

Lifan Power USA

ATS-200A Operation Manual

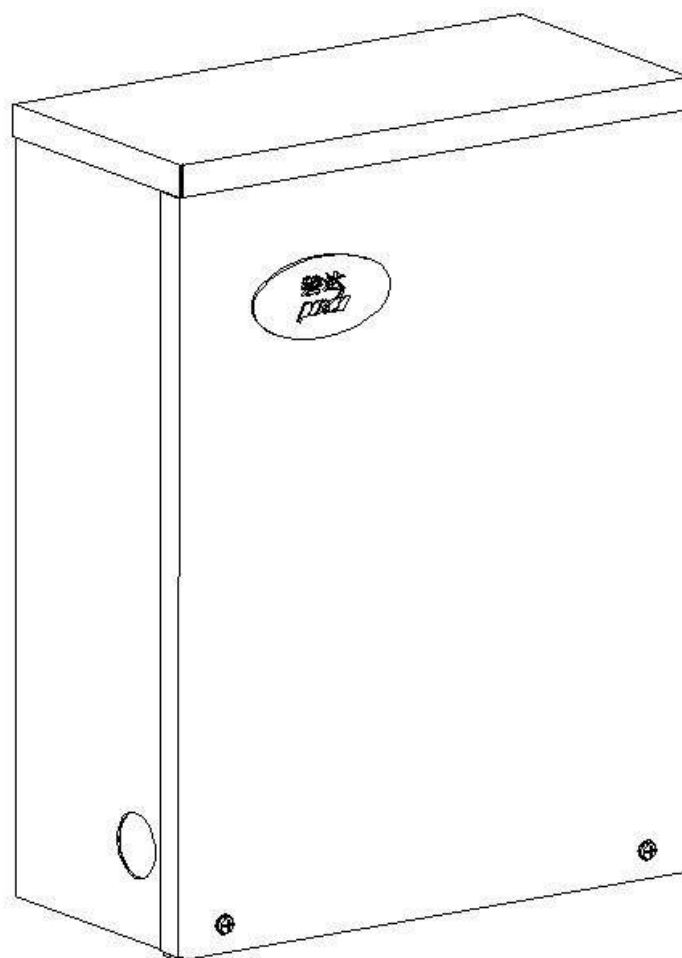


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Preface

Lifan Power USA Automatic Transfer Switch (hereinafter referred to as ATS) only utilizes the very best ATS components and AC Contactors for the main switches, and are manufactured from advanced and closely controlled production processes. They can be paired with any of our automatic generator sets, in order to form a complete and thorough Mains, Gas generator or Gasoline generators Automatic Transfer System.

The DKG-173 Transfer Controller installed inside our 200amp ATS applies to single phase as well as 3-phase applications, with phase voltage of 220VAC. Plugin connectors are installed with external connection which makes the maintenance, inspection or replacement very easy and convenient.

Functions

ATS has control functions (such as genset start-up delay, mains restore delay and voltage detection, etc.). When the ATS was applied with automatic gensets, the genset's Control Box will send transfer signal in order to transfer loads automatically. It can operate with our automatic control systems or other brands that have remote start self-control functions which are simple and economic.

Control Mode

Generating/Automatic/Mains

LED Display

Mains Available

Mains on Load

Generator Available

Generator on Load

Parameters Setting

- M.VOLT. SET: Mains Voltage Normal Value Setting, 75-100% settable.
- "VOLT. 100%" = 170-300V.
- MCT: Closing Delay Time after the Mains Voltage is back to normal, 0-40MIN settable.
- GCT: Closing Delay Time after the Generator Voltage is back to normal, 0-40S settable.
- G.VOLT. SET: Generator Voltage Normal Value Setting, 75-100% settable.
- "VOLT. 100%" = 170-300V.
- Protection Function: Mains /Generator Low-Voltage Protection.

Operation Instructions

Automatic Mode

1. Move the control switch of the ATS Control Panel on the AUTO position, the control mode of the genset is “AUTO”.
2. When mains on load, the indicators “Mains Available” and “Mains on Load” light on.
3. When mains failure occurs or utility is abnormal, the genset will be controlled by the Control Box for “Start-up Delay” automatic start.
4. When the genset has started and the voltage is normal, the indicator “Generator Available” lights on. The ATS automatically transferred to the generator side and the indicator “Generator on Load” lights on.
5. When the utility is restored, the indicator “Mains Available” lights on. The ATS automatically transferred to mains side after the genset Control Box has sent the “Mains on Load” signal. The indicator “Generator on Load” lights off and “Mains on Load” lights on.
6. When ATS Control Box detected that the genset voltage was normal, the indicator “Generator Available” lights on. The ATS will transfer to the generator side when GCT time setting was set on conditions of “Generator on Load”.

Fault Inspection and Troubleshooting

All our products will be strictly inspected before delivery in order to guarantee the quality of products. Unreliability caused by users' improper installation and misuse can be checked in accordance with the following instructions. Please contact us or the nearest dealer for help if faults are still unresolved.

1. The Main Switch has no action

- 1). The start-up delay has not finished. Waiting please!
- 2). Verify whether the line connections are right or not, especially the mains power source, the generator power source and loaded lines.
- 3). Check if the control lines from ATS to Control Box were connected correctly or not.

2. Indicators do not work

- 1). Verify whether the line connections are right or not, especially the mains power source, the generator power source and loaded lines.
- 2). Check if the setting of each control panel delay potentiometer is right or not.

3. Generator can not start in case of the utility outage

- 1). Verify whether the ATS Control Panel control switch and generator are set in "AUTO" position.
- 2). Check if the control lines from ATS to generator's Control Box were connected correctly or not.

DKG-173 Manual

DIN RAIL MOUNTED ATS CONTROLLER WITHOUT DC SUPPLY

DESCRIPTION

The DATAKOM model DKG-173 is a DIN Rail mounted ATS controller not requiring DC supply.

The unit monitors 3-phase mains voltages, sends remote start command to the generating set and performs changeover of both generator and mains contactors.

The Front Panel LED provides information about mains and generator power availability as well as contactor positions.

Mains return delay and genset contactor delays are adjustable between 1 and 40 seconds through front panel knobs.

FEATURES

- DIN Rail mounted
- No DC supply required
- Adjustable MCB and GCB delays
- 10A/250VAC MCB and GCB outputs
- 10A/28VDC/250VAC remote start output
- Isolated mains and genset inputs

OPERATION

- When the mains exist while all its phase voltage are below the limit
1/ If R, MC, RST LEDs are on.
-The MCB terminal is supplied with voltage R.
-The REMOTE START relay contact is open.



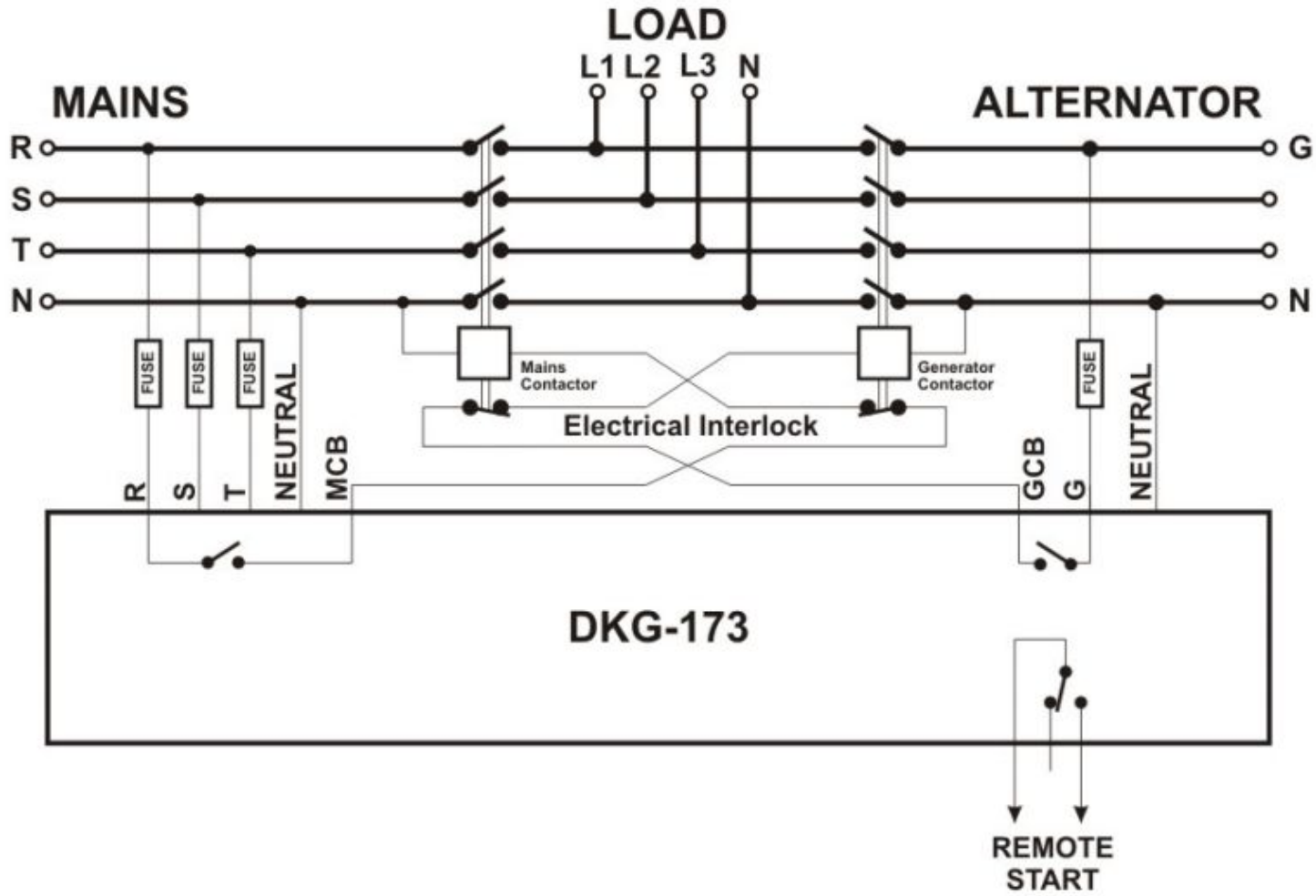
-The REMOTE START relay contact opens.

- If any phase voltage of mains is over the limit
-R, MC, RST LEDs turn off.
-The MCB terminal is open.
-The REMOTE START relay contact closes.

The REMOTE START output is expected to provide a genset running condition.

- When the genset voltage G is over the limit
-The G led turns on.
-At the expiration of the genset

Typical Connection Diagram



INPUTS

- R-S-T: Mains phase voltages.
- NEUT-MN: Mains neutral terminal.
- G: Generator phase voltage.
- NEUT-GN: Generator neutral terminal.

OUTPUTS

- MCB-MAINS CONTACTOR: Normally open relay output connecting the phase-R voltage to the terminal. (10A@250V-AC)
- GCB-GENERATOR CONTACTOR: Normally open relay output connecting the phase-G voltage to the terminal. (10A@250V-AC)
- REMOTE START: Normally open engine start request relay output. (10A@28V-DC/250V-AC)

LED INDICATORS

- G: genset voltage present
- GC: genset contactor closed
- R: power supplied from mains
- RST: mains voltages present
- MC: mains contactor closed

TECHNICAL SPECIFICATIONS

- Alternator Voltage: 170-300 V-AC (Ph-N)
- Mains voltages: 170-300 V-AC (Ph-N)
- Generator Contactor Delay: 1 to 40 sec. adjustable
- Mains Return Delay: 1 to 40 sec. adjustable
- MCB Relay Output: 10A @ 250V-AC
- GCB Relay Output: 10A @ 250V-AC
- Remote Start Relay Output: 10A @250V-AC/28V-DC
- Operating temp.: -30°C (-22°F) to 70 °C (158°F).
- Storage temp.: -30°C (-22°F) to 80 °C (176°F).
- Maximum humidity: 95% non-condensing.
- Dimensions: 70 × 115 × 66mm (W × H × D)
- Weight: 180g (approx.)
- Installation: DIN Rail mounted.
- Case Material: High Temp. ABS/PC (UL94-V0)
- IP Protection: IP20
- Conformity (EU directives)
 - 2006/95/EC (low voltage)
 - 2004/108/EC (EMC)
- Norms of reference:
 - EN 61010 (safety requirements)
 - EN 61326 (EMC requirements)



Application Range

MCTRANS Series Dual power transfer switches (ATSE) are advanced products which adopted the early twentieth century technology. It can used for two-way power source infrequently transferred switched with rated insulation voltage AC800V and DC250V, rated current 20 to 5000A, rated frequency 50 or 60 Hz.

It mainly applied in occasions where need uninterruptible power supply, such as malls & office buildings, post & communications, fire-fighting, military, mines, ship & vessel, escalator & elevator and industrial assembly lines, etc. in order to meet the requirements of providing more reliable power sources.

The products are characterized by its small size, easy operation, fast switching speed and high reliability.

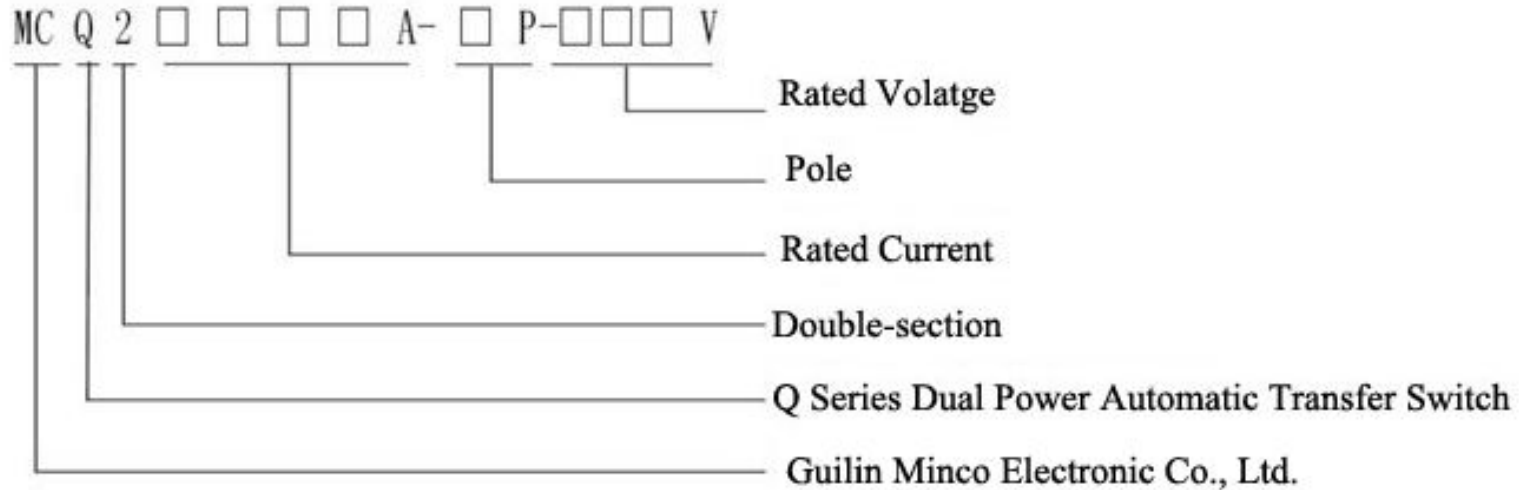
MCQ2 Model is double segments (without Neutral Position, transfer sequence: Mains to Generator) dual power transfer switch.

MCQ3 Model is three segments (with Neutral Position, transfer sequence: Mains to Neutral to Generator) dual power transfer switch.

Standards

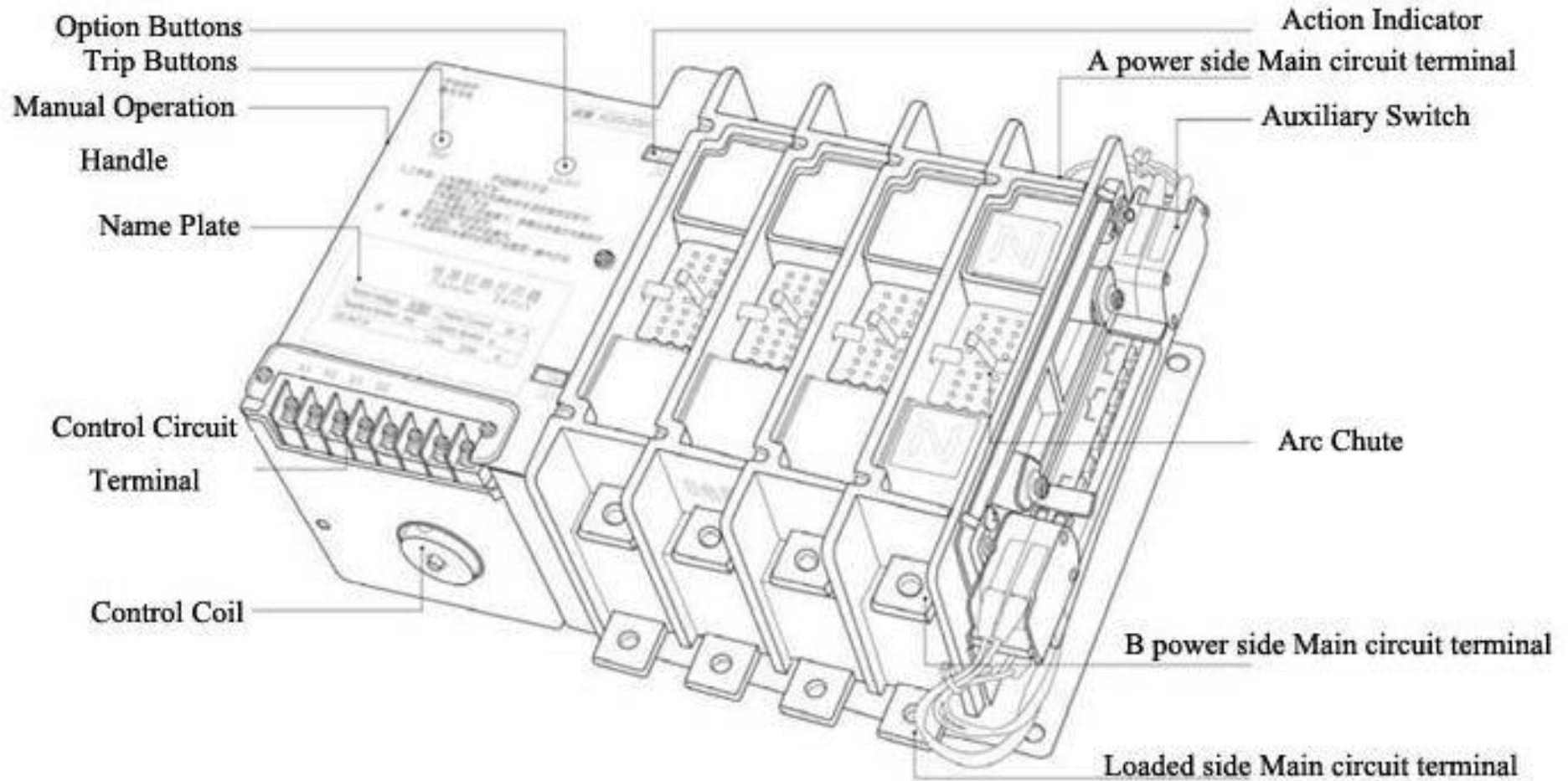
- IEC60947-1/GBT.14048.1-2000** Low-voltage switch Equipment and control
Equipment General rules
- IEC60947-3/GBT.14048.3** Low Voltage Switch Equipment and Control
Equipment Low-voltage Switch, Isolator, Isolation
switch and Combined Electronic Equipment
- IEC60947-6/GBT.14048.11** Automatic Change-over Switch Circuit

Relevant Models and Implications



Model	Rated Current	Pole	Rated Voltage	Wiring Method	Control Voltage
MCQ3 three segments with open position	20 40 80 100	2: 2 poles	690V	F: Front	2: 230VAC
MCQ2 double segments without open position	125 160 200 225 250 350 400	3: 3 poles 4: 4 poles	400V	B: Back	4: 400VAC

Product Appearance and Parts Description



Main Technical Specifications

MCQ3 Main Technical Specifications

Model			MCQ3														
Rated Voltage			AC400V/690V							DC125V/250V							
Rated Current			20A-63A			80A-125A			160A-250A			350A-500A			630A-800A		
Coil Quantity			Double Coils														
Wiring Method			Front											Back			
Pole			2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
Weight(KG)			5.5	6	6.5	6	6.5	7	6	8	10	11	14	18	25	33	42
Operating Current	DC100V (A)		3	3	4	3	3	4	3	4	5	5	5	7	6	6	6
	AC100V/110V (A)		3	3	4	3	3	4	3	4	5	5	5	7	6	6	6
	AC200V/220V (A)		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
Tripping Current	DC100V		1A							1.5A			2A				
	AC100V/110V		1A							1.5A			2A				
	AC200V/220V		0.5A							0.7A			1A				
Performance	Short-time Withstand Current		5KA					10KA			12KA			15KA			
	Rated Conditional Short-circuit Current		12.5KA					25KA			30KA			37.5KA			
	Connecting and Breaking Capability		AC-33B(10Ie Connect • 8Ie Break) cos=0.35 DC-33B 1.1Ie Connect • 1.1Ie Break L/R=1 ms														
	Switching Time	A power side	Control	55ms							60ms			100ms			
Break			20ms							25ms			30ms				
	B power	Control	80ms							80ms			135ms				

Automatic Transfer Switch User Manual

		side	Break	20ms	20ms	30ms
	Life		Electrical: 2500 operations, Mechanical: 10000 operations			
	Operating Recycles		120 operations/hour			
Auxiliary Switch			A power side 1C, B power side 1C, Switch Capacity AC100V 5A AC200V 2.5A DC100V 0.5A			
Accessories			Manual Operation Handle			

Continued

Model		MCQ3																	
Rated Voltage		AC400V/690V								DC125V/250V									
Rated Current		1000A		1250A		1600A		2000A		3150A		4000A		5000A					
Coil Quantity		Double Coils																	
Wiring Method		Back																	
Pole		2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	3P	3P	
Weight(KG)		30	39	49	31	40	51	36	47	59	95	115	135	110	150	190	207	265	
Operating Current	DC100V (A)	6	6	8	6	6	6	7	8	9	8	10	12	10	12	14	16	18	
	AC100V/110V (A)	6	6	8	6	6	6	7	8	9	8	10	12	10	12	14	16	18	
	AC200V/220V (A)	3	3	4	3	3	4	3.5	4	4.5	4	5	6	7	7	8	8	9	
Tripping Current	DC100V	2A						4A											
	AC100V/110V	2A						4A											
	AC200V/220V	1A						1A											
Performance	Short-time Withstand Current	22KA				25KA				35KA				50KA		50KA		50KA	
	Rated Conditional Short-circuit Current	50KA				55KA				55KA				80KA		100KA		120KA	

Automatic Transfer Switch User Manual

Connecting and Breaking Capability			AC-33B(10Ie Connect • 8Ie Break) cos=0.35 DC-33B 1.1Ie Connect • 1.1Ie Break L/R=1 ms					
Switching Time	A power side	Control	115ms	115ms	180ms	140ms	200ms(190)	210ms(190)
		Break	25ms	25ms	25ms	30ms	30ms (30)	35ms (35)
	B power side	Control	145ms	150ms	220ms	190ms	220ms(240)	150ms(270)
		Break	25ms	25ms	25ms	30ms	30ms (30)	35ms (35)
Life			Electrical: 2000 operations, Mechanical: 8000 operations			Electrical: 2000 operations, Mechanical: 8000 operations		
Operating Recycles			120 operations/hour			30 operations/hour		
Auxiliary Switch			A power side 1C, B power side 1C, Switch Capacity AC100V 5A AC200V 2.5A DC100V 0.5A					
Accessories			Manual Operation Handle					

MCQ2 Main Technical Specifications

Model		MCQ2								
Rated Voltage		AC400V/690V					DC125V/250V			
Rated Current		20A-63A			80A 100A 125A			160A 200A 225A 250A		
Coil Quantity		Double Coils								
Wiring Method		Front								
Pole		2P	3P	4P	2P	3P	4P	2P	3P	4P
Weight(KG)		4.5	5	5.5	5	5.5	6	6	8	10
Operating Current	DC100V (A)	3	3	4	3	3	4	3	4	5
	AC100V/110V (A)	3	3	4	3	3	4	3	4	5
	AC200V/220V (A)	1.5	1.5	2	1.5	1.5	2	1.5	2	2.5

Automatic Transfer Switch User Manual

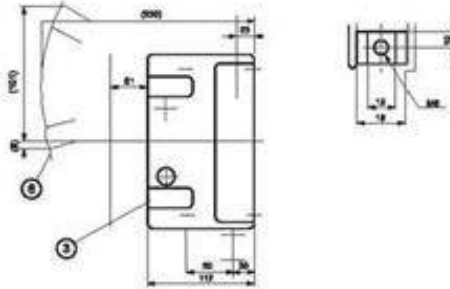
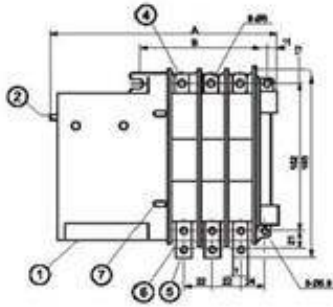
Tripping Current	DC100V		1A	
	AC100V/110V		1A	
	AC200V/220V		0.5A	
Performance	Short-time Withstand Current		5KA 10KA	
	Rated Conditional Short-circuit Current		12.5KA 25KA	
	Connecting and Breaking Capability		AC-33B(10Ie Connect • 8Ie Break) cos=0.35 DC-33B 1.1Ie Connect • 1.1Ie Break L/R=1 ms	
	Switching Time	A power side	Control	55ms
			Break	20ms
		B power side	Control	80ms
			Break	20ms
	Life		Electrical: 2500 operations, Mechanical: 10000 operations	
Operating Recycles		120 operations/hour		
Auxiliary Switch		A power side 1C, B power side 1C, Switch Capacity AC100V 5A AC200V 2.5A DC100V 0.5A		
Accessories		Manual Operation Handle		

Note: The outside dimensions of MCQ2 Models Rated Current from 350A to 500A are the same as the 350A to 500A Models of the MCQ3.

Installation Dimensions

20A-63A

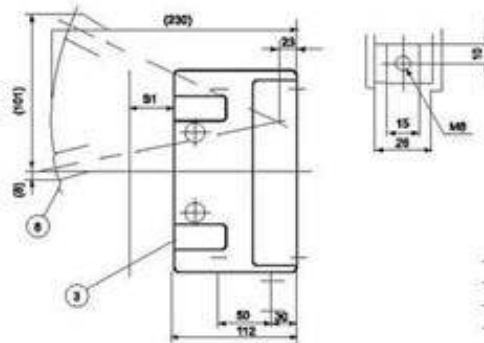
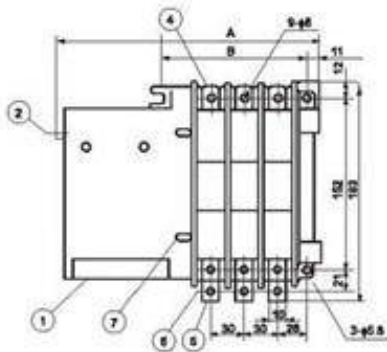
Panel Safe Distance (S1 Dimensions: 30mm (400V), 60mm (690V))



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

80A-125A

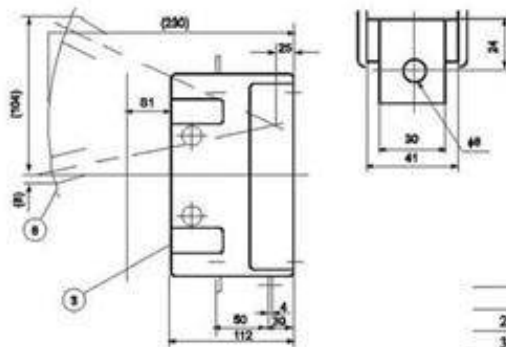
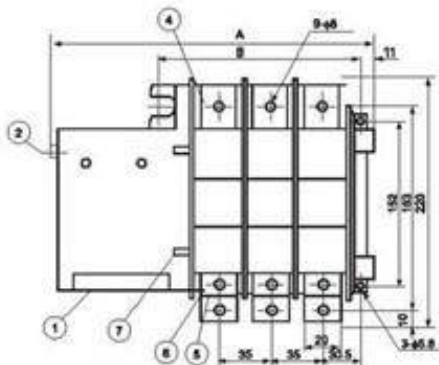
Panel Safe Distance (S1 Dimensions: 30mm (400V), 60mm (690V))



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

160A-250A

Panel Safe Distance (S1 Dimensions: 30mm (400V), 60mm (690V))



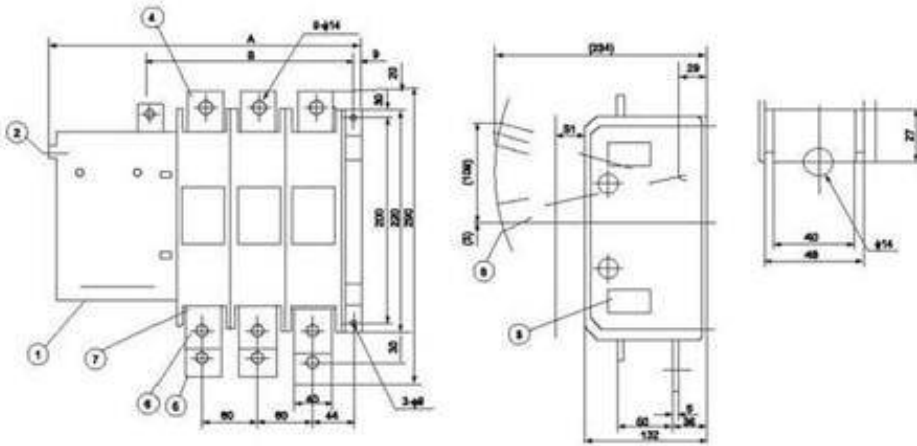
	A	B
2P	219	113
3P	254	148
4P	289	183

- ① Operation Circuit Terminal
- ② Manual Operation Handle Entrance
- ③ Auxiliary Switch
- ④ A power side Main Circuit Terminal
- ⑤ Loaded Side Main Circuit Terminal
- ⑥ B power side Main Circuit Terminal
- ⑦ ON/OFF Option Buttons
- ⑧ Manual Operation Handle(Removable)

Automatic Transfer Switch User Manual

350A-500A

Panel Safe Distance (S1 Dimensions: 30mm (400V), 60mm (690V))



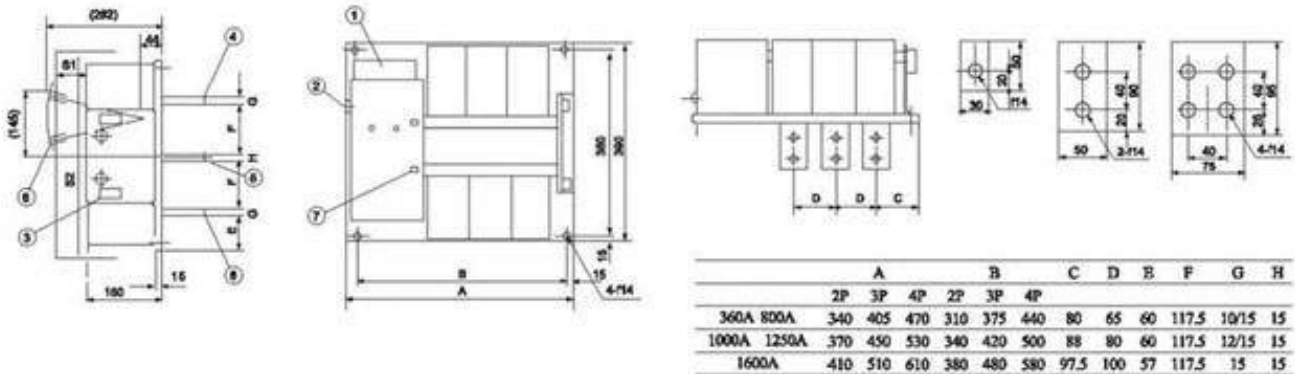
	A	B
2P	280	164
3P	340	224
4P	400	284

MCQ3 630A-1600A Only

S1 Dimensions: 45mm (400V), 90mm (690V)

S2 Dimensions: 430mm (400V), 450mm (690V)

630A 1000A 1600A
800A 1200A

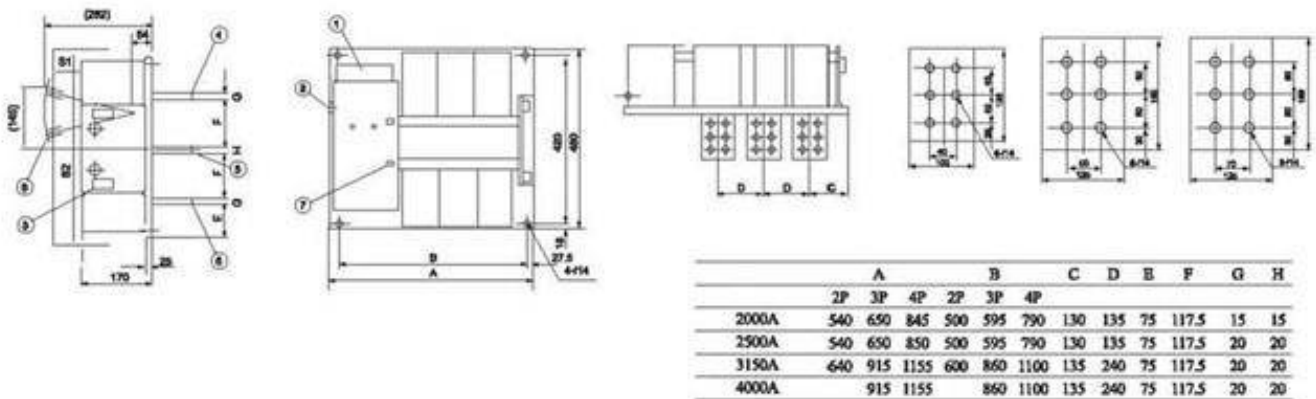


	A			B			C	D	E	F	G	H
	2P	3P	4P	2P	3P	4P						
360A 800A	340	405	470	310	375	440	80	65	60	117.5	10/15	15
1000A 1250A	370	450	530	340	420	500	88	80	60	117.5	12/15	15
1600A	410	510	610	380	480	580	97.5	100	57	117.5	15	15

MCQ3 2000A-4000A Only

S1 Dimensions: 50mm (400V), 100mm (690V)

S2 Dimensions: 560mm (400V), 600mm (690V)



	A			B			C	D	E	F	G	H
	2P	3P	4P	2P	3P	4P						
2000A	540	650	845	500	595	790	130	135	75	117.5	15	15
2500A	540	650	850	500	595	790	130	135	75	117.5	20	20
3150A	640	915	1155	600	860	1100	135	240	75	117.5	20	20
4000A		915	1155		860	1100	135	240	75	117.5	20	20

Box Machining Dimensions

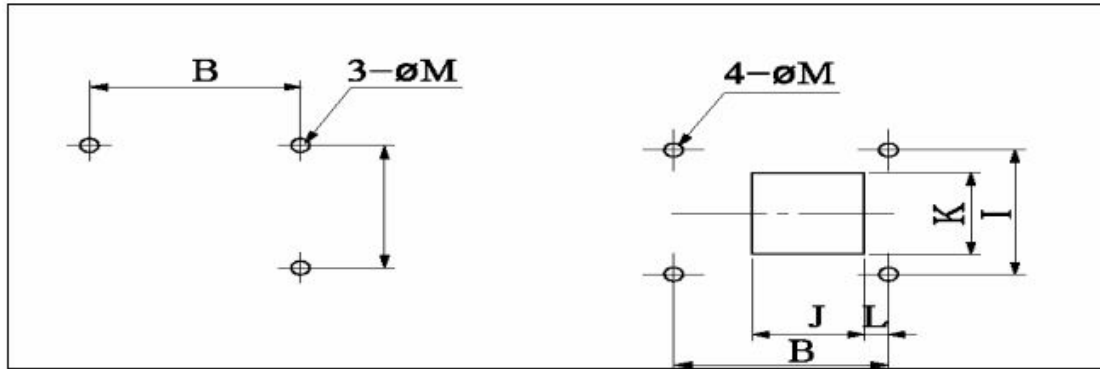


Figure I . Fixing Bolt Hole (Front)

Figure II . Fixing Bolt Hole and Panel Hole (Back)

Model	MCQ3 100	MCQ3 250	MCQ3 400	MCQ3 630	MCQ3 800	MCQ3 1000	MCQ3 1250	MCQ3 1600	MCQ3 2000	MCQ3 2500	MCQ3 3150	MCQ3 4000	
B	2P	103	113	164	310	310	340	340	380	460	500	685	685
	3P	133	148	224	375	375	420	420	480	595	645	915	915
	4P	163	183	284	440	440	500	500	580	790	790	1155	1155
I	152	152	200	360	360	360	360	360	420	420	420	420	
J	2P	—	—	—	145	145	180	180	225	285	310	460	460
	3P	—	—	—	210	210	260	260	325	420	455	690	690
	4P	—	—	—	275	275	340	340	425	600	600	920	920
K	—	—	—	330	330	330	330	330	350	350	350	350	
L	—	—	—	25	25	23	23	20	20	20	65	65	
M	5.8	5.8	9	14	14	14	14	14	14	14	14	14	
Figure	I			II									

Note:

① Keep the wire bending pressure from placing directly on the terminal when connecting the main circuit terminal.

② For the arc extinction distance outside the arc chute, please see the Outside Dimensions Part Figure I and Figure II .

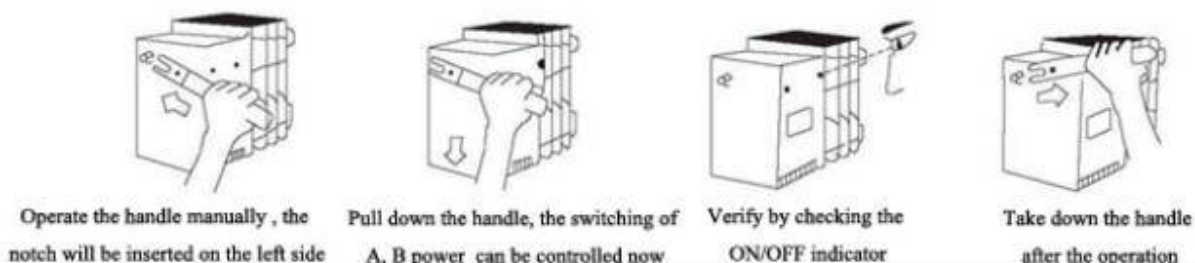
③ Please connect the grounding wire to the terminal marked \perp .

Manual Operation Instructions

The terminals may be melted when operation under load due to different individual operation differences. Avoid using manual operation method if possible. Please operate as the following instructions if the manual operations are unavoidable.

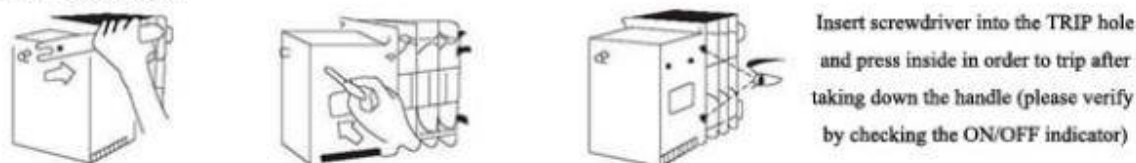
1. Completely no operation power supply
2. When checking on operating mechanisms and contacting terminals under non-loaded conditions
3. In case of failure and electric start can not be operated.

Double segments A, B power side Control Method

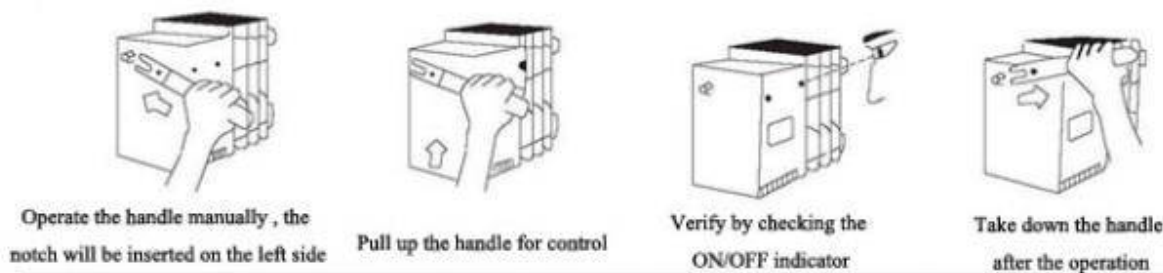


Three segments A, B power side Control Method

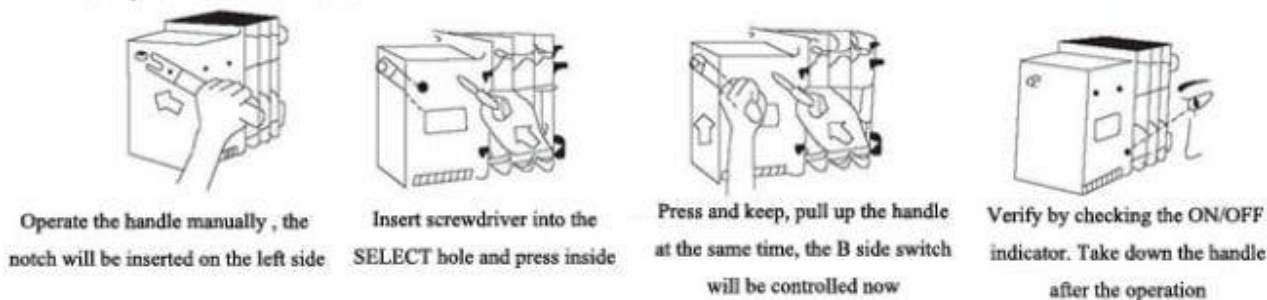
1) Manual tripping Method



2) A power side control method

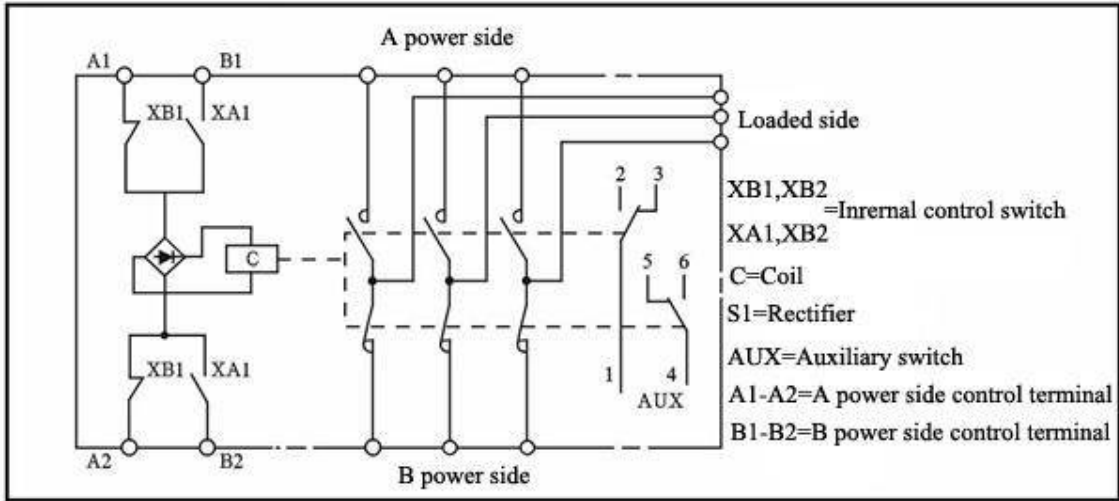


3) B power side control method

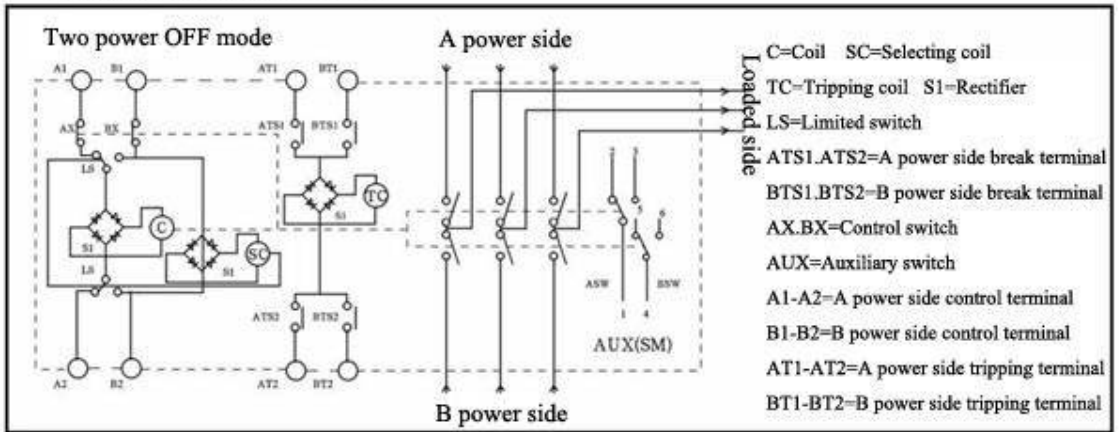


Typical Connection Diagram

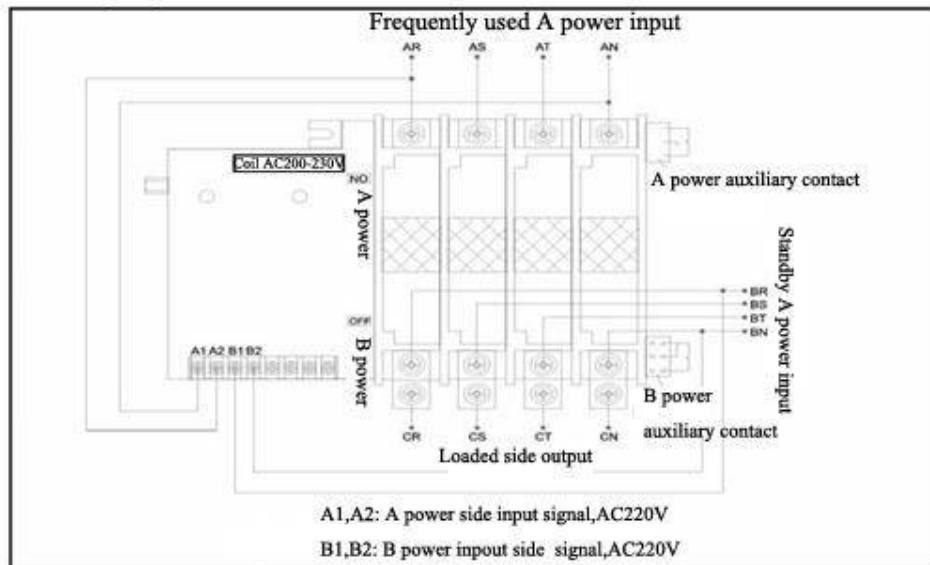
Internal wiring diagram of MCQ2



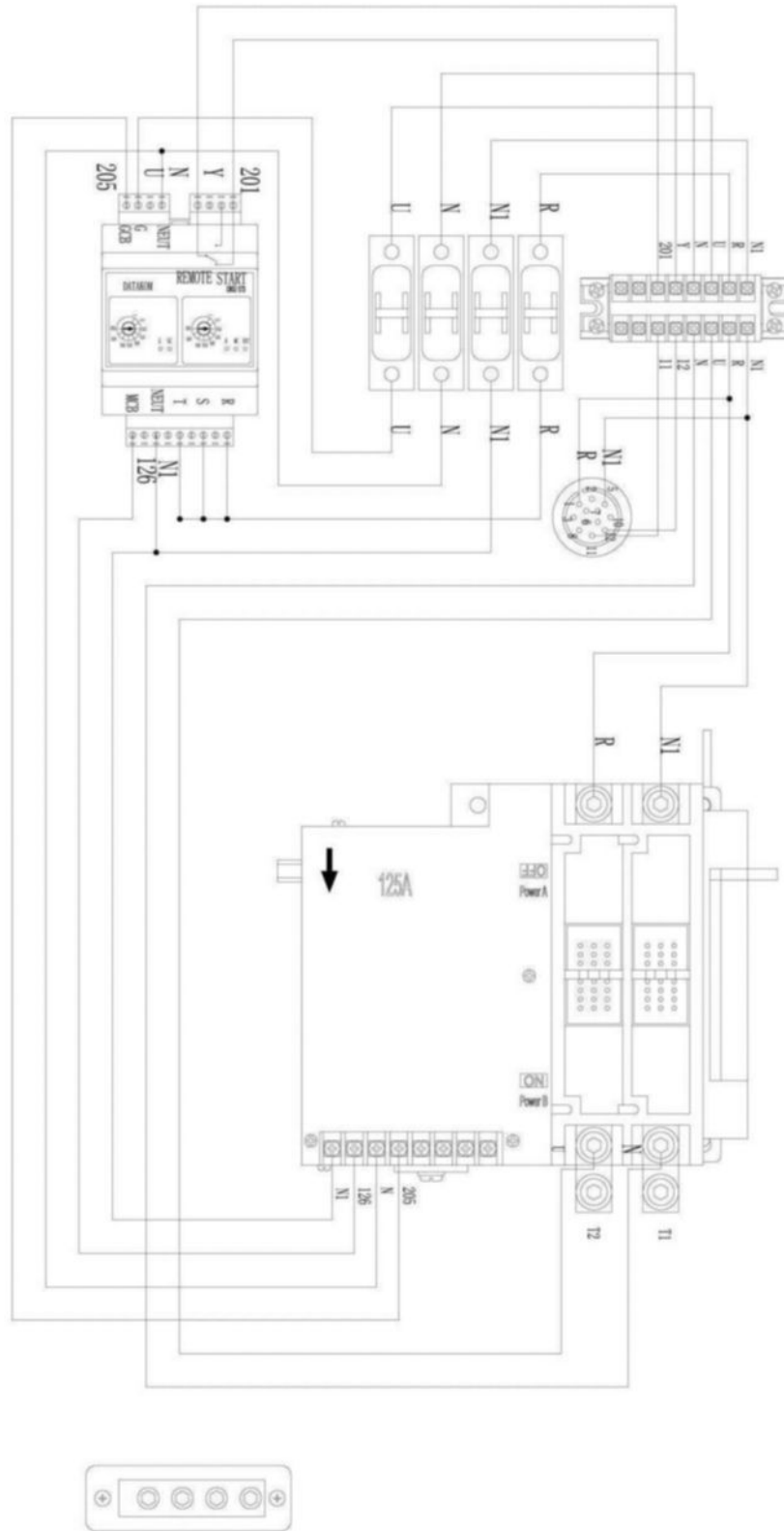
Internal wiring diagram of MCQ3



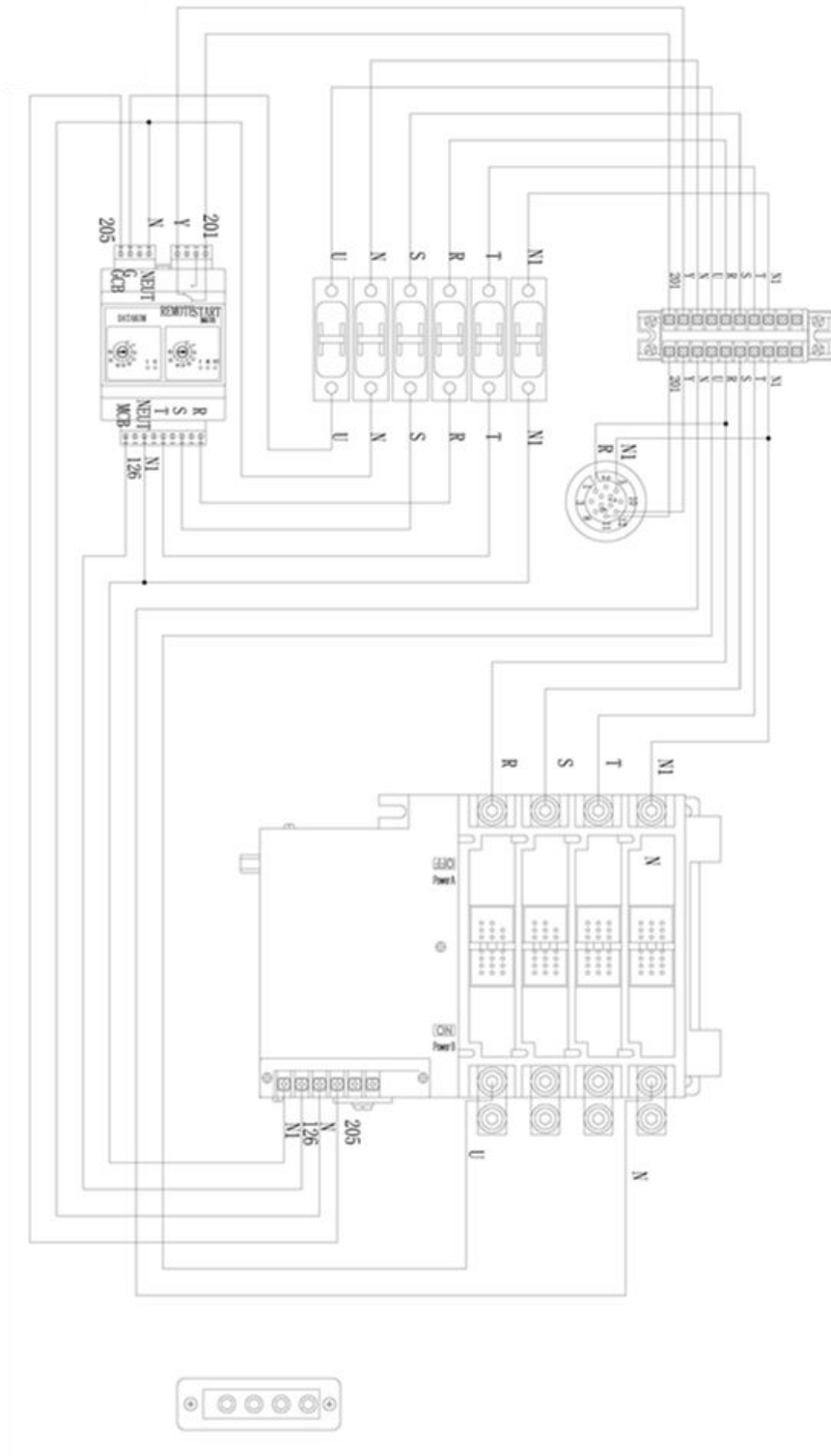
External wiring diagram



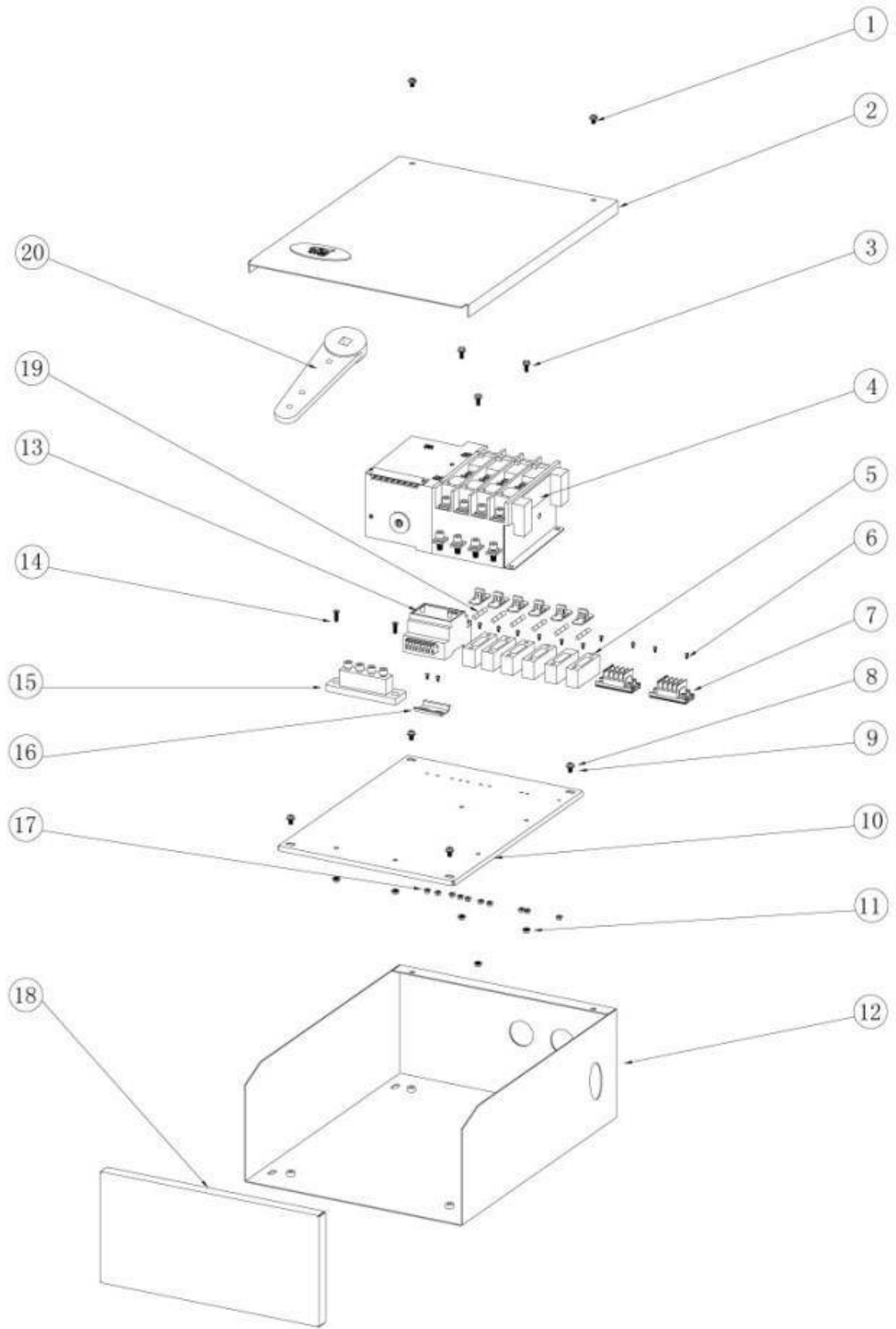
ATS Single Phase Wiring Diagram



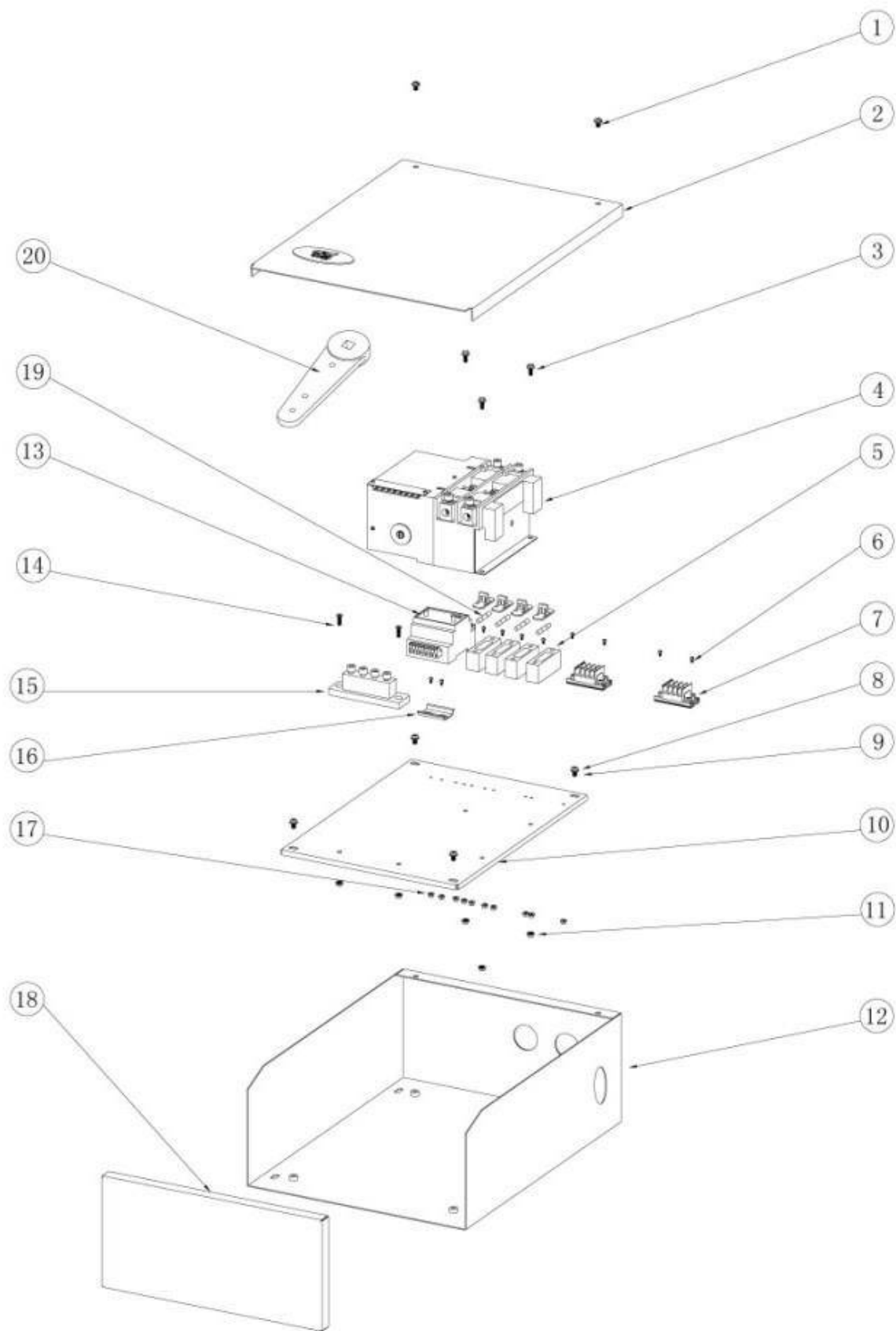
ATS Three Phase Wiring Diagram



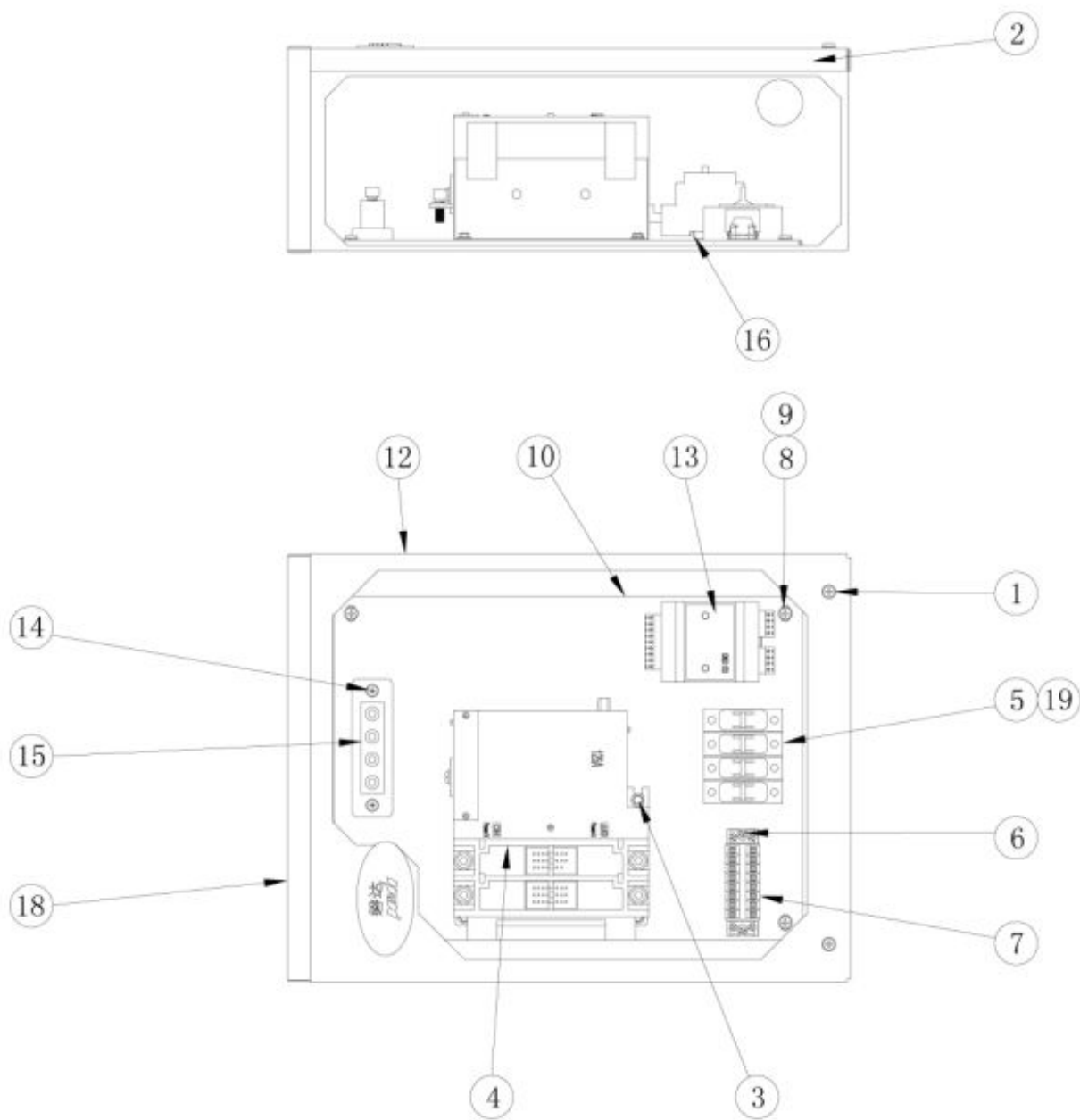
ATS Three Phase Exploded Diagram



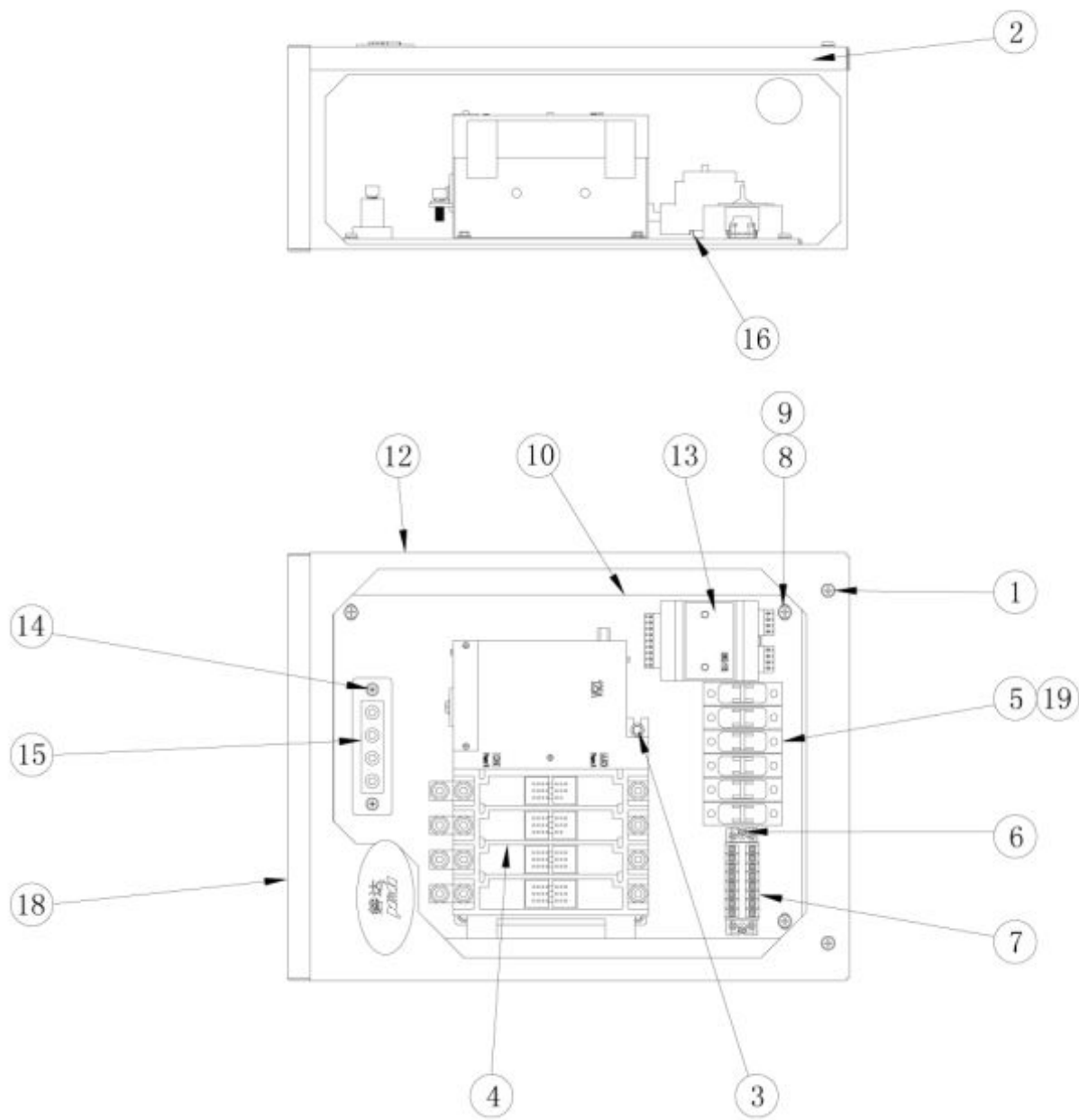
ATS Single Phase Exploded Diagram



Single Phase Installation Diagram



Three Phase Installation Diagram

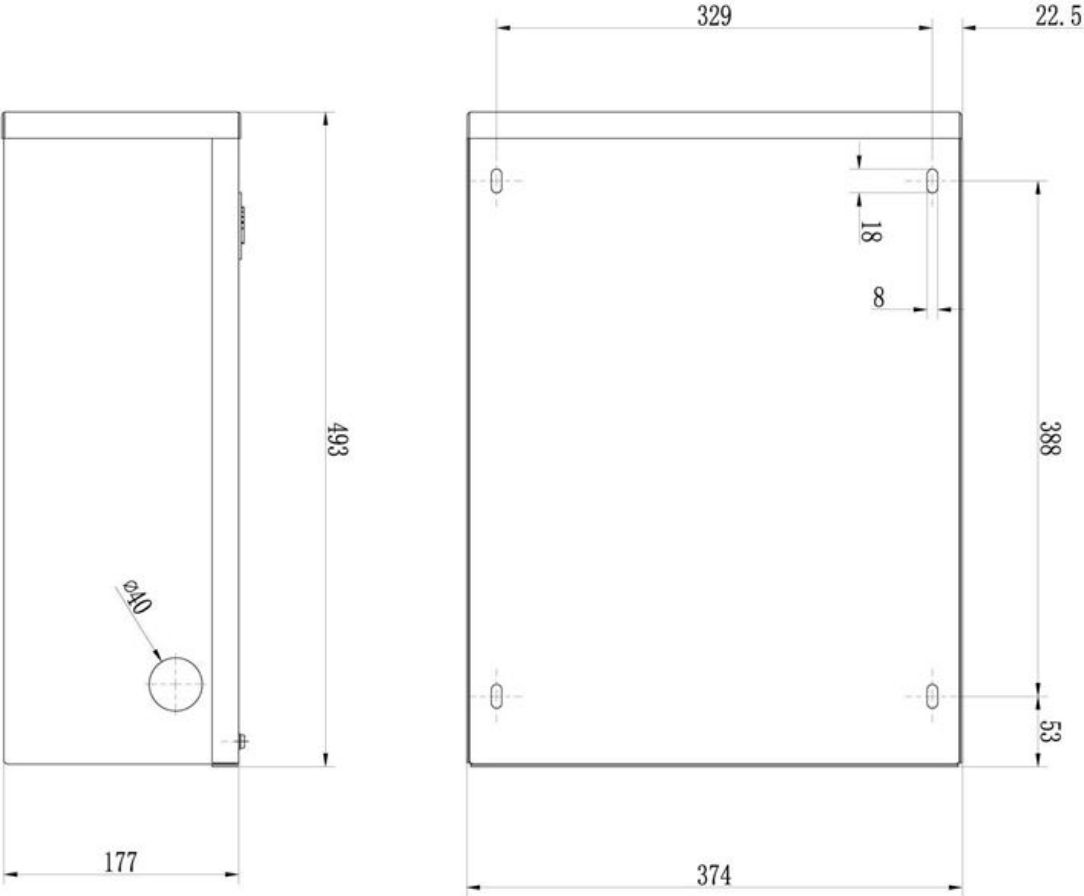


Parts List

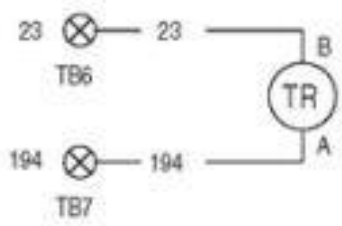
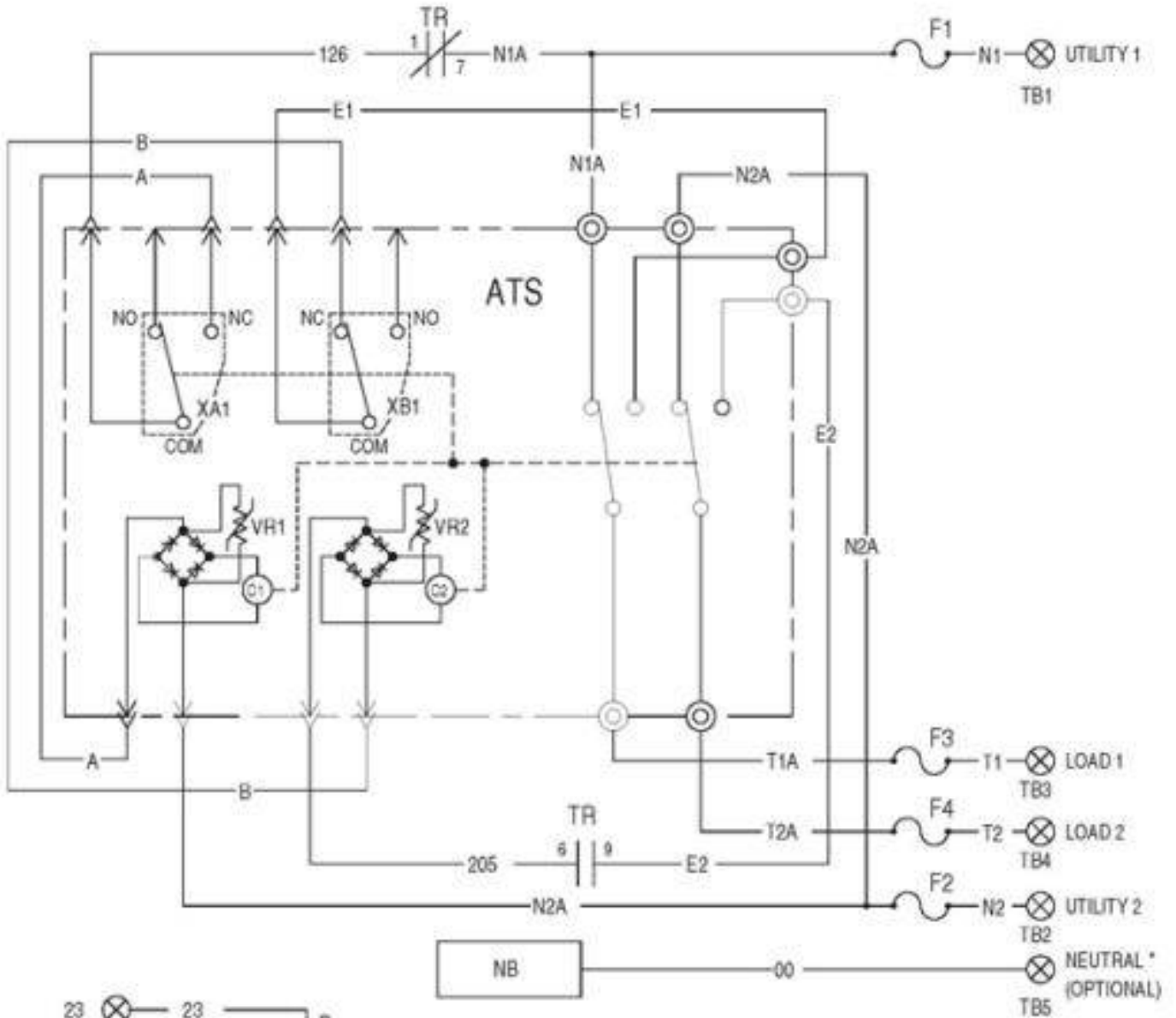
ATS Single Phase Parts List			
No.	Parts Name	Quantity	Model
1	Round Cross-Head Screw	2	M6×1.0×10
2	ATS Box Upper Cover	1	
3	Hexagon flange bolts	3	M5×1.0×12
4	Transfer Switch	1	MCQ2-200A 2P
5	Fuse Base	4	OP530
6	Round Cross-Head Screw	8	M4×0.75×8
7	Connector Bar	2	15A-4P
8	Round Cross-Head Screw	4	M5×1.0×10
9	Gasket	4	M5×1.0×12
10	ATS Box Fixing Plate	1	
11	Nut	5	M5×1.0
12	ATS Box	1	
13	ATS Controller	1	DKG-173
14	Flat Cross-Head Screw	2	M5×1.0×12
15	Grounding Bar	1	
16	Mounting Bar	1	
17	Nut	8	M4×0.75
18	ATS Box Side Cover	1	
19	Fuse	4	10A
20	Handle Shank	1	

ATS Three Phase Parts List			
No.	Parts Name	Quantity	Model
1	Round Cross-Head Screw	2	M6×1.0×10
2	ATS Box Upper Cover	1	
3	Hexagon flange bolts	3	M5×1.0×12
4	Transfer Switch	1	MCQ2-200A 4P
5	Fuse Base	6	OP530
6	Round Cross-Head Screw	10	M4×0.75×8
7	Connector Bar	2	15A-4P
8	Round Cross-Head Screw	4	M5×1.0×10
9	Gasket	4	M5×1.0×12
10	ATS Box Fixing Plate	1	
11	Nut	5	M5×1.0
12	ATS Box	1	
13	ATS Controller	1	DKG-173
14	Flat Cross-Head Screw	2	M5×1.0×12
15	Grounding Bar	1	
16	Mounting Bar	1	
17	Nut	10	M4×0.75
18	ATS Box Side Cover	1	
19	Fuse	6	10A
20	Handle Shank	1	

ATS Control Box Installation Hole Diagram



ATS Single Phase Connection Schematics

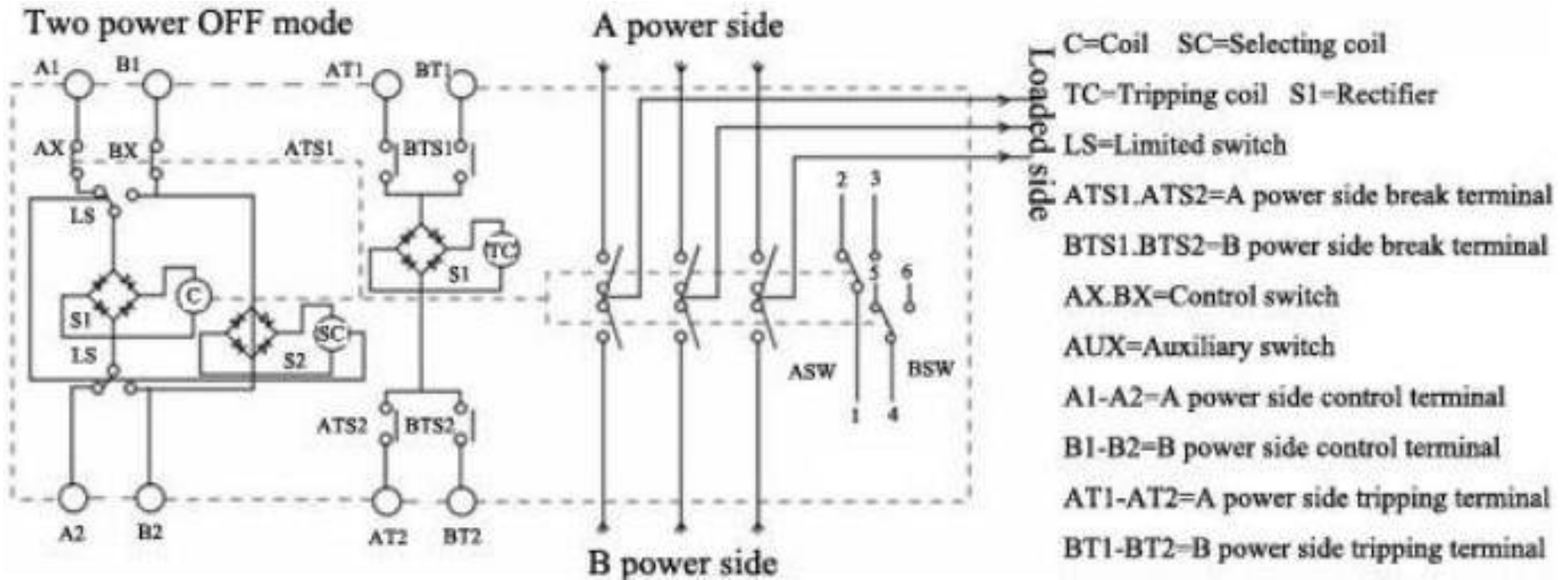


NOTE:
ALL CONTACTS SHOWN WITH
TRANSFER SWITCH IN UTILITY
POSITION.

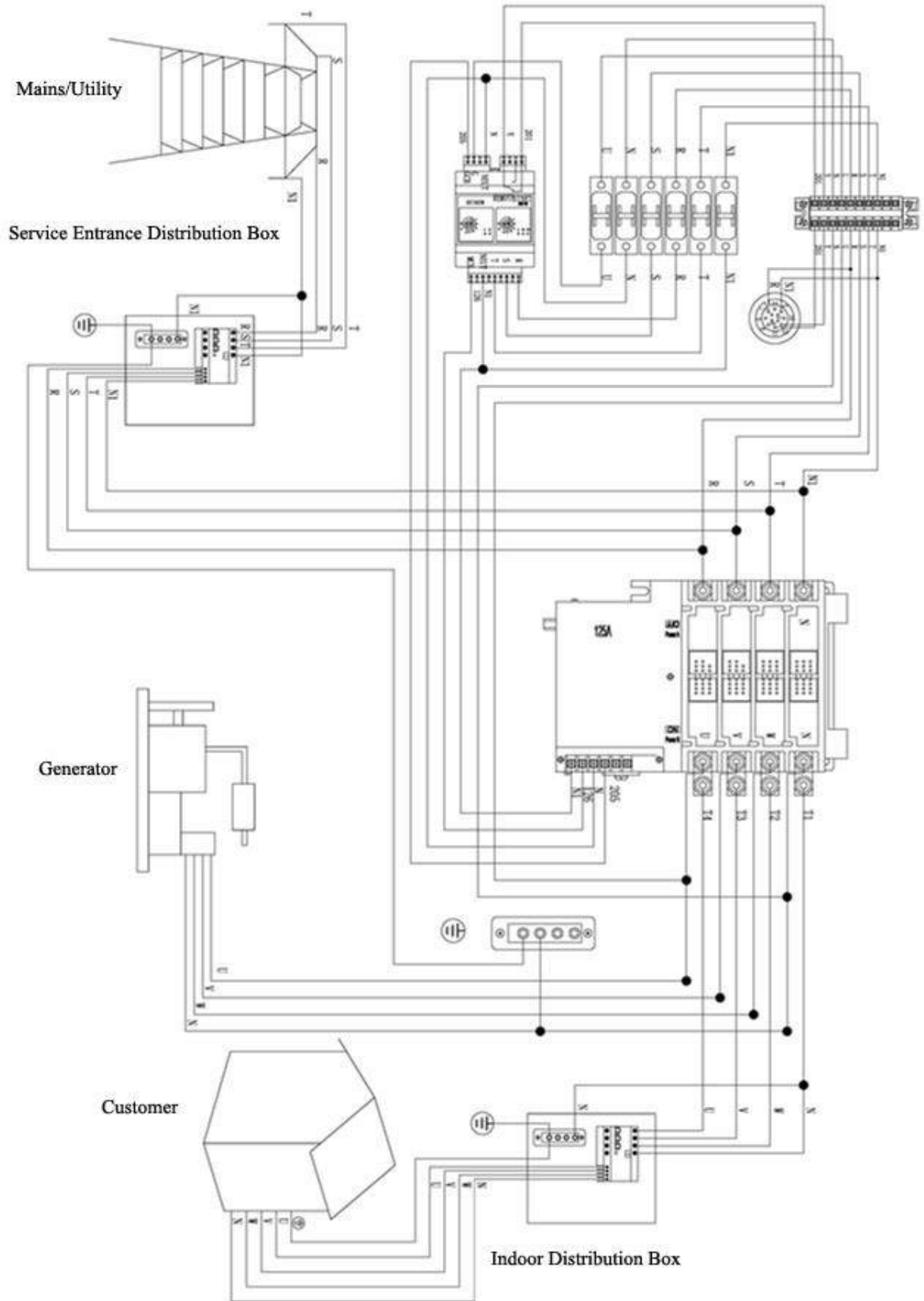
* - NOT USED WITH PREPACKAGED STANDBY GENERATORS

LEGEND	
ATS	TRANSFER SWITCH CONTACTOR
C1	SOLENOID COIL (UTILITY CLOSING)
C2	SOLENOID COIL (STANDBY CLOSING)
TR	RELAY, TRANSFER
TB	TERMINAL STRIP (CUSTOMER CONNECTION)
XA1, XB1	LIMIT SWITCHES, ACTUATOR
F1, 2, 3 & 4	FUSE, 5A
VR1, VR2	VARIATOR
NB	NB - NEUTRAL BLOCK

ATS Three Phase Connection Schematics



ATS Three Phase Connection Diagram



Maintenance and Service

The Free Warranty is 18 months from the date of delivery. The manufacturer will provide free repair services for problems caused by product quality within this free warranty. Paid repair or replacement services are available after the free warranty period.

Damage caused by the following reasons will be charged even if the products you purchased are still in the free warranty period:

1. Misconnection of wires, private disassembly & assembly or repair.
2. Exceed the standards, such as operations out of the current limits or over-testing of insulation voltage, etc..
3. External injury or damage due to drop or impact.
4. Natural hazards or abnormal disasters, such as earthquake, fire, thunder strike and abnormal voltage, etc..

Note:

- Do not install in environments where there may be explosive gases, or explosion will be happen.
- Do not install in humid environments.
- Do not install in places where its external magnetic field is 5 times larger than earth magnetic field, or the dual power can not work properly.
- Do not install in places where the vibration is larger than 5 grams.
- Do not install in places where metal are vulnerable to gas corrosion and insulation material can be easily broken.

EquipSource LLC. D/B/A Lifan Power USA.

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