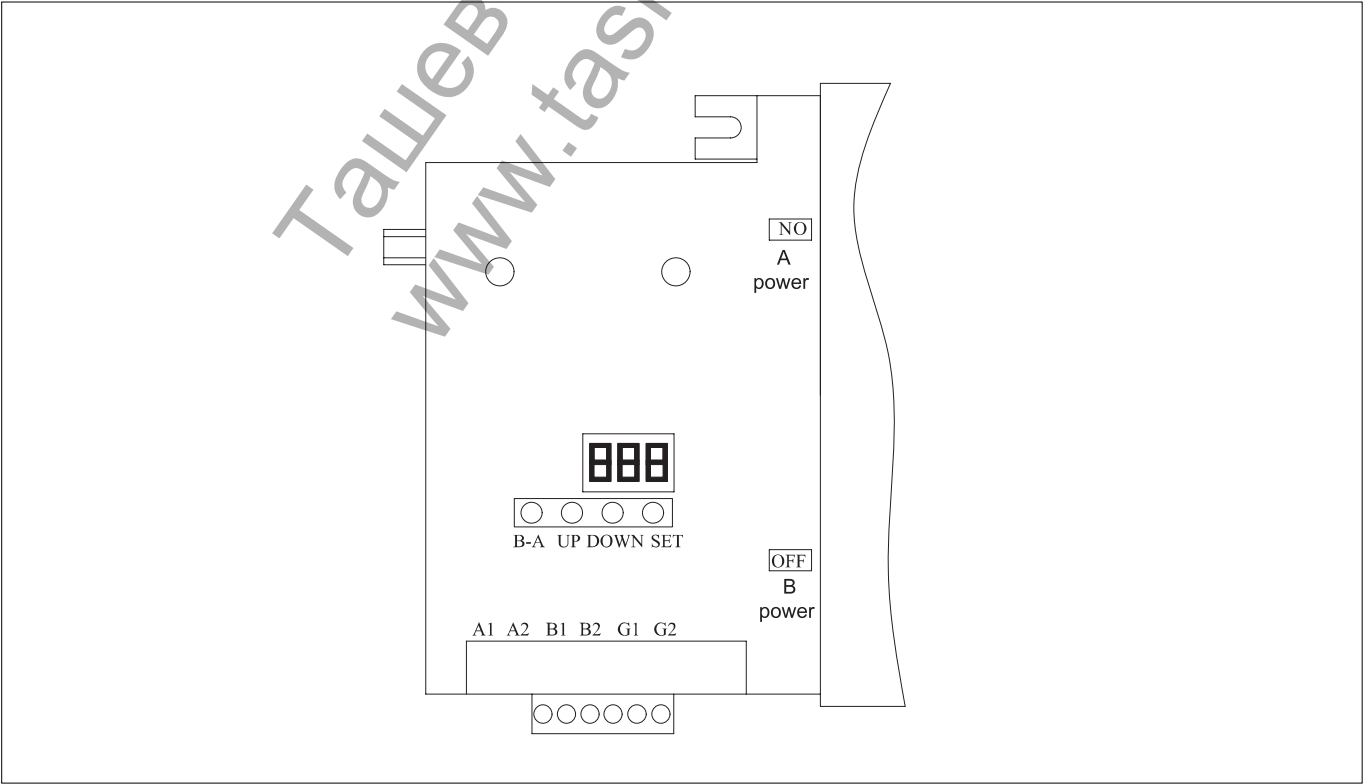
S1尺寸: 50mm(400V),100mm(690V)

S2尺寸: 560mm(400V),600mm(690V)



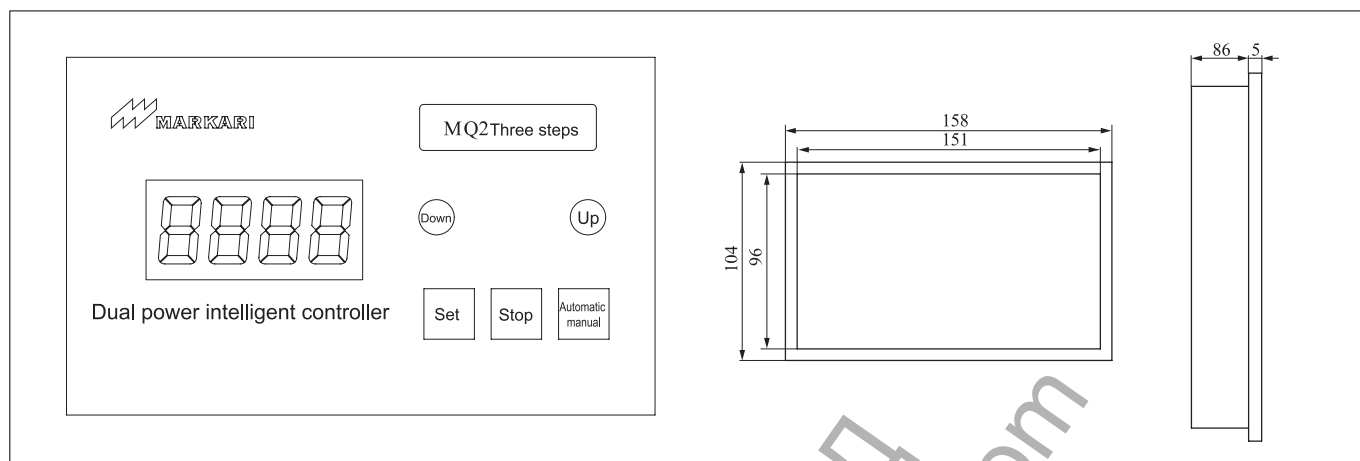
		A			B			D	E	F	G	H
	2P	3P	4P	2P	3P	4P	C					
360A 800A	340	405	470	310	375	440	80	65	60	117.5	10/15	15
1000A 1250 A	370	450	530	340	420	500	88	80	60	117.5	12/15	15
1600A	410	510	610	380	480	580	97.5	100	57	117.5	15	15

Product sketch map

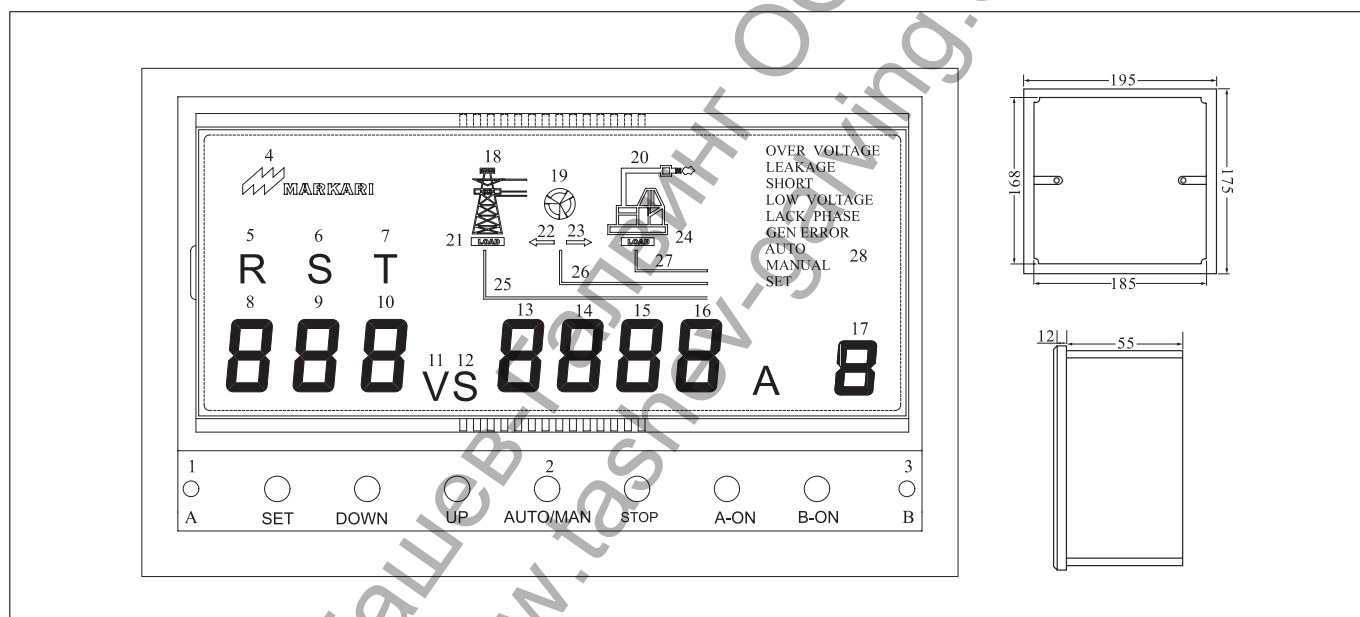


M2 and M3 II LED external economic controller display distribution

Mounting dimension picture



M3 Type LCD external controller function.



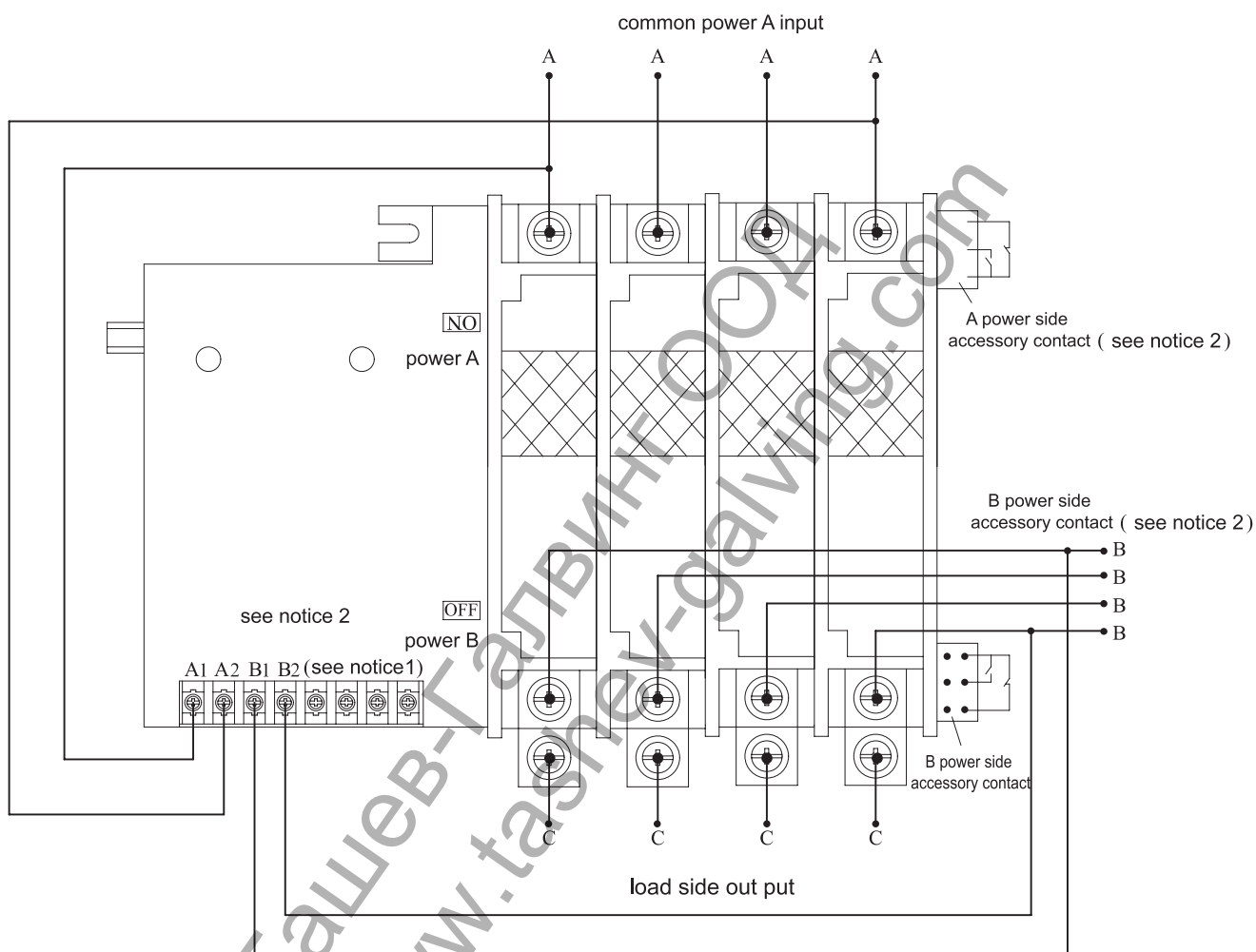
◆ Indicated definition is just following:

1. Common power A normal indicated light.
2. Button distribution; see the detail in ATS M3 LCD external controller.
3. Ready power B normal indicated light.
4. Mark
5. R phase
6. S phase
7. T phase
- 8-10: voltage indication value and setting parameter value
11. Voltage mark
12. Second marks of the delay indication
- 13-16: malfunction information and normal 3-D marks.

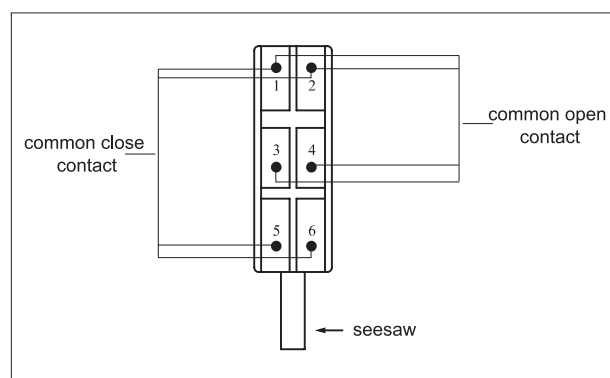
17. Indicate the code position when it is setting. Normal is 0.
18. Network mark A means common network, and in the normal condition it will shine.
19. middle transfer position, when it is transferring, the fan will turn.
20. ready power B.
21. The common power will put in and it will shine.
22. it is ready to put in the common power.
23. it is ready to put in the ready power.
24. it is putting in the common power, and shine.
25. it has been putting the common power.
26. in the middle OFF position.
27. in the middle OFF position.
28. malfunction and setting, automatic and manual prompt.

ATS Dual Power Automatic Transfer Switch

M2 connecting diagram



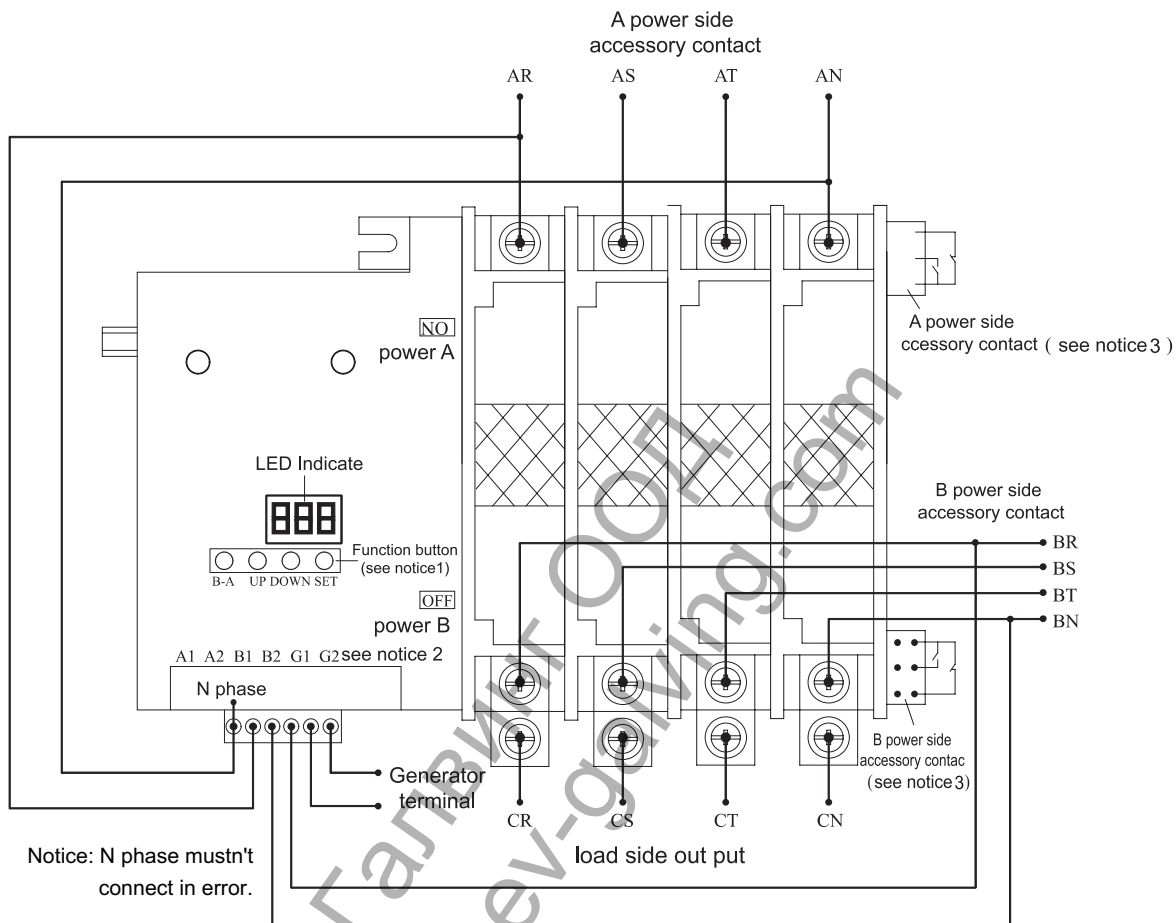
Auxiliary contacts diagram



- ◆ A1 A2 (put in signal import by A power,AC220V)
- ◆ B1 B2 (put in signal import by B power,AC220V)

Notice: A B auxiliary contact can be used in connecting the signal of indicate, alarm or feedback, and that depends on the customer

M2 II, M3 III type internal controller fast wiring diagram.



Notice: 1. (Brief introduction for each function button)

- ◆ SET: it can set the delay of A-B, B-A, and stopping generator
- ◆ DOWN: you can set minus, and it can indicate B voltage when it is automatic, and it can transfer into B power by manual.
- ◆ UP: you can set plus, and it can indicate A voltage when it is automatic, and it can transfer into A power by manual.
- ◆ B-A: auto/man transfer (LED indicate twinkle that means it is in the manual state)

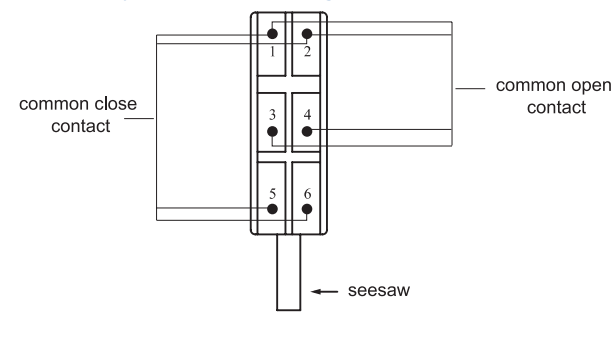
Notice: 2

- A1 A2 (put in signal import by A power, AC220V)
- B1 B2 (put in signal import by B power, AC220V)
- G1 G2 (generator contact)

Notice: 3

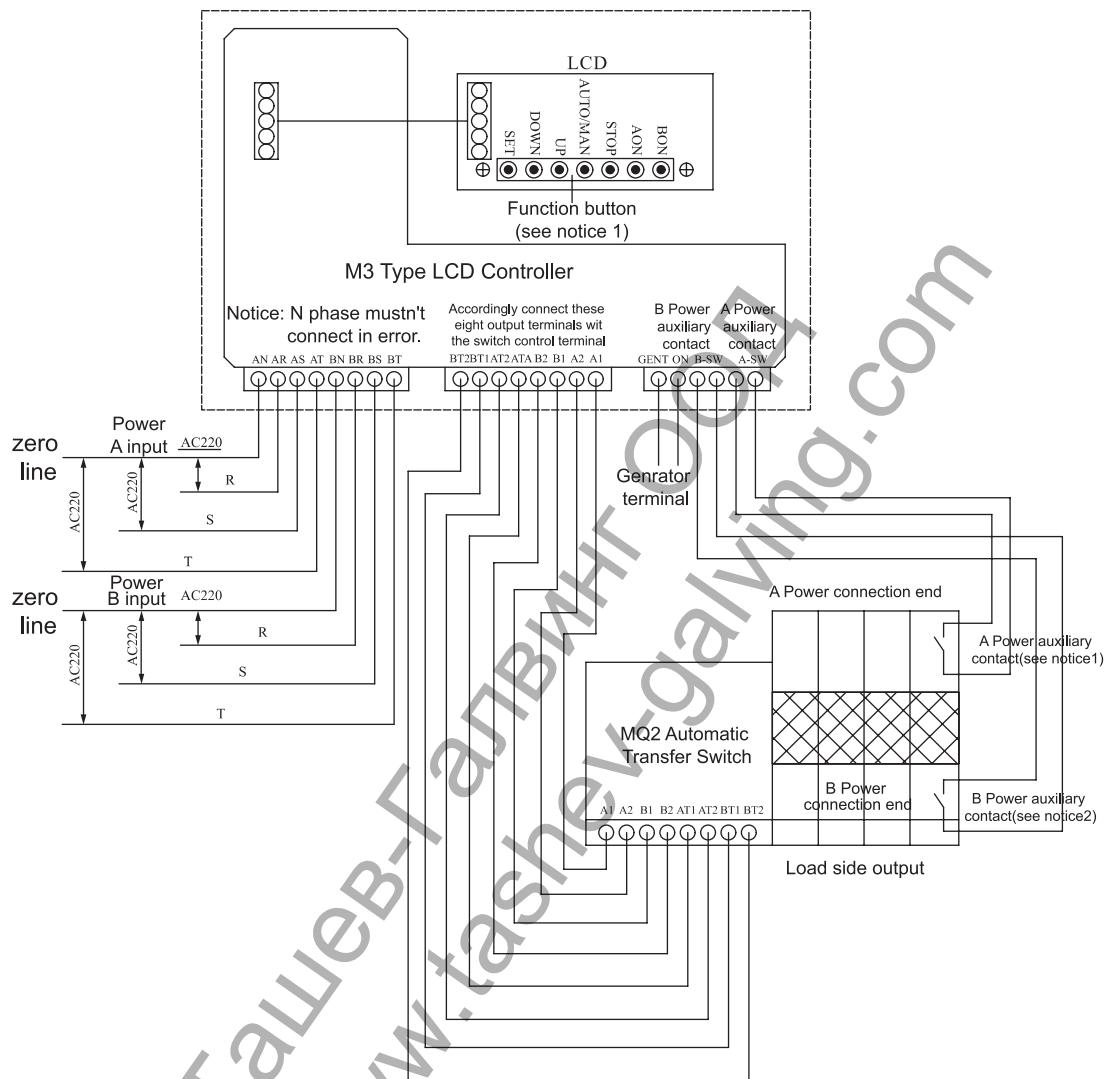
A B auxiliary contact can be used in connecting the signal of indicate, alarm or feedback, and that depends on the customer.

Auxiliary contacts diagram

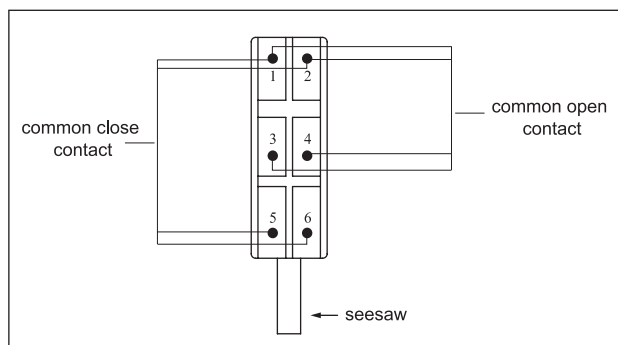


ATS Dual Power Automatic Transfer Switch

Type M2 II, M3 III LED external controller, has zero-pin.



Auxiliary contacts diagram



MQ3 Dual Power Automatic Transfer Switch

Application:

MQ3 series dual power automatic transfer switches (follow brief as setting) is one of adopted international technology developed by our company. The setting is suits for AC 50Hz, rated working voltage is 400V, rated current 6A-100A and under dual power supply system. It has over voltage, under voltage, lost phases protection function. The setting mainly used for hospital, shopping center, bank, and chemical industry, metallurgy, high building, military facilities.

Standards

IEC 947-6-1(1989)«Automatic Transfer Switch Electric Equipment».

Environment conditions for operation and installation:

- ◆ Ambient temperature: -5℃ – +40℃, and average temperature in24 hours below +35℃ (except for special orders).
- ◆ Elevation of installation site: < 2000m
- ◆ Relative humidity: not exceeding 50% at the maximum ambient tem perature of +40℃. With lower temperature, higher humidity would be permitted, but the lowest average temperature in a month not ex ceeding 90% in that month, and giving consideration to the dews on the goods surface, which would appear due to temperature change.
- ◆ Pollution protection: 3 grade
- ◆ The breaker should be put in the place where there isn't any explo sive medium and conductive dust and no gas, which would corrode metal or destroy the insulation.

The main technology parameter:

- ◆ The voltage of the automatic controller and motor operation controller is AV220V.
- ◆ The life of the switch (N-R-N) is 5000 times.
- ◆ The minimum transfer time is 3s.

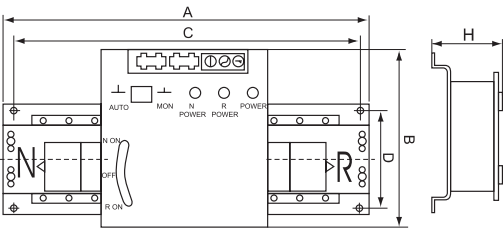
Specification:

Type	MQ3		
Specification		63	100
Working breaker		MM5	MM5
Frame current	A	63	100
Rated working voltage	V	400	400
Rated breaker current	A	6,10,16,20, 25,32,40,50,63	63,80,100
Rated limit short circuit braking capability	KA	W	W
		6	10

Overall and mounting dimensions:

Type	MQ3		
Specification		63	100
Dimension	A(Length)3P/4P	290	372
	B(Width)	165	195
	C(Length)3P/4P	275	342
	D(Width)	115	140
	H(Height)	120	125

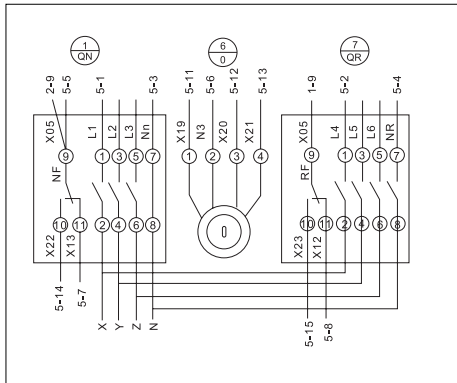
63W/YC type



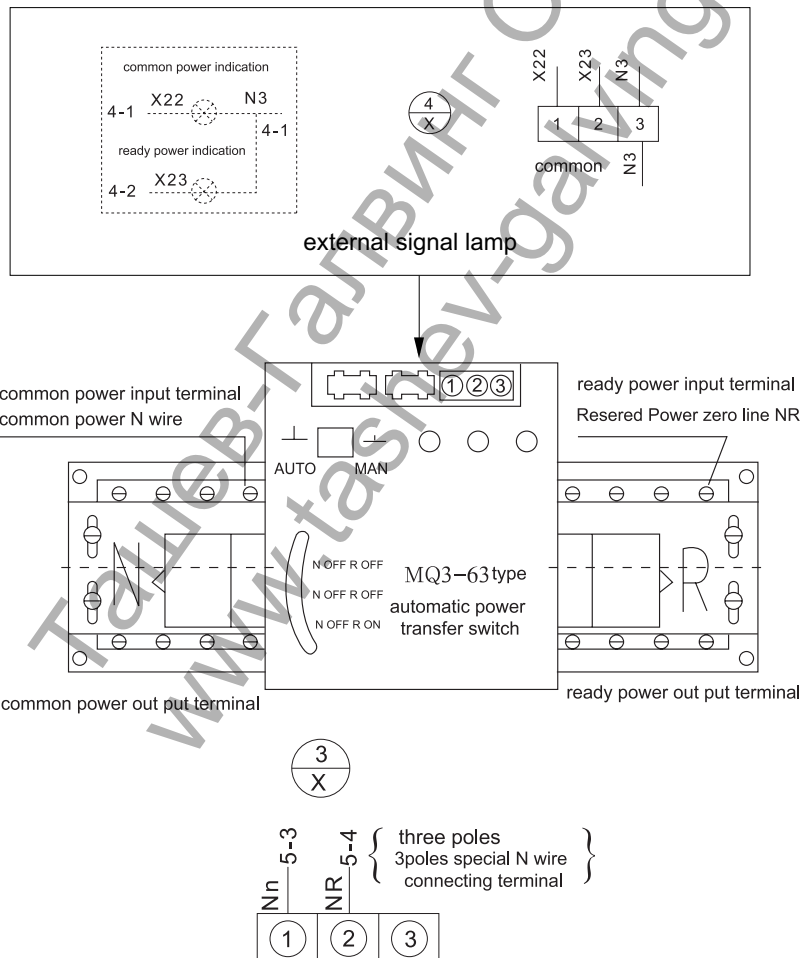
ATS Dual Power Automatic Transfer Switch

Operation and connection

◆ MQ3-63 connection diagram



Connection number	1-1	2-1	3-1	1-7	3-2	2-7	1-9	6-2	1-11	2-11			6-1	6-3	6-4	1-10	2-10
Poles			3	4	3	4											
Order number	L1	L4	Nn	Nn	NR	NR	X05	N3	X13	X12			X19	X20	X21	X22	X23
Terminal number	1	2	3	3	4	4	5	6	7	8	9	10	11	12	13	14	15



Notice: Manual handle is used for urgent.(controller power button in the concave position, is the manual position.)

Maintenance:

The transfer switch panel has two 1A fuses and one trinodal connection terminal. The fuse is used to automatic controller short circuit protection, and the terminal is indicate the signal lamp connects into the controller box panel, and supply the power, the voltage is AC220V, current is 150Ma. And 1 is common power signal lamp power, 2 is ready power signal lamp power.

MQ5 Moulded Case Circuit Breakers

General



MQ5 Dual Power Automatic Transfer Switch Series (hereafter called as MQ5) is a kind of new automatic transfer switch gathered switch and logic controller to achieve mechanic and electricity turn into a integral whole. It is suitable for using in the distribution equipment in industry and business with rated insulating voltage up to 1000V, rated frequency 50Hz, rated voltage 660V, conventional heating current up to 3200A supplying for switch automatically of common power and reserve power in power system or switch automatically and safety isolation of two sets load device etc. It can be used for hospital, shop, bank, high building, coal mine, telecommunication, iron mine, superhighway, airport, industrial flowing water line and military installation etc. important situation where disallow power supply failure.

The switch is an operation device that various logic order is sent by control circuit board to managing electrical engine, then through gear box, arouses spring store energy, release instantaneously after deceleration. So that can make and break circuit quickly or make circuit transfer. By obvious state can achieve safety insulation.

The switch can achieve full-automatic, compulsory "0", remote control, urgent manual-operation; while have lack phase examination and protection, under/over voltage examination and protection, frequency examination and protection and delay regulation, electric mechanism interlock etc. function

Characteristic and Parameter

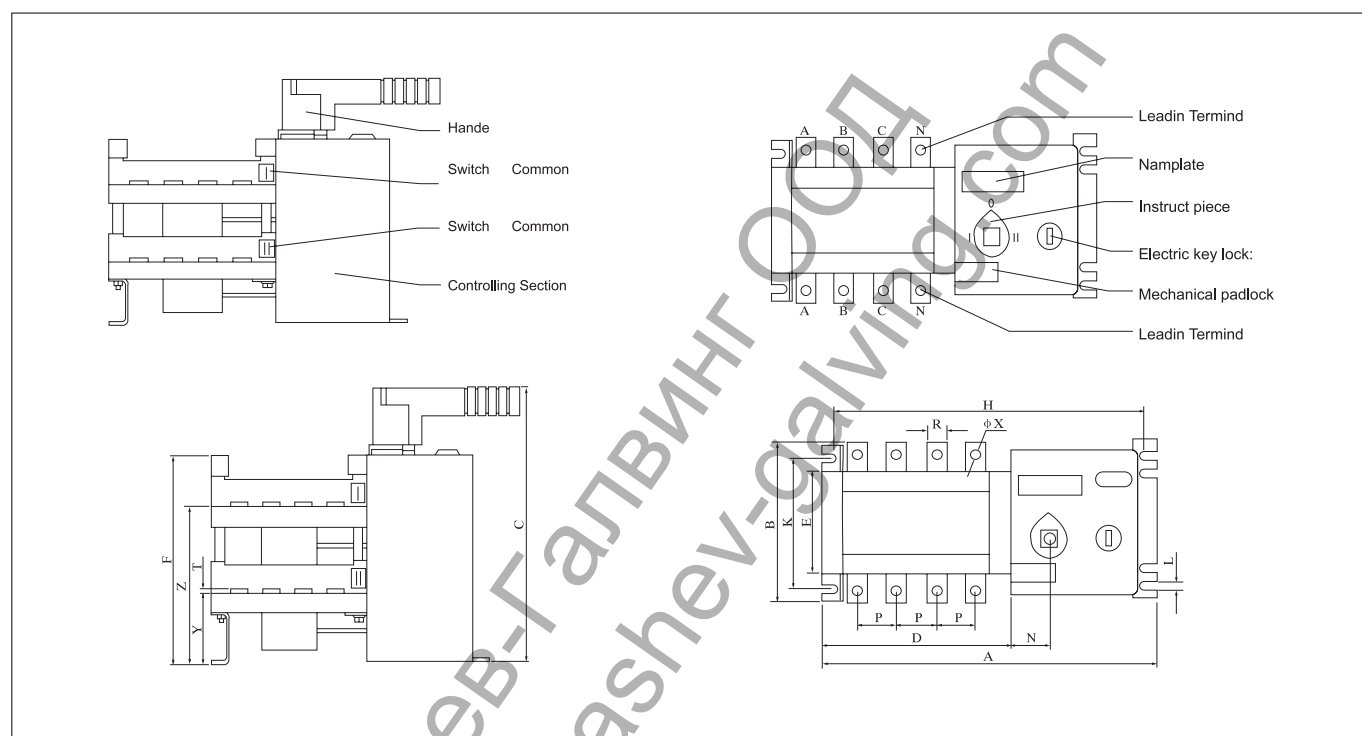
- ◆ The switch conforms to the requirement of GB14048.1, IEC60947-6-1 standard.
- ◆ Rated working voltage(Ue):DC220V, 440V;AC380V, 660V
- ◆ Rated making capacity (ARms):10 Ie
- ◆ Rated breaking capacity (ARms):8Ie

Conventional heating current			32	40	63	80	100	125	160	200	250	315	400	500	630	1000	1250	1600	
Rated insulating voltage			750V									1000V							
Dielectric Properties			3kV									5kV							
Rated impulse withstand voltage			8kV									12kV							
Rated working current	380V	AC-21	32	40	63	80	100	125	160	200	250	315	400	500	630	1000	1250	1600	
		AC-22	32	40	63	80	100	125	160	200	250	315	400	500	630	1000	1250	1600	
		AC-23	32	40	63	80	100	125	160	200	250	315	340	425	536	800	1000	1250	
	660V	AC-21	32	40	63	80	100	125	160	200	200	250	315	400	500	800	1000	1250	
		AC-22	32	40	63	80	100	125	125	160	200	200	250	315	400	500	800	1000	
		AC-23	25	32	32	40	40	63	63	80	100	125	160	200	250	315	400	500	
	220V	AC-21	32	40	63	80	100	125	160	200	250	315	400	500	630	1000	1250	1600	
		AC-22	32	40	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	
		AC-23	32	40	63	80	100	125	160	200	250	315	400	500	550	630	800	1000	
	440V	AC-21	32	40	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	
		AC-22	32	40	63	80	100	125	160	200	250	315	400	500	550	630	800	1000	
		AC-23	32	40	63	80	100	125	160	200	250	315	350	400	500	550	630	800	
Rated short time withstand current			7KA					9KA				13KA				26KA			
Rated limit short circuit current			70KA									100KA				120KA			
Operation torque (N · M)			AC-21					19		26		39				50			
Energy consume	Start	AC-22					325				355				440				
	Normal	AC-23					62				74				98				
Transfer time(S)			0.45									0.6				1.2			
Mechanical life			10000									5500				4000			
Weight (Kg)	3poles	4.8					7.2		8		10		10.5		14		15		16
	4poles	5.0					7.5		9		11		11.5		16		17.5		19

ATS Dual Power Automatic Transfer Switch

Structure and Characteristic

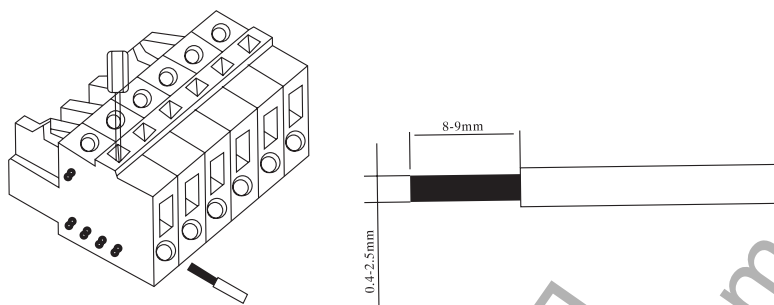
- ◆ Electric key lock: Control internal control circuit power. Only when it is open, switch can operated in full automatic, compulsory "0" and remote control. When it is close, the switch only could be operated manually.
- ◆ Operation handle: Must close electric lock when use operation handle.
- ◆ Mechanical padlock: Check special mechanical padlock device. When checking, transfer the switch at position "0", then pull padlock and hang the padlock to prevent from any accident (When pull padlock, internal control power will be cut off, switch can operated automatically, and can prevent handle from harnessing).
- ◆ Instruct piece: Has three state: means switch I is on. II means switch II is on. "0" means switch I, II are all off.



Type	A	B	C	D	E	F	H	K	L	N	P	R	T	ØX	Y	Z
MQ5-32~100/3	215	120	175	100	70	124	200	85	7	30	30	14	2.5	6	38	90
MQ5-32~100/4	245	120	175	130	70	124	230	85	7	30	30	14	2.5	6	38	90
MQ5-125~160/3	268	135	225	140	85	172	245	110	7	33	36	20	3.5	9	56	130
MQ5-125~160/4	298	135	225	170	85	172	275	110	7	33	36	20	3.5	9	56	130
MQ5-200~250/3	310	170	260	180	110	205	285	110	7	38	50	25	3.5	11	60	145
MQ5-200~250/4	360	170	260	230	110	205	335	110	7	38	50	25	3.5	11	60	145
MQ5-315~400/3	375	240	320	225	160	240	350	180	9	42	65	32	5	11	80	188
MQ5-315~400/4	435	240	320	290	160	240	415	180	9	42	65	32	5	11	80	188
MQ5-500~630/3	375	260	320	225	160	240	350	180	9	42	65	40	6	13	80	188
MQ5-500~630/4	435	260	320	290	160	240	415	180	9	42	65	40	6	13	80	250
MQ5-1000/3	505	312	370	378	200	295	470	220	11	50	120	60	8	13	108	250
MQ5-1000/4	625	312	370	498	200	295	590	220	11	50	120	60	8	13	108	250
MQ5-1250/3	505	356	370	378	200	295	470	220	11	50	120	80	8	13	108	250
MQ5-1250/4	625	356	370	498	200	295	590	220	11	50	120	80	8	13	108	250
MQ5-1600/3	505	356	370	378	200	295	470	220	11	50	120	80	10	13	108	250
MQ5-1600/4	625	356	370	498	200	295	590	220	11	50	120	80	10	13	108	250

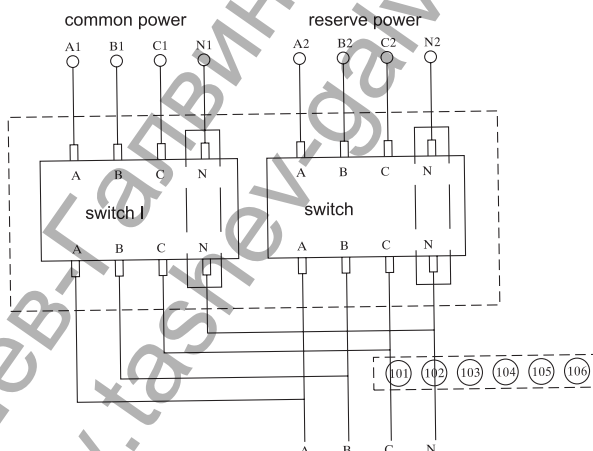
ATS Dual Power Automatic Transfer Switch

Terminal connection method



Energize downward, imbed wiring as picture.

Main circuit



Regulation Instruction

- ◆ When use operating handle, operated switch on/off three times, it should be operated neatly.
- ◆ Full-automatic regulation: discharge handle, connect with relative line, start electric lock, turn on common and reserve power, the switch should transfer to "I" position, then cut off common power, the switch should transfer to "II" position; turn on common power again, the switch should transfer to "I" position back.
- ◆ Compulsory "0" regulation: When common power working, start compulsory "0" self-lock button, the switch should transfer to "0" position; when reserve power working, start compulsory "0" self-lock button, the switch should transfer to "0" position.
- ◆ Long range control regulation: When common power working, start "II" button, the switch should transfer to "II" position; when reserve power working, start "I" button, the switch should transfer to "I" position;
- ◆ Exam signal indicator light: When common/reserve power is on/off, switch "I/II" making and breaking, electric/mechanic padlock is on/off, any signal indicator light should indicate relatively.
- ◆ After regulation, close down the power first, transfer switch to position "0" with handle.
- ◆ After install, discharge electric key and operating handle and keep respectively preventing accident.

MQ6 Dual Power Automatic Transfer Switch

General



This series automatic transfer switch is designed and developed by our company. It complies with GB/T14048.6 standard. All of parts, components are well selected, the finished products are under continuous 168 hours drying power-on running, and finally pass our serious checkout then leave our factory, thus, greatly ensure the reliability and safety.

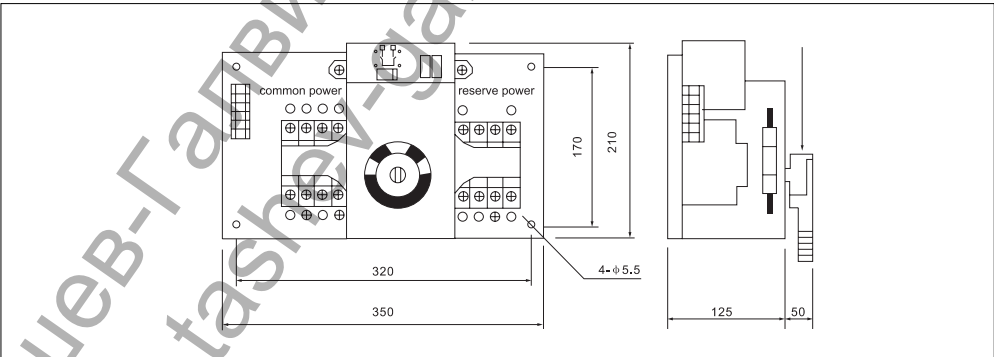
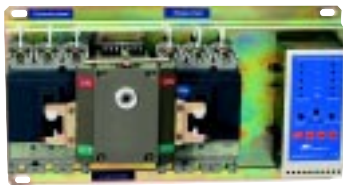
Service Range

This series automatic transfer switch which is suitable for using in double power supply system with rated voltage below 415V (660V), rated frequency 50Hz/60Hz, rated working current 63A and below, which is used in hospital, shop, bank, high building, coal mine, telecommunication, iron mine, superhighway, airport, etc. important situation where disallow power supply failure.

Service Condition

- ◆ Not over altitude 2000m.
- ◆ Ambient temperature : -10℃~+40℃.
- ◆ Pollution protection: Class III
- ◆ There must be not any explosive medium and no gas that would corrode metal or any con-ducting dust that would destroy the insulation.
- ◆ Atmospheric condition: the air relative humidity should not be more than 50% at +40℃, no higher relative humidity under lower temperature, the average humidity of the wettest month should not be more than +25℃, the average max. relative humidity of this month should not be more than 90%;

Overall and Installation Dimensions



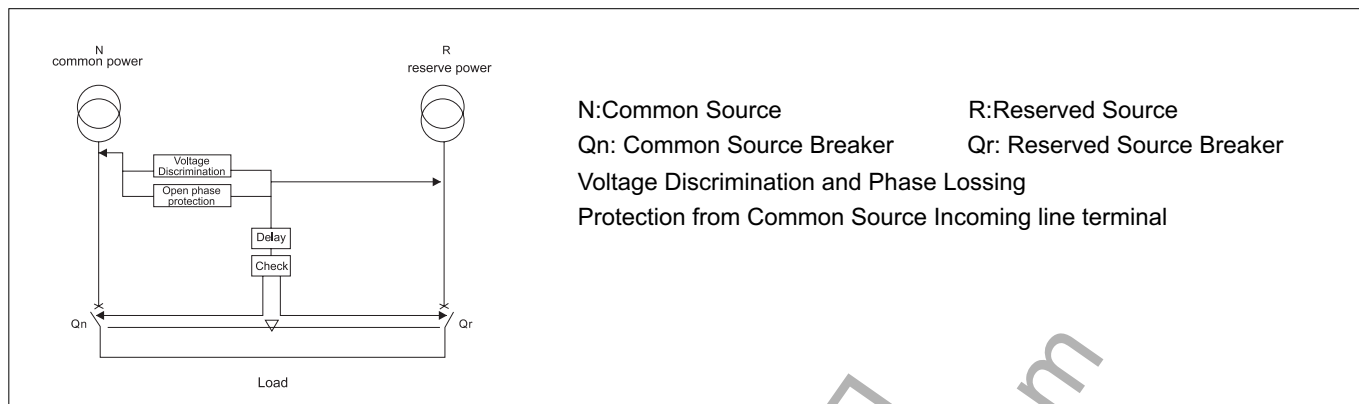
Specification and Parameter

Pole no.	Rated voltage U_e (V)AC	Rated current I_e (V)AC	Frequency	Ultimate short circuit breaking capacity (A)/cos(φ)	Mechanical life (times)
2	380V	6、10、16、20、	50/60	6000/0.65 4500/0.70	10000
3		25、32、40、50、			
4		63			

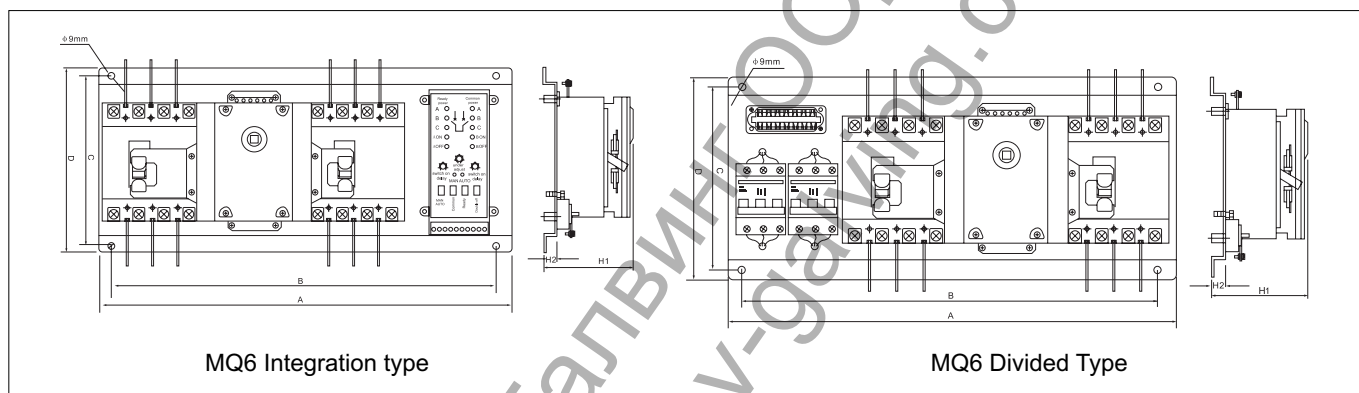
Work Principle

When common source is normal, the functional key is at position "auto", reserve breaker is open and common breaker is close to protect common source for connecting with load, the common power voltage indicator is light. When the common source failures (the voltage is lower than 60% of rated voltage), the common source will transfer to reserve source automatically, the reserved source voltage indicator is ON, the reserved source working indicator is ON. After removing the failure of the common source, this switch will transfer to the common source automatically again.

ATS Dual Power Automatic Transfer Switch



Overall and Installation Dimension



MQ6 Integration type Overall and Installation Dimensions

Dimension Specification	A		D	B		C	H1	H2
	3P	4P		3P	4P			
MQ6Y-63	400	420	220	370	390	195	< 142	26
MQ6Y-100	420	480	250	390	450	195	< 142	26
MQ6Y-160	450	520	250	420	490	225	< 160	26
MQ6Y-225	450	520	250	420	490	225	< 160	26
MQ6Y-400	570	660	330	540	630	305	< 196	26
MQ6Y-630	630	750	330	600	720	305	< 196	26
MQ6Y-800	630	750	330	600	720	305	< 196	26

MQ6 Divided Type Overall and Installation Dimensions

Dimension Specification	A		D	B		C	H1	H2
	3P	4P		3P	4P			
MQ6F-63	380	430	220	370	400	195	< 142	26
MQ6F-100	420	480	250	390	450	225	< 142	26
MQ6F-160	450	520	250	420	490	225	< 160	26
MQ6F-225	450	520	250	420	490	225	< 160	26
MQ6F-400	570	660	330	540	630	305	< 196	26
MQ6F-630	630	750	330	600	720	305	< 196	26
MQ6F-800	630	750	330	600	720	305	< 196	26

◆ Panel Tapping Dimension of Controller: W160 × H84 × D105

Main Characteristic

Type	MQ6-100/225	MQ6-400	MQ6-630/800
Mechanism life	5000	3000	2500
Electricity life	1000	1000	500
Total times of usage life	6000	4000	3000
Rated working system	Uninterrupted working system		
Over voltage transfer setting value	115%Ue (No adjusting, as it has being adjusted before leaving factory)		
Under voltage setting adjust scope	(60%~85%)Ue continuous adjustable		
Time of contact transfer	< 2s		
Switch off delay	0.5~30s continuous adjustable		
Switch on delay	0.5~30s continuous adjustable		

◆ Main Technical Data

Type	Selecting circuit breaker	Pole number	Breaking capacity I cu(KA)	Rated current (A)	Rated working voltage(V)	Rated insulating voltage(V)
MQ6-63	MM4-100	3Poles	25,35	40、50、	AC 380(400)	690
		4Poles	35	63、80、100		
MQ6-100	MM4-160	3Poles	35,50	63、80、100、	AC 380(400)	690
		4Poles	50	125、140、160		
MQ6-225	MM4-250	3Poles	35,50	100、125、140、	AC 380(400)	690
		4Poles	50	160、200、225、250		
MQ6-400	MM4-400	3Poles	50,65	250、315、350、400	AC 380(400)	690
		4Poles	65			
MQ6-630	MM4-630	3Poles	50,65	400、500、630	AC 380(400)	690
		4Poles	65			
MQ6-800	MM4-800	3Poles	50,65	630、700、800	AC 380(400)	690
		4Poles	65			

Main Characteristic

Automatic controller exam the voltage of two circuit at the same time. When power voltage higher than rated value 110%, considering over voltage, while lower than rated value 60%~80%, considering under voltage. Computer judges and deal with the exam result, then sent orders such as switch on, switch off, generate, uninstall or alarm. The above exam result showed on the control board and also can be connect with computer supply for user to exam reason. Intelligent controller has three types: automatic switch and restore suits for power network -power network and power network -generator, automatic switch without restore suits for power network -power network.

◆ Self-transfer and self-recovery (R) suits for power network -power network

Making is consider as common power acquiescently, when common power is abnormal, it will transfer to zero position after three seconds, and through delayer transfers to reserve power (R) automatically. The delay time can be set 0~30 seconds.

◆ Self-transfer and non-self recovery suits for power network -power network

Controller exams and transfers common power (N) and reserve power (R) in the two supplying powers. Consider common power as initial state, when common power (N) is abnormal, it will transfer to zero position after three seconds, and through delayer transfers to reserve power (R) automatically. But it won't restore after common power (N) is normal.