

Quick Reference Guide



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XI'AN XICHI ELECTRIC CO., LTD

CMC-LX

SOFT STARTER

380V 7.5~630kW

Function

CMC-LX motor soft starter is a sort of new type motor starting protector combining electronic technology, microprocessor and automation. It is able to stably start and stop motor without step change, which perfectly avoids mechanical and electrical impact as a result of using direct start, Y- Δ start and auto-induction voltage-reduced start to start motor and can effectively reduce starting current and distribution capacity. At the same time, as CMC-LX soft starter has current transformer and contactor built inside, user does not need to externally connect the both to soft starter.

Characteristics

- **Unique SCR triggering close-loop control algorithm**

The unique SCR close-loop control is specially designed for standard load and heavy load. User can choose current-limit start or voltage ramp start according to load conditions so as to realize absolutely smooth start without torque oscillation.

- **High control precision**

Adoption of high-performance Cortex-M3 32-bit inner core CPU for central control with features of fast speed, high precision and strong capability of anti-interference.

- **Simple and compact appearance**

Three-in and six-out structure of main circuit under patent protection and built-in current transformer with easy wiring and high reliability.

- **Standard MODBUS-RTU protocol**

When ordering, users can choose whether to carry the standard MODBUS-RTU communication protocol according to the actual situation.

- **Integrated with advanced protective function**

Protective functions of phase failure, overload, overcurrent, phase current unbalance, thyristor overheat to protect motor and other equipment.

- **Fireproof material**

The product of below 90kW is in plastic structure made with inflaming retarding ABS material; for the product of 90kW and above, the upper cover is in plastic structure and main frame is made of aluminium-zinc plate with features of heatproof and corrosion resistance.

- **Movable panel**

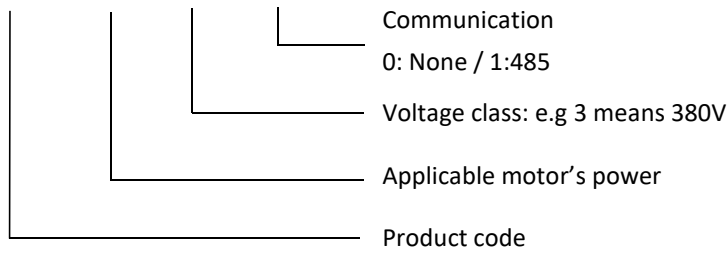
The panel can be moved to equipment operating surface through machine interface for remote control.

- **Easy maintenance**

The monitor signal coding system consists of 4-digit display monitors working state of the equipment for 24 hours and provides fast fault diagnosis.

Description of soft starter's model

CMC-□□□/□-LX-□



Service conditions

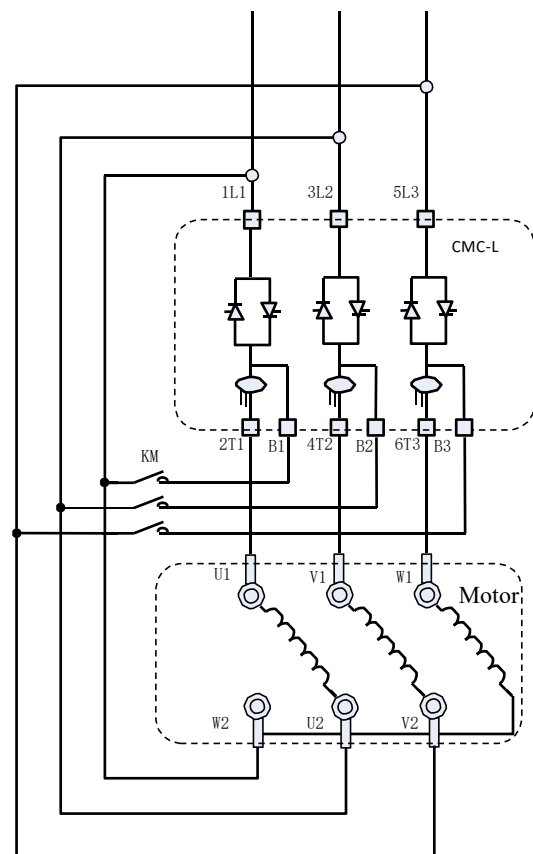
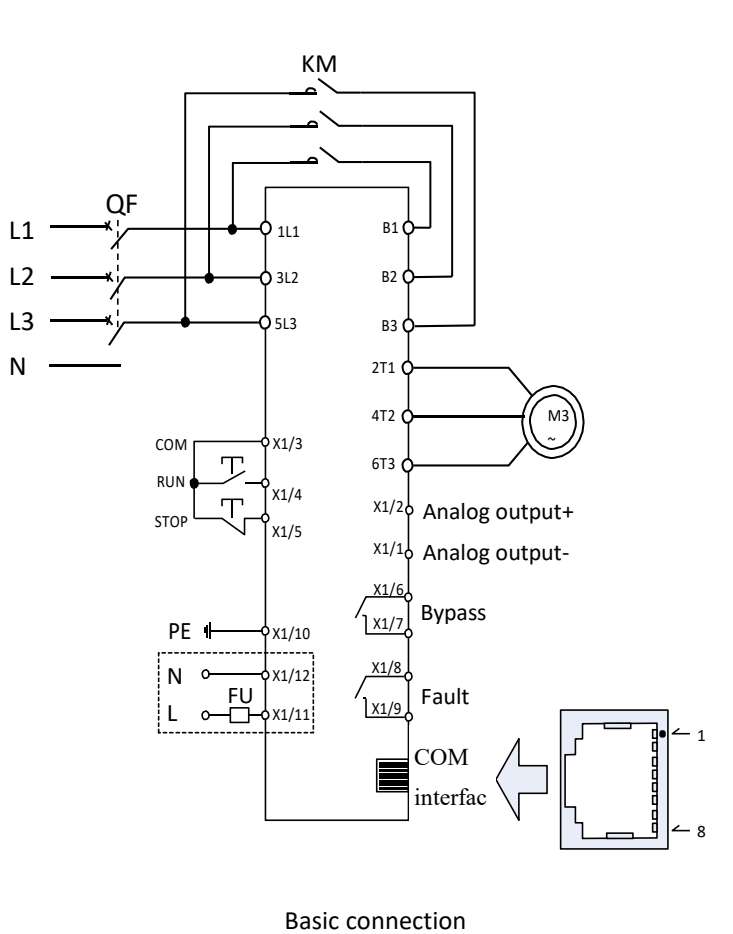
Control power	External	AC110V-10% to AC220V+15%, 50/60Hz
	Built-in	Internal integrated control power supply, no need for external
Three-phase power	Standard wiring AC380V ±15% Internal delta wiring AC380V±15%	
Nominal current	18A~1200A, 23 rated values in total	
Applicable motor	Ordinary squirrel cage AC asynchronous motor	
Start ramp mode	Voltage ramp start, current ramp start	
Stop mode	Free stop, Soft stop	
Logical input	Impedance 1.8 KΩ, power supply +24V	
Start frequency	Frequent or infrequent startup can be done, it is recommended that the number of startups per hour does not exceed 10 times	
Protective function	Phase loss, overcurrent, SCR protection, overheating, phase current imbalance	
IP	IP00, IP20	
Cooling type	Natural cooling or forced air cooling	
Installation type	Wall mounted	
Communication method	RS485 (Optional)	
Environmental condition	<p>When sea altitude is above 2,000m, soft starter should be derated for use.</p> <p>Ambient temperature: -25 ~ +45°C</p> <p>Relative humidity: less than 95% (20°C±5°C)</p> <p>Free of flammable, explosive and corrosive gas or conductive dust.</p> <p>Indoor installation, good ventilation, vibration less than 0.5G</p>	

Basic wiring diagram

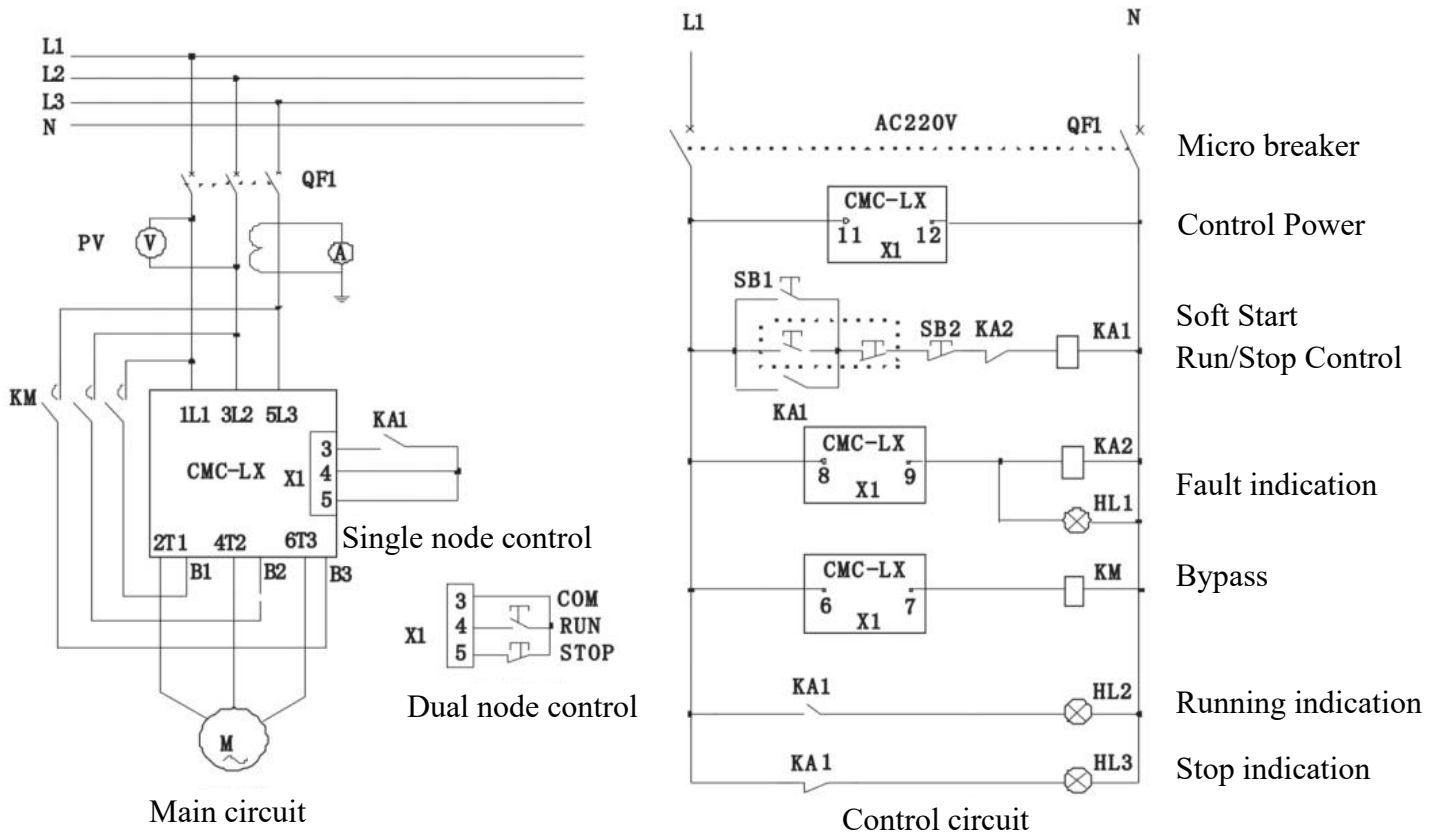
Soft starter's terminals 1L1, 3L2 and 5L3 are connected to three-phase power supply and terminals 2T1, 4T2 and 6T3 connected to electric motor. Soft starter's detection of phase sequence can be determined by parameter setting. When bypass contactor is used, one end of contactor is connected to terminals 1L1, 3L2, 5L3 of soft starter and the other end connected to terminals B1, B2, B3.

Delta internal connection diagram

When using the delta internal connection, the user must make the connection according to the following diagram to avoid damage to the motor or soft starter. The machine will judge the motor wiring before starting. If the wiring is incorrect, the soft starter will report a wiring error fault.



Wiring diagram for typical application



NOTES:

- When the control power supply is built in, there are no 11 and 12 terminals of X1.
- Single-node wiring:** X1/4 and X1/3 are disconnected in shutdown state, and X1/5 and X1/4 are short-circuited;
Single-node control: soft start with contact closure, soft start stop with contact open;
Two-node wiring: X1/4 and X1/3 are disconnected in shutdown state, and X1/5 and X1/3 are short-circuited;
Two-node control: input pulse soft start at X1/4 terminal, soft start stop by input pulse at X1/5 terminal.
- The PE ground wire should be as short as possible. Connect to the grounding point closest to the soft starter. The appropriate grounding point should be located on the mounting plate close to the soft starter. The mounting plate should also be grounded. The grounding here is functional grounding rather than protective grounding.

Description of terminal

Terminal No.		Name of terminal		Description
Main circuit	1L1, 3L2, 5L3	Main circuit power input		Connect to three-phase AC power supply and bypass contactor
	2T1, 4T2, 6T3	Main circuit power output		Connect to three-phase asynchronous motor
	B1, B2, B3	Bypass Contactor		Connect to bypass contactor
Control circuit	X1/1	Analog output- (AO-)		0~20mA or 4~20mA
	X1/2	Analog output+ (AO+)		Output load impedance (150--500Ω)
	X1/3	COM		Common terminal
	X1/4	External control start(RUN)		Start when X1/4 and X1/3 are short circuited
	X1/5	External control stop(STOP)		Stop when X1/5 and X1/3 break
	X1/6	Bypass output relay (K11, K12)		K11-K12 close when output is available and contact capacity AC250V/5A, DC30V/5A
	X1/7			
	X1/8	Fault output relay (K21, K22)		K21-K22 close when output is available and contact capacity AC250V/5A, DC30V/5A
	X1/9			
	X1/10	PE		PE
	X1/11	L	Control power	AC110V-10% - AC220V+15%
	X1/12	N		
COM interface	1, 2	GND	Power GND	Optional RJ45, The interface definition is used with the basic wiring schematic diagram
	3, 4	A+	COM terminal	
	5, 6	B-		
	7, 8	+24V	Power +	

Note: When the control power supply is built-in, there is no X1/11, X1/12.

Attached table1: CMC-LX Soft starter standard wiring specifications and accessories selection (take 380V as an example)

Applicable motor (KW)	Model of soft starter	Rated current (A)	Model of bypass contactor	Size of primary line (copper line)
7.5	CMC-008/3-LX	18	CJX4-25	4 mm ²
11	CMC-011/3-LX	24	CJX4-32	6 mm ²
15	CMC-015/3-LX	30	CJX4-32	10 mm ²
18.5	CMC-018/3-LX	39	CJX4-40	10 mm ²
22	CMC-022/3-LX	45	CJX4-50	16 mm ²
30	CMC-030/3-LX	60	CJX4-63	25 mm ²
37	CMC-037/3-LX	76	CJX4-80	35 mm ²
45	CMC-045/3-LX	90	CJX4-95	35 mm ²
55	CMC-055/3-LX	110	CJX4-115F	35 mm ²
75	CMC-075/3-LX	150	CJX4-150F	50 mm ²
90	CMC-090/3-LX	180	CJX4-185F	30×4 copper bar
110	CMC-110/3-LX	218	CJX4-225F	30×4 copper bar
132	CMC-132/3-LX	260	CJX4-265F	30×4 copper bar
160	CMC-160/3-LX	320	CJX4-330F	30×4 copper bar
185	CMC-185/3-LX	370	CJX4-400F	30×4 copper bar
220	CMC-220/3-LX	440	CJX4-500F	40×5 copper bar
250	CMC-250/3-LX	500	CJX4-500F	40×5 copper bar
280	CMC-280/3-LX	560	CJX4-630F	40×5 copper bar
315	CMC-315/3-LX	630	CJX4-630F	40×5 copper bar
400	CMC-400/3-LX	780	JWCJ20-800	50×8 copper bar
470	CMC-470/3-LX	920	JWCJ20-1000	50×8 copper bar
530	CMC-530/3-LX	1000	JWCJ20-1000	50×8 copper bar
630	CMC-630/3-LX	1200	CKJ7-1600A/1140V	50×8 copper bar

NOTE: Standard wiring means delta or star connection in motor winding, thyristor is connected between power supply and motor.

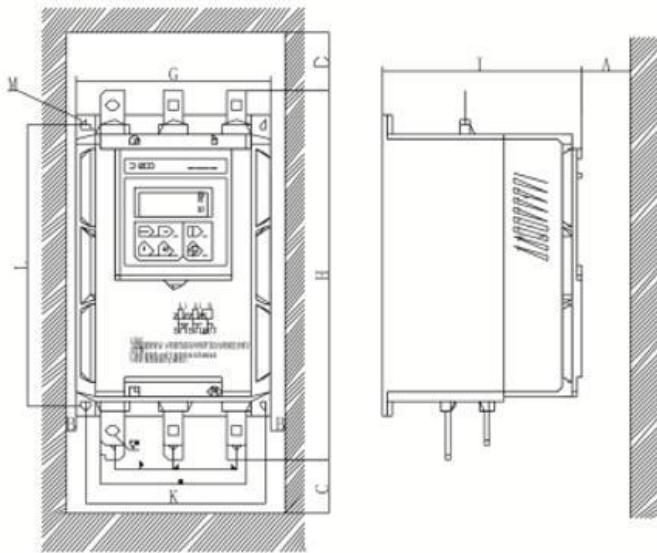
Internal delta connection means delta-thyristor and winding are in series in motor winding. The advantage of internal delta is to derate in selection of soft starter, the current in soft starter and motor inner delta connection is $1/3^{1/2}$ of line current. Soft starter is selected according to rated current of line current/1.5le times in the above mentioned list. In the selection process, the user can further derate the soft starter according to the actual situation.

Attached table 2: Instructions to installation of accessories of CMC-LX soft starter

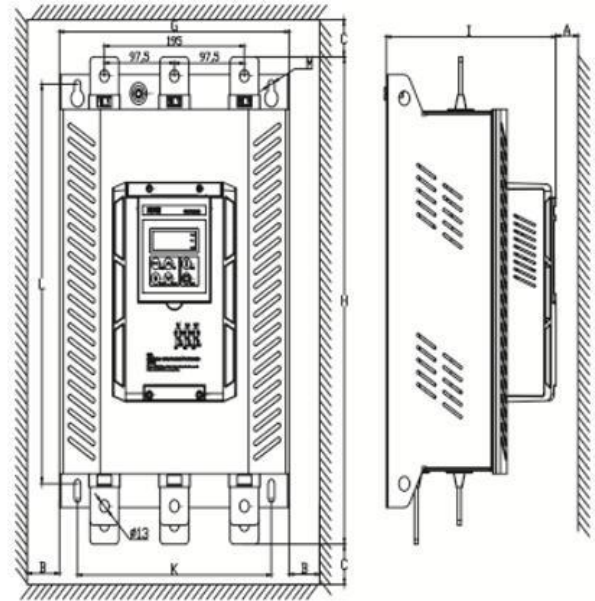
 <p style="text-align: center;">Fig.1</p>	 <p style="text-align: center;">Fig.2</p>	<p>CMC-LX series soft starter "external keyboard box fixing accessories" installation steps are as follows:</p> <ol style="list-style-type: none"> 1. Lock keyboard box's fixing base onto door panel, as is shown in figure1. 2. Remove keyboard box from soft starter and dismount tapping screws at the back of keyboard box, as shown in figure2.
 <p style="text-align: center;">Fig.3</p>	 <p style="text-align: center;">Fig. 4</p>	
 <p style="text-align: center;">Fig. 5</p>	<p>Note:</p> <p>The list of installation accessories is as follows:</p> <p>Keyboard case fixing accessories 1 pc/set</p> <p>Cross round head self-tapping screw M3*15 2pcs/set</p> <p>External keyboard box cable 1pc/set</p> <p>All accessories are in the accessory bag, please check the quantity before installation.</p>	

Attached table 3: Dimension and Hole Size of CMC-LX Soft Starter (Unit: mm, take 380V as an example)

Model	Structure No.	G	H	I	K	L	M	A	B	C	D	Gross weight (kg)
CMC-008~075/3-LX	F005	172	320	172	156	240	6	54	35	72	55	5.1
CMC-090~185/3-LX	F006	285	474	235	230	390	9	85	61	101	39	19.9
CMC-220~315/3-LX	F007	320	512	235	270	415	9	97.5	60	101	39	25.8
CMC-400~530/3-LX	F008	400	652	235	330	500	9	120	57	101	39	51.5



F005



F006 & F007 & F008

Attached table 4: Model Selection of CMC-LX Soft Starter

No.	Rated Current (A)	380V	
		Applicable power (kW)	Size (mm) L*W*H
1	18	7.5	F005 320*172*172
2	24	11	
3	30	15	
4	39	18.5	
5	45	22	
6	60	30	
7	76	37	
8	90	45	
9	110	55	
10	150	75	
11	180	90	F006 474*285*235
12	218	110	
13	260	132	
14	320	160	
15	370	185	
16	440	220	F007 512*320*235
17	500	250	
18	560	280	
19	630	315	
20	780	400	F008 652*400*235
21	920	470	
22	1000	530	
23	1200	630	

Ordering

- When placing an order, please inform the supplier of the product model, specifications, load conditions and conditions of use in order to select the product correctly.
- The standard configuration of the soft starter includes a current transformer, and users do not need to connect an external current transformer.
- For users who have special requirements for this product, please explain to the supplier when ordering, and we will provide perfect services



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If there is any change in product size and parameters, please refer to the latest product.