

**YCQD7 series**  
star-delta starter  
**OPERATION INSTRUCTION**  
Standard: IEC 60947-4-1



⚠ Before installing and using this product, please read this manual carefully and pay more attention to safety.

**⚠ Safety Alert**

1. The product is strictly prohibited from being installed in environments containing flammable and explosive gases, damp condensation, and wet hands are strictly prohibited from operating the product;
2. During product operation, it is strictly prohibited to touch the conductive parts of the product;
3. When installing, maintaining, and maintaining products, it is necessary for professional personnel to ensure that the circuit is powered off;
4. Children are strictly prohibited from playing with products or packaging;
5. Sufficient space and safe distance should be reserved around the installation of the product;
6. Do not install in areas where gas media can corrode metals and damage insulation;
7. When installing and using the product, standard wires must be used and connected to the required power supply and load;
8. To avoid dangerous accidents, the installation and fixation of the product must strictly follow the requirements of the manual;
9. After dismantling the packaging, the product should be checked for damage and the integrity of the items should be checked.

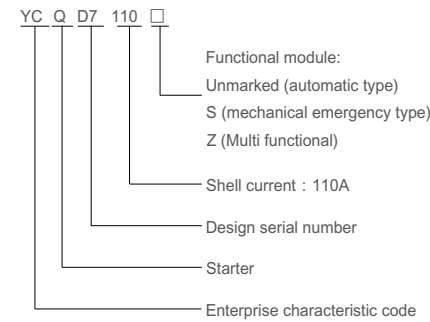
**1 Main uses and scope of application**

The YCQD7 series star delta starter (hereinafter referred to as the starter) is suitable for three-phase squirrel cage induction motors with AC 50Hz, rated voltage of 380V/400V, and rated working current of up to 110A (phase current when the starter is delta connected), controlling power up to 90kW. It is used to control the start, operation, and stop of the stator winding from star to delta, in order to reduce the impact of starting current and motor starting on the transmission network.

The starter adopts a modular design and integrated structure, integrating contactors, intelligent controllers, and intelligent auxiliary contacts. The intelligent controller can automatically control the starter to run according to the predetermined program, thereby completing the star delta starting of the motor.

This series of products is suitable for the star delta voltage reduction starting of electric motors for dual speed fans, domestic water pumps, and drainage pumps, as well as manual forced starting of fire water supply, as well as applications where the load that requires voltage reduction starting has protection requirements for starting and operation. Starters can meet the requirements of different fields by installing functional modules.

**2 Series model specifications and their meanings**



**3 Normal use, installation, transportation, and storage conditions**

**3.1 Normal usage conditions**

--The upper limit value of the normal operating environment temperature shall not exceed +40℃, the lower limit value shall not be lower than -5℃, and the average temperature value within 24 hours shall not exceed +35℃;

--When the surrounding air temperature is +40℃, the relative humidity of the air does not exceed 50%, and there can be higher relative humidity at lower temperatures. When the monthly average minimum temperature is +25℃, the monthly average maximum relative humidity of the month does not exceed 90%. Due to occasional condensation caused by temperature changes, users should take special protective measures.

**3.2 Installation conditions**

--The altitude of the installation site shall not exceed 2000 meters.

■ Vertical installation

The vertically installed starter has an upward power terminal and a downward load terminal. The inclination angle between the installation surface and the vertical surface of all starters shall not exceed ± 5°, which does not affect their performance.

■ Fixation method: screw installation.

**3.3 Transportation and storage conditions**

The applicable temperature range for transportation and storage is between -25℃ and +60℃, and can reach +70℃ in a short period of time (24 hours). The storage area should be ventilated, dry, and not affected by rain, snow, or direct sunlight.

**4 Main technical parameters and functions**

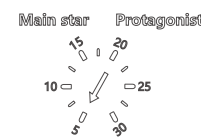
Parameter		Unit	YCQD7-110					
Rated working current: Ie(AC-3)		A	65	75	85	95	100	110
Rated working voltage: Ue		V	380V/400V					
Rated insulation voltage: Ui		V	800					
Number of poles		P	3					
Mechanical lifespan	Automatic multifunctional	10000 times	60					
	Mechanical emergency (manual operation)	times	3000					
Controllable three-phase squirrel cage motor operating power (AC-3)		kw	45	45	55	55	75	75
Supporting fuse body		A	RT18L-125/P					
Ability of wiring terminals to connect wires		mm²	35	50				
Coil parameters	Rated control voltage: Us	V	220V/230V					
	Pull-in voltage	%Us	80% ~110%					
	Release voltage	%Us	20% ~75%					
	Coil suction	VA	230					
	Maintain power	VA	19	32				

Function	Automatic type	S: Mechanical emergency type	Z: multifunctional type
Star Triangle Conversion	■	■	■
Adjustable star running time	■	■	■
Mechanical emergency (manual forced start)	-	■	-
Overload protection	-	-	■
Locked rotor protection	-	-	■
Phase loss protection	-	-	■
Three-phase imbalance protection	-	-	■
Overvoltage protection	-	-	■
Undervoltage protection	-	-	■
Trouble display	-	-	■
Fault alarm	-	-	■
Status display	-	-	■
Communication function	-	-	□

Mechanical emergency: When the signal line or the control line of the fire pump control box malfunctions, making it impossible to automatically or manually start the fire pump, the mechanical emergency start device on the fire pump control box door can be used to manually close the main and corner contactors of the fire pump to start the fire water pump.

**6 Setting and operating instructions**

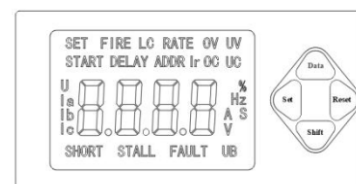
**6.1 Basic/Emergency**



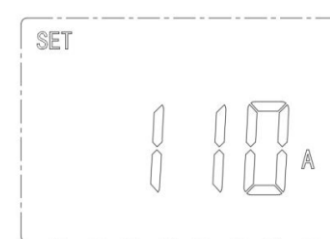
Parameter	Unit	YCQD7-110					
Rated working current :Ie(AC-3)	A	65	75	85	95	100	110
Suggest controllable operating power of three-phase squirrel cage motors(AC-3)	kW	45	45	55	55	75	75
Delay setting value (recommended)	s	17	17	19	19	21	21

By using tools such as a flat screwdriver to rotate the knob and pointing the arrow towards the number, the star triangle start delay can be adjusted within a range of 5s to 30s. The default value for the product at the factory is 5s.

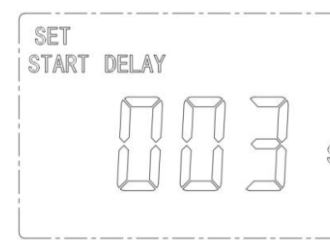
**6.2 Multifunctional**



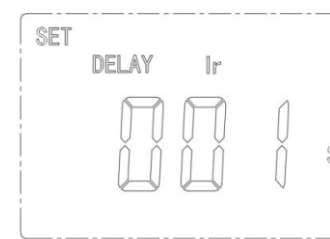
Press the "Settings" button to enter the "Settings interface";  
Press the "shift key" to move data bits;  
Press the "data key" to modify parameters;  
Press the "reset button" to exit and save the settings.



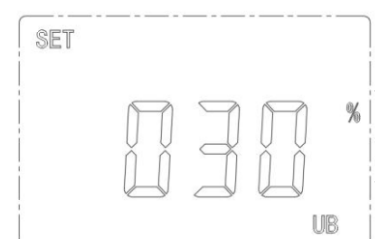
Press the "Settings" button once to enter the "Setting Current Parameter Setting Interface". Use the "Shift" and "Data" keys to set the numerical value. Set the range of "Ie: 110A (65-110A)"; Ie: 95A (65-95), "Is: 65A (45-65)", and default to "Ie".



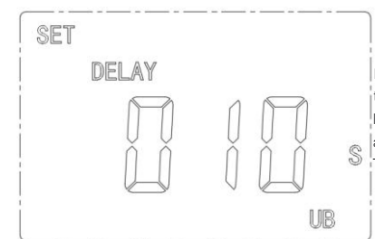
Press the "Settings" button twice to enter the "Start Delay Parameter Setting Interface", use the "Shift" and "Data" keys to set numerical values, with a setting range of 0-99 seconds, default to 3 seconds, 0 indicating shutdown;



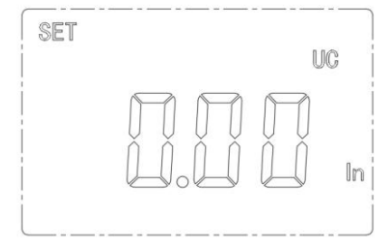
Press the "Set" button three times to enter the "Overload inverse time protection action characteristic setting interface", use the "Shift" and "Data" keys to set the numerical value, with a setting range of 0 to 4;  
"0" indicates turning off overload long delay protection;  
"1" represents a 1.5Ir action time of 51 seconds;  
"2" represents a 1.5Ir action time of 98 seconds;  
"3" represents a 1.5Ir action time of 144 seconds;  
"4" represents a 1.5Ir action time of 200 seconds;



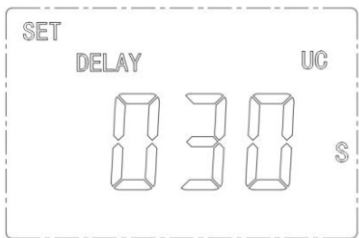
Press the "Settings" button four times to enter the "Current Unbalance Parameter Setting Interface". Use the "Shift" and "Data" keys to set the numerical values. The setting range is 20%-80%, with a step of 10%. The default value is 30%, and 0 indicates shutdown.



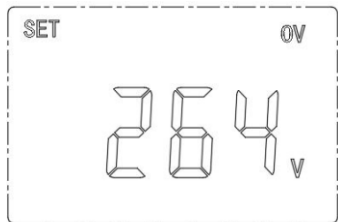
Press the "Settings" button five times to enter the "Current Unbalance Protection Delay Parameter Setting Interface". Use the "Shift" and "Data" keys to set the numerical value. The setting range is 1-40s, with a default of 10s;



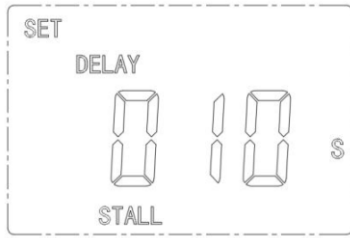
Press the "Settings" button six times to enter the "Undercurrent Protection Multiplier Parameter Setting Interface", use the "Shift" and "Data" keys to set numerical values, with a setting range of 0.2-0.8. Default 0, 0 indicates shutdown; shutdown;



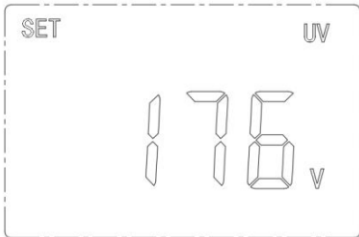
Press the "Settings" button seven times to enter the "Undercurrent Protection Delay Parameter Setting Interface". Use the "Shift" and "Data" keys to set numerical values. The setting range is 1 to 60 seconds, with a default of 30 seconds;



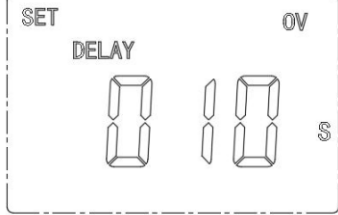
Press the "Settings" button ten times to enter the "Overvoltage Protection Parameter Setting Interface". Use the "Shift" and "Data" keys to set numerical values. The setting range is 230V~286V, with a default of 264V, and 0 indicating shutdown;



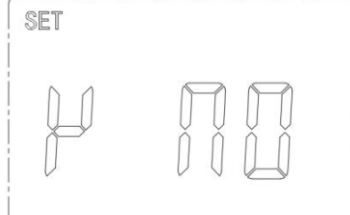
Press the "Settings" button thirteen times to enter the "Lock rotor protection delay parameter setting interface". Use the "Shift" and "Data" keys to set the numerical value. The setting range is 1-10s, with a default of 10s.



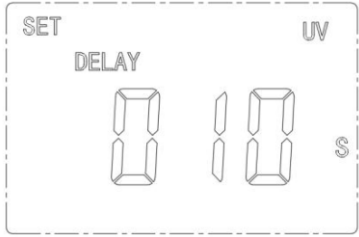
Press the "Settings" button eight times to enter the "Undervoltage Protection Parameter Setting Interface". Use the "Shift" and "Data" keys to set the numerical value. The setting range is 154~198V, with a default of 176V and 0 indicating shutdown;



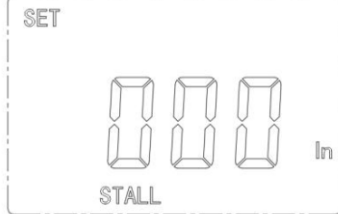
Press the "Settings" button eleven times to enter the "Overvoltage Protection Delay Parameter Setting Interface". Use the "Shift" and "Data" keys to set numerical values. The setting range is 1-30s, with a default of 10s;



Press the "Settings" button fourteen times to enter the "Restore Factory Settings" interface. Use the "Shift" and "Data" keys to set numerical values. "YES" indicates restoring factory settings, "NO" indicates not restoring factory settings, and defaults to NO.

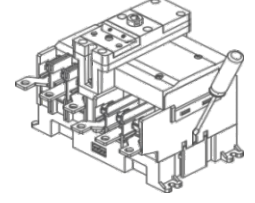


Press the "Settings" button nine times to enter the "Undervoltage Protection Delay Parameter Setting Interface". Use the "Shift" and "Data" keys to set numerical values. The setting range is 1-30s, with a default of 10s;



Press the "Settings" button twelve times to enter the "Locked rotor protection current multiple setting interface". Use the "Shift" and "Data" keys to set the numerical value. The setting range is 5-9 times, default to 0 times, 0 means off.

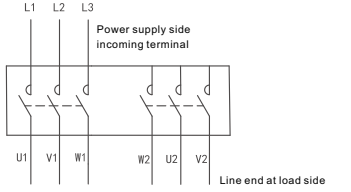
6.3 Motor phase power outage detection



Before the product is powered on, it can be tested for power outage according to the motor wiring situation and the position indicated in the following diagram. When motor phase detection is required, use a flat screwdriver to insert it into the auxiliary contact slot on the right side of the product, press down 2-3mm, and disconnect the star contactor contact to perform phase detection. After the test is completed, the flat screwdriver is removed from the card slot to restore the contact closure of the star contactor.

7 Main circuit and terminal wiring diagram

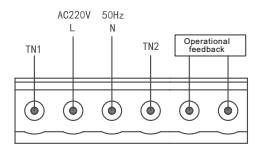
7.1 Main circuit wiring diagram



Main circuit wiring diagram

L1, L2, and L3 are the main input terminals of the circuit, U1, V1, and W1 are the output terminals of the main contactor, and W2, U2, and V2 are the output terminals of the star angle contactor.

7.2 Schematic diagram of coil control terminal wiring

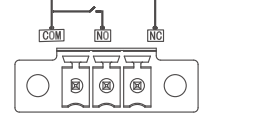


Automatic terminal wiring diagram

L and N are the power supply ports for coil control. When this port is powered on, the product operates in a star delta manner according to the control logic;

Tn1 and TN2 are the product function detection ports, which do not require wiring during use; The operation feedback port is a set of normally open auxiliary contacts. When the starter starts to start, the auxiliary contacts close and can be used as operation signal feedback or control circuit self-locking.

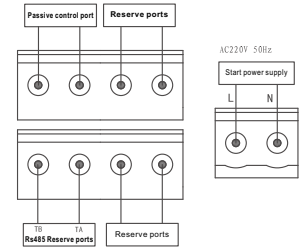
7.3 Mechanical emergency feedback terminal wiring diagram



Mechanical emergency feedback terminal wiring diagram

COM is a common point, with a set of normally open NO and a set of normally closed auxiliary contacts NC. When the manual operating mechanism of the starter rotates and closes, it can serve as an emergency start feedback signal or interlock signal for the product.

7.4 Multifunctional Feedback Terminal Wiring Diagram

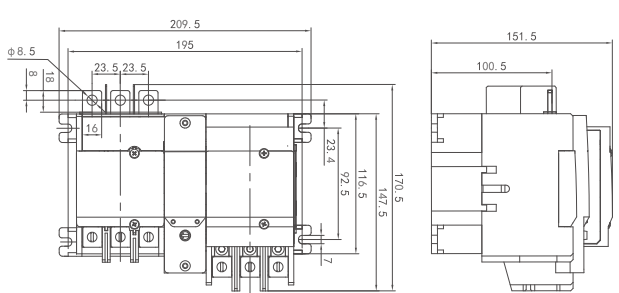


Multifunctional terminal wiring diagram

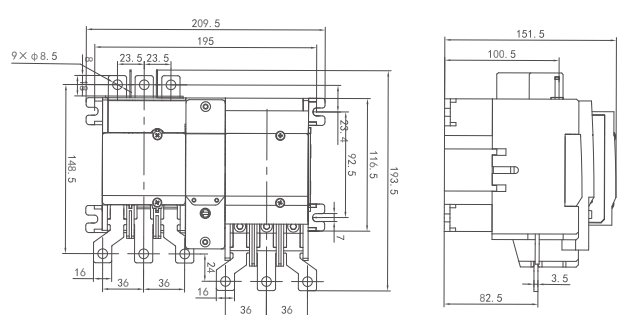
RS485 communication port: enables external communication connection;  
Passive control port: The external controller (user provided) reserves a port, which is short circuited by default at the factory. When this port is disconnected, the product cannot start;  
L and N are the power ports for product coil control.

8 Appearance and installation dimensions

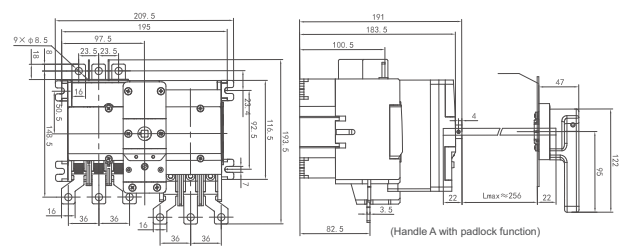
8.1 Automatic star delta starter



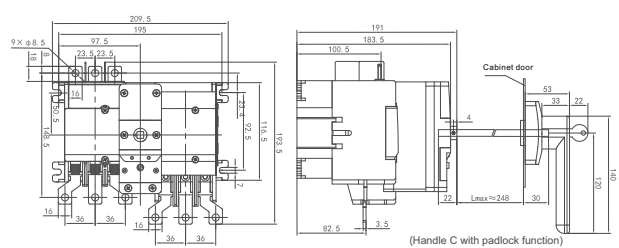
YCQD7-110 65A, 95A Automatic type



YCQD7-110 110A Automatic type

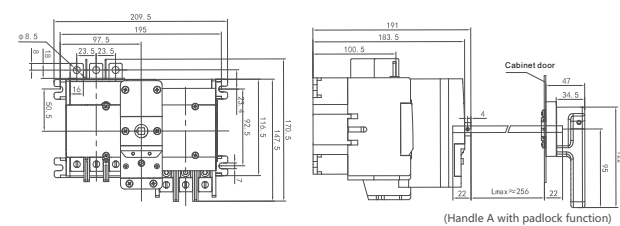


YCQD7-110S 110A Mechanical Emergency Type



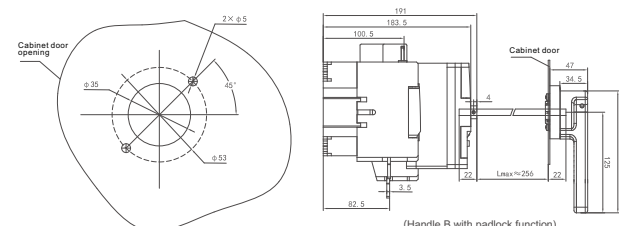
YCQD7-110S 110A Mechanical emergency type

8.2 Mechanical emergency star delta starter

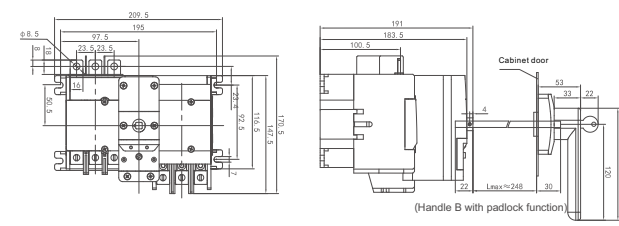


YCQD7-110S 65A, 95A Mechanical emergency type

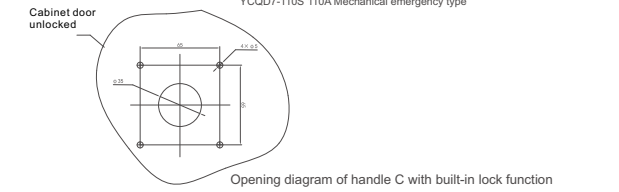
Sq.	Handle type	Handle length
1	With padlock functionA	L=122mm
2	With padlock functionB	L=152mm
3	Equipped with lockfunctionC	L=140mm



Opening diagram of handle A and B with padlock function

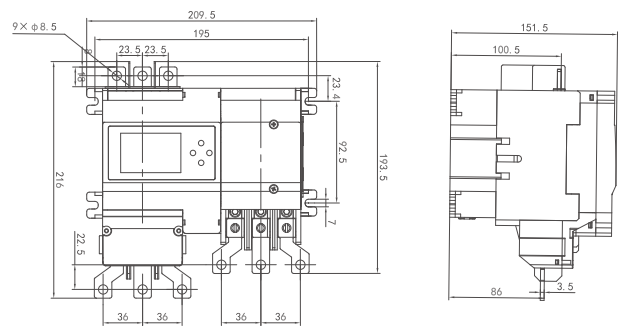


YCQD7-110S 65A, 95A mechanical emergency type



Opening diagram of handle C with built-in lock function

8.3 Multifunctional Star Delta Starters



YCQD7-110 multifunctional model

### 9 Maintenance and upkeep

- 9.1 Daily cleaning of dust, checking for loose screws at each terminal, and checking for damage and aging of wires.
- 9.2 The usage environment must meet the environmental conditions specified in the manual. Products stored or unused for six months should be inspected before reuse.
- 9.3 The exposed parts of the external connecting wires at the inlet and outlet of the starter should be wrapped with insulation to prevent accidents during use.
- 9.4 The maintenance and upkeep of products must be carried out by personnel with professional qualifications.

### 10 Fault analysis and troubleshooting

Fault phenomenon	Cause analysis	Exclusion methods and preventive measures	Remarks Description
No action or unreliable action	The control power supply voltage does not match the coil voltage	Use the corresponding control power supply	
	Insufficient power capacity of the operating circuit or occurrence of wire breakage or wiring errors	Check the circuit to ensure correct wiring	
Product suction noise	The coil is burnt out and the mechanical movable part is stuck	Repair or replace the product	
	1.Control power supply voltage too low 2.Dust or foreign objects on the pole surface of the iron core	1.Use the corresponding control power supply 2.Clean the surface dust or foreign objects of the iron core	
Not releasing or releasing slowly	Contact fusion welding	Repair or replace the product	

**CNC**  
ELECTRIC

## CERTIFICATE

Product Model: YCQD7  
Standard: IEC 60947-4-1  
Inspector : CNC 003  
Production date: Printed on the product  
or package.  
This product is qualified according  
to the delivery inspection

**CNC**  
YCQD7

**CNC ELECTRIC**

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