

Distribution Apparatus

YCQ9E Automatic transfer switch

B



General

YCQ9E series automatic transfer switch, rated working current 16A to 630A, to be used in power systems for ensuring the continuity of the supply, by transferring a load between two power supply sources. The switch has three working positions of "Main (I) closing", "Standby (II) closing" and "Double-of (0)", which can be used for fire-fighting linkage and infrequent connection and disconnection of power supply systems. Mainly used in hospitals, shopping malls, banks, chemical industry, metallurgy, high-rise buildings, military facilities and fire-fighting occasions where power failure is not allowed.

Standards: IEC 60947-6-1

Type designation

YC Q 9 E - 125 / 3 □ □

Enterprise code	Product code	Design number	/
YC	Q	9	E
CNC	PC Class Automatic Transfer Switch	/	LCD type
Frame size current	Pole	Function code	Rated current
125	3	□	□
125, 250, 630	3P; 4P	A: Without RS485 B: With RS485	16~630A

Function

1. Source I/II over/under-voltage monitoring
2. Source I/II over/under frequency monitoring
3. Source I/II power ON running status LED indication
4. When the switch is working normally, the LCD displays the switch information. When inquiring/adjusting the parameters, it displays the parameter settings; before transfer operation, transfer delay timer is displayed in a countdown mode.
5. Fire-fighting linkage function: The controller has a set of passive fire-fighting signal input terminals, which can accept external passive fire-fighting signals, and transfer to double of position, also has a set of passive feedback signal output terminals, which can return the switch's in-position signal to the firefighting equipment.
6. Generator control function: The controller has a set of relay dry contacts to control the start and stop of the generator, and can set the start delay and stop delay of the generator (need to be connected to the auxiliary power supply DC24V).
7. Communication function: Configure RS485 communication port, Modbus-RTU communication protocol, which can realize remote signaling, remote measurement, remote control, and remote adjustment (D-type controller).

Distribution Apparatus

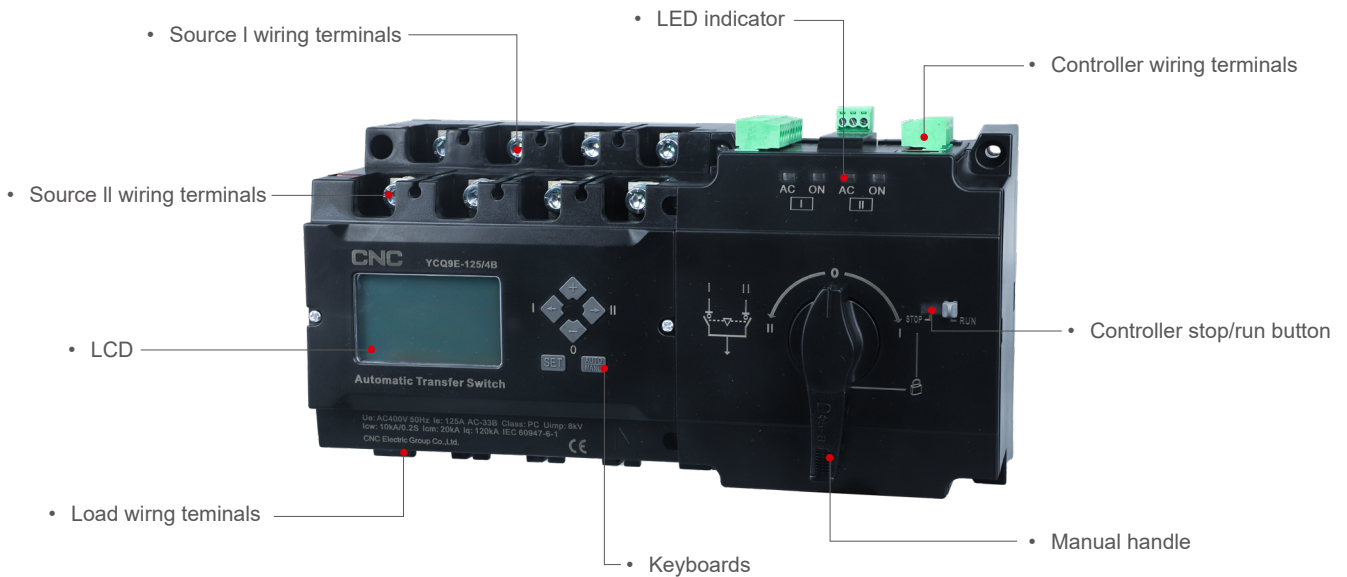
YCQ9E Automatic transfer switch

Operating conditions

1. Ambient temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, average temperature within 24h does not exceed $+35^{\circ}\text{C}$.
2. Humidity. When the highest temperature is $+40^{\circ}\text{C}$, the relative humidity in the air does not exceed 50%, higher relative humidity is allowed at lower temperatures, for example, up to 90% at $+25^{\circ}\text{C}$. Special measures should be taken for the occasional condensation due to temperature changes.
3. Installation altitude: The altitude of the installation site does not exceed 2000m.
4. Pollution degree: Pollution degree is level 3.
5. EMC electromagnetic compatibility: Class B (public).

Note: If the usage environment does not meet the above conditions, it should be explained to the manufacturer.

Structure introduction



Distribution Apparatus

YCQ9E Automatic transfer switch

Technical data

Frame size	125	250	630
Number of poles (P)	3, 4	3, 4	3, 4
Rated working current Ie(A)	16, 20, 25, 32, 40, 63, 80, 100, 125	140, 160, 200, 225, 250	315, 350, 400, 500, 630
Rated working voltage Ue(V)	AC400V/415V 50Hz		
Rated insulation voltage Ui(V)	690		
Rated impulse withstand voltage Uimp(kV)	8		
Utilization Category	AC-33B		
Rated short time with stand current Icw(kA)	10	10	25
Rated short time making capacity Icm(kApeak)	20	30	50
Rated control voltage Us (V)	AC230V/50Hz		
Contacts transfer time(s)	0.6±50%	1.0±10%	1.5±10%
Transfer time(s)	1.25±10%	2.1±10%	3.3±10%
Recovery transfer time(s)	(1.25+time-delay)±10%	(2.1+time-delay)±10%	(3.3+time-delay)±10%
Power-off duration (s)	(0.6±20%)+time-delay)±10%	(1.0+time-delay)±10%	(1.5+time-delay)±10%
Operation cycles	Without load	8500	7000
	With load	1500	1000
	Total	10000	8000
Dimension(mm)LxWxH	245x130x122	295x175x175	430x272x228
Weight (kg)	4.3	9	22.5

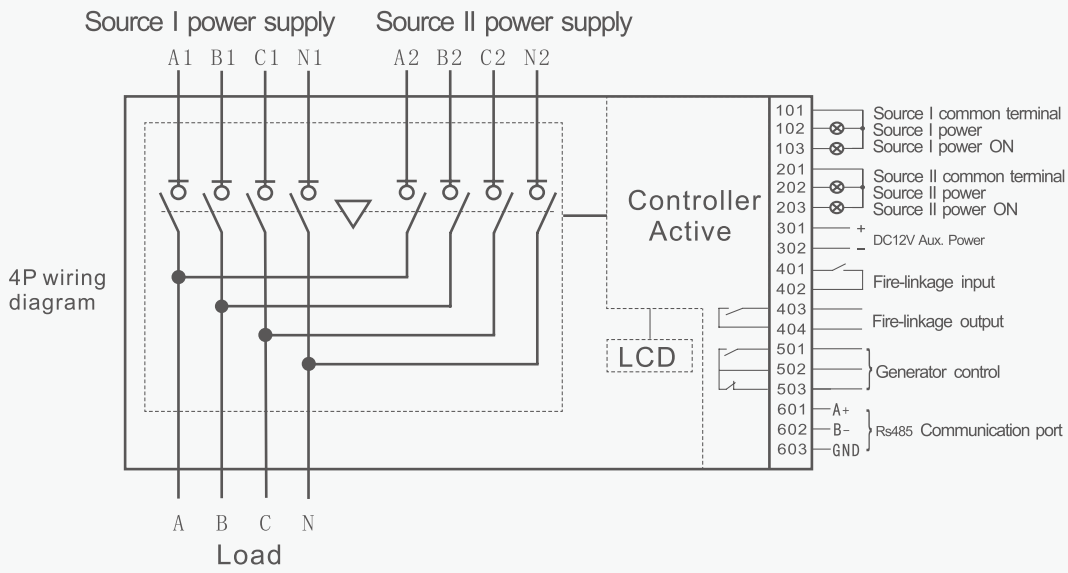
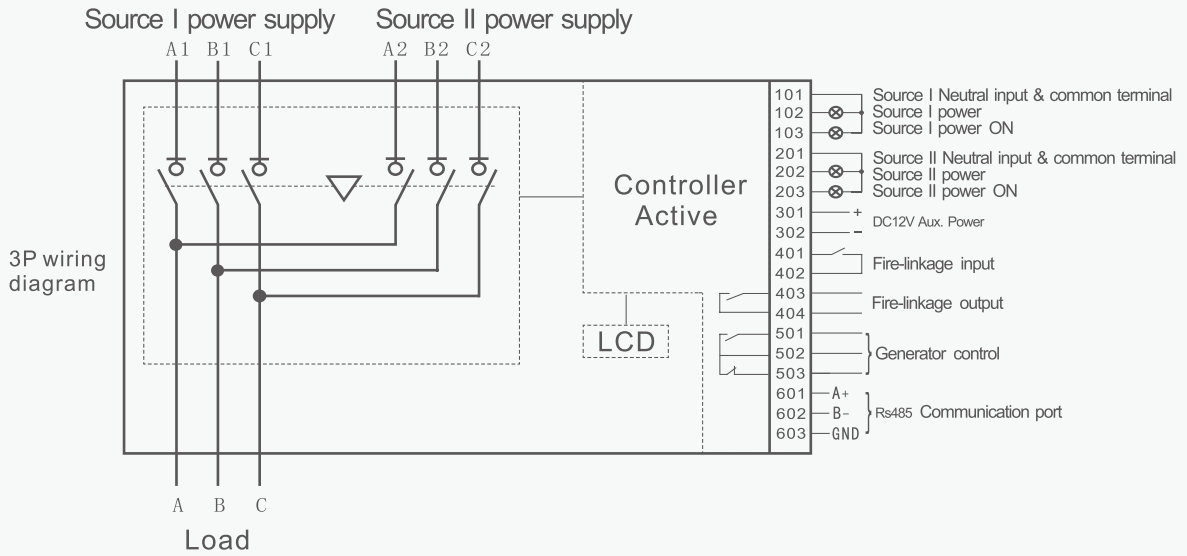
Controller function

Control voltage	AC230V 50/60Hz
Aux.Power	DC 24V
Power consumption	≤ 10W
Working position	Three working positions of "Main (I) closing", "Standby (II) closing" and "Double-of (0)"
Operation mode	Auto mode, manual operation, control panel operation, remote operation, Rs485 communication
Transfer mode	Auto transfer auto recovery/Auto transfer no auto recovery
Display mode	LCD
Source I monitoring	Under-voltage,over-voltage,power loss monitoring(A,B,C three phase)
Source II monitoring	Under-voltage,over-voltage,power loss monitoring(A,B,C three phase)
Generator control	Yes(Generator start and stop)
Fire-linkage control	One group voltage-free signal to cut-off both power, and 1 group voltage-free feedback
Frequency monitoring	No
Engine exerciser	No
Transfer delay timer(S)	Default:5s, 0~180s adjustable
Recovery delay timer(S)	Default:5s,0~180s adjustable
Under-voltage range	Default: 187V,154~198V adjustable
Over-voltage range	Default:263V,242~330V adjustable
Source priority	Source I priority(default),SourceII priority,No priority
Rs485 Communicaiton	B type
LCD	Yes, LCD is sperable

Distribution Apparatus

YCQ9E Automatic transfer switch

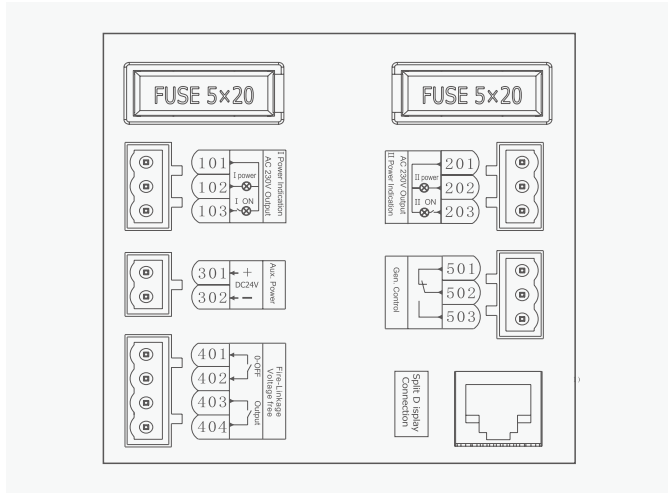
Wiring diagram



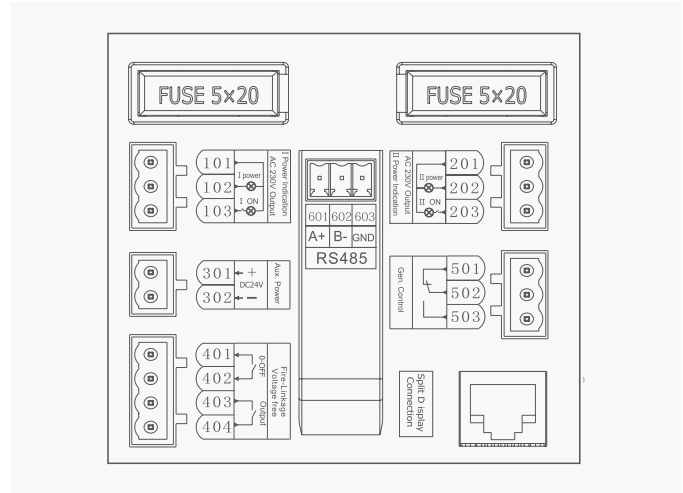
Distribution Apparatus

YC9E Automatic transfer switch

A type Controller



B type Controller



B

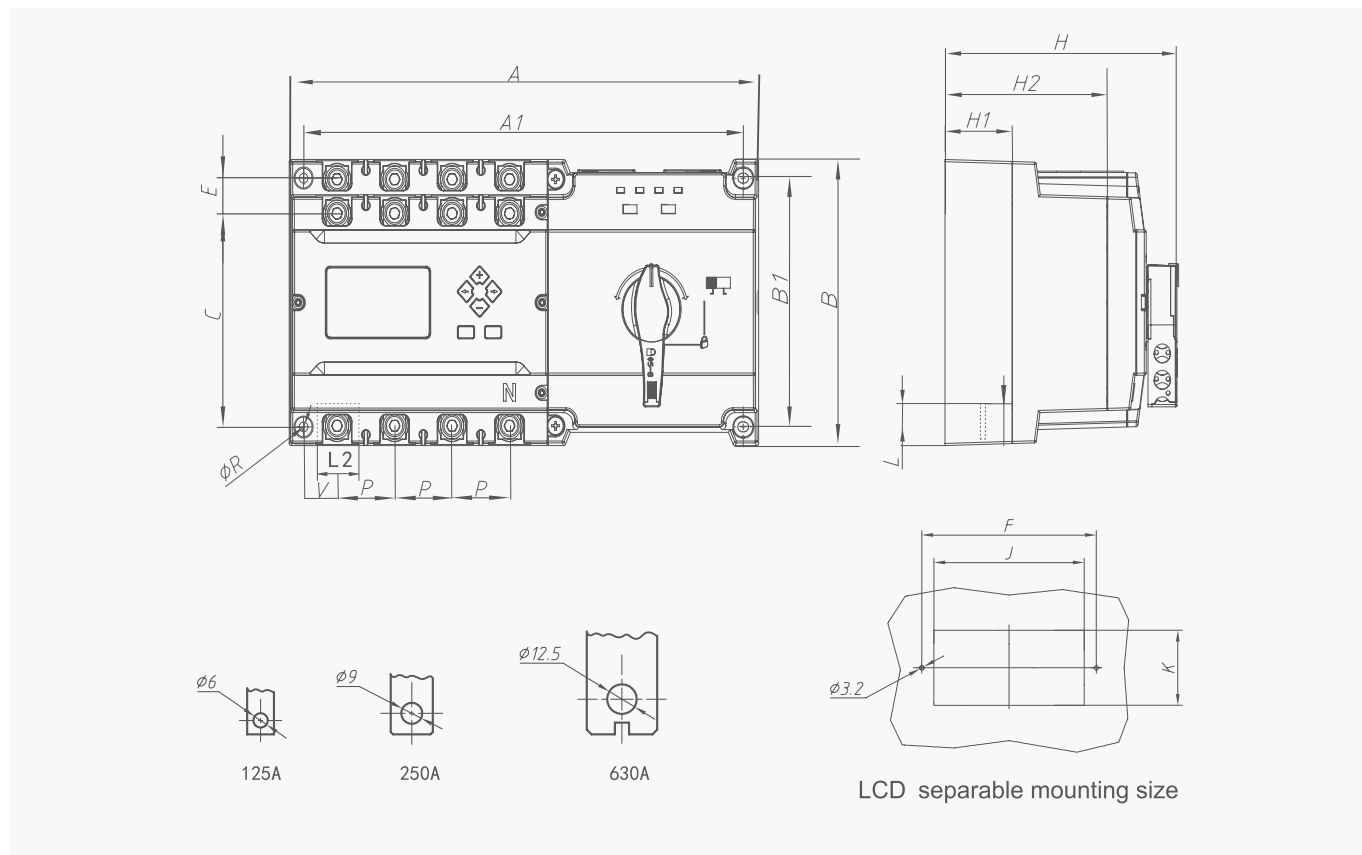
Control terminals instruction

- 101~103:Source I power supply signal output (active output AC230V/0.5A)
101-Source I external LED indicator common neutral line and 3P neutral line input terminal
101, 102-Source (I) power signal indication
101, 103-Source (I) Closing signal indication
- 201~203:Source II power supply signal output (active output AC230V/0.5A)
201-Source II external LED indicator common neutral line and 3P neutral line input terminal
201, 202-Source (II) power signal indication
201, 203- Source (II) closing signal indication
Note: 101-"N1" and 201-"N2" are control power neutral wires for 3P products.
- 301~302 auxiliary power input port (DC12V/24V)
The purpose of connecting the auxiliary power supply is to control the start delay timer of the generator when the switch is in the grid-generation mode. If there is no auxiliary power supply, the start delay time of the generator is 0s.
If the generator delay function is not needed, the auxiliary power supply is not needed.
- 401~402 Fire linkage control port (passive)
401, 402- firefighting linkage signal input: 401, 402 ports can only be connected to a set of normally open passive contacts, when the normally open contacts are closed, the controller immediately controls the switch transfer to double off position, cut off the load power.(Note: If the fire signal is active, the signal must be transfer via a small relay then connect the normally open contact to the controller port)
403, 404-fire linkage signal output: Inside ports 403 and 404 are a set of passive contacts that are normally open, which are used for the feedback signal of fire fighting actions. Ports 403 and 404 are normally open, when the fire signal is input and the switch is switched to the double off position, the contacts 403 and 404 are closed. (Note: When the fire-fighting function is activated, the switch is in the double off position. If the switch needs to resume normal operation, press any key on the controller panel to remove the fire-fighting signal)
- 501~503 generator signal output port (passive)
When the backup (II) power supply is a generator group, user can realize the automatic start function after connecting to the generator controller through terminals 501~503, inside ports of 501~503 are a group passive relay dry contact, 502 is the common terminal, 501 is the normally open point, and 502 is the normally closed point.
In the grid-generator working mode and the controller is in AUTO mode, when the main power supply is normal. 502-501 is closed, and 502-503 is disconnected, if the main power supply fails, and when the standby is out of power, 502-503 will be closed after the generator start delay timer, and 502-501 will be disconnected at the same time, and send signal to start the generator. After the transfer delay timer is over, the switch will first switch to the double position. When the power generation group comes in, the controller will execute the generator warm-up delay timer.After the delay, the switch will automatically switch to the standby power supply side. During the standby side generator power supply process,when the main power supply is restored, if it is normal, the controller will control the switch to transfer to the main power supply after the return delay timer. After the main power ON, 502-501 will be closed after generator stop delay timer. At the same time, 502-503 will be disconnected and send signal to stop generator. Action flow can be referred to 8.2 Grid-generator mode.
- 601~603 RS485 communication port
601—A+ 602—B- 603—GND, communication protocol MODBUS-RTU.

Distribution Apparatus

YCQ9E Automatic transfer switch

Overall and mounting dimensions(mm)



B

Size	Outline Dimension(mm)			Mounting Size(mm)											LCD mounting size		
	A	B	H	A1	B1	H1	H2	C	E	R	V	P	L	L2	F	J	K
125	245	130	122	230	113	31	71	97.5	15.5	4.5	25	30	16	21.5	127	112	56
250	295	175	175	275	152	29	99	132	20	6	32	35	29	27			
630	430	272	228	400	240	41	131	207	30	9	50	58	38	42			