

CMC-MX

Soft starter



Function

CMC-MX 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-MX soft starter has current transformer and contactor built inside, user does not need to externally connect the both to soft starter.

Characteristic

◆ Multiple starting modes

User is allowed to choose current-limiting start and voltage ramp start and apply programmable kick start and start-current limit in each starting mode so as to largely meet the site application and achieve the optimal start.

High reliability

◆ High performance microprocessor digitally processes signals in control system, which avoids excessive adjustment in previous analog line and obtains the perfect accuracy and execution speed.

◆ Powerful anti-interference performance

All external control signals are isolated using photoelectric city and different noise-proof levels to fit the application in special industry.

◆ Simple adjustment

Control system provides wide scope of application and simple adjustment method. With various functional options, it is able to match control objects of different kinds.

◆ Optimized structure

The unique compact inner structure design is especially convenient for user to integrate it into the existing system and save the cost of purchasing current

transformer and bypass contactor.

◆ Power frequency

Power frequency 50/60Hz is set by inputting parameters in favor of user's operation.

◆ Analog output

4-20mA current output function is in favor of user's operation.

◆ MODBUS-RTU communication

It is possible to connect 32 equipments during network communication. User can achieve the goal of automatic communication through setting baud rate and communication address. The setting scope of communication address is 1-32 and initial value is 1. The setting scope of baud rate: 0 (2400); 1 (4800); 2 (9600); 3 (19200); the initial value is 2 (9600).

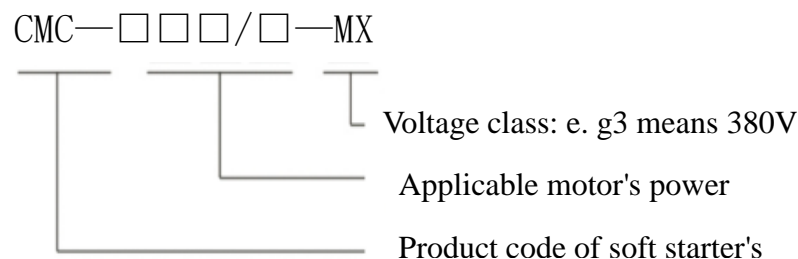
◆ Perfect protective function

Multiple motor's protective functions including overcurrent, input/output phase loss, Thyristor short circuited, overheat, leakage detection, electric thermal overload, inner contactor failure, and phase current unbalance protections prevent that motor and soft starter from being damaged in case of failure and faulty operation.

◆ Simple 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

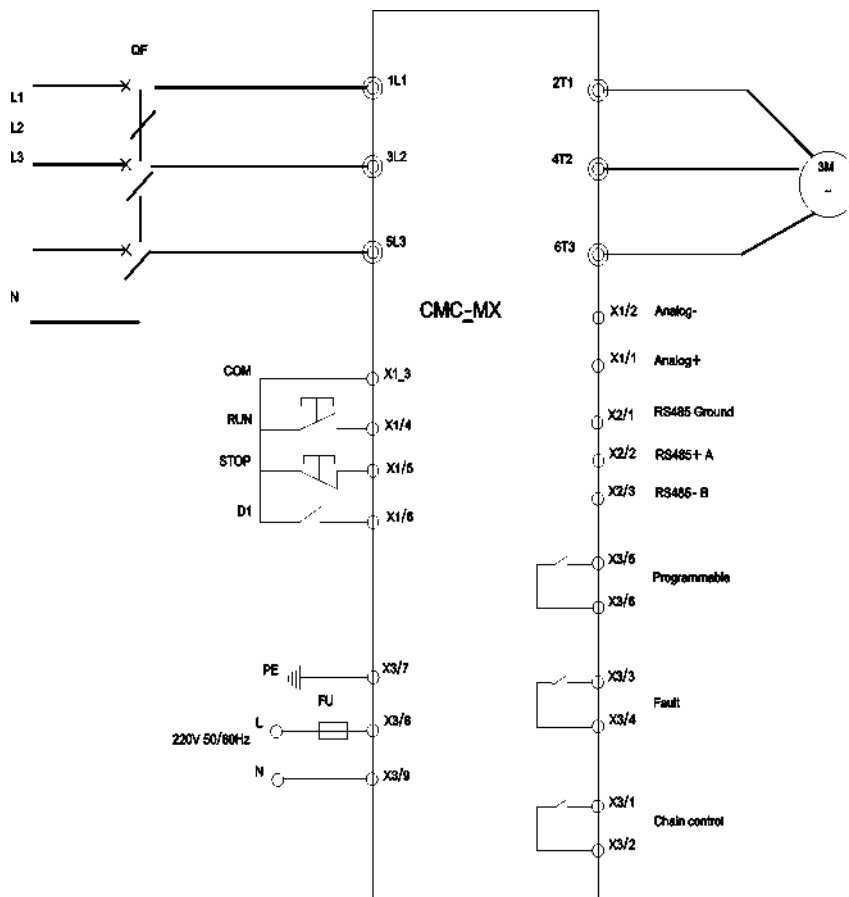


Service condition

Control power	AC110V-220V $\pm 15\%$, 50/60Hz
Main power	AC380V $\pm 15\%$
Rated current	18A—500A, 17 rated values in total
Applicable motor	Ordinary squirrel cage AC asynchronous motor
Start ramp mode	Voltage ramp start and current ramp start
Stop mode	Free stop and soft stop
Logical input	Impedance 1.8 K Ω , power supply +24V
Start frequency	Frequent or infrequent start available, start is advised not to exceed 10 times each other
Protective function	Phase failure, overcurrent, short circuit, SCR protection, overheat, phase current unbalance, wiring and inner feult
IP	IP00, IP20
Cooling type	Natural cooling or forced air cooling
Installation type	Wall-mounted
Environmental condition	<p>When sea altitude is above 2,000m, soft starter should be derated for use.</p> <p>Ambient temperature: -25--+45 $^{\circ}\text{C}$</p> <p>Relative humidity: less than 95% (20 $^{\circ}\text{C} \pm 5^{\circ}\text{C}$)</p> <p>Free of flammable, explosive and corrosive gas or conductive dust.</p> <p>Good ventilation for indoor installation and vibration is less than 0.5G</p>

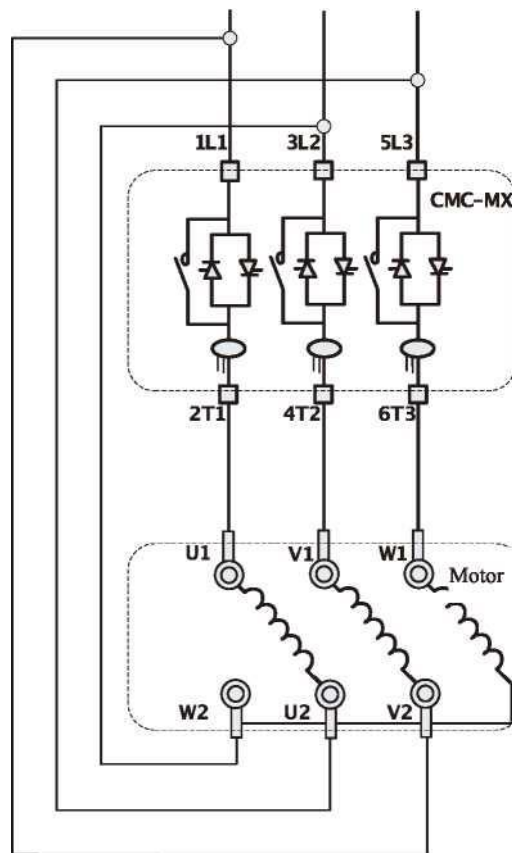
Basic wiring diagram

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



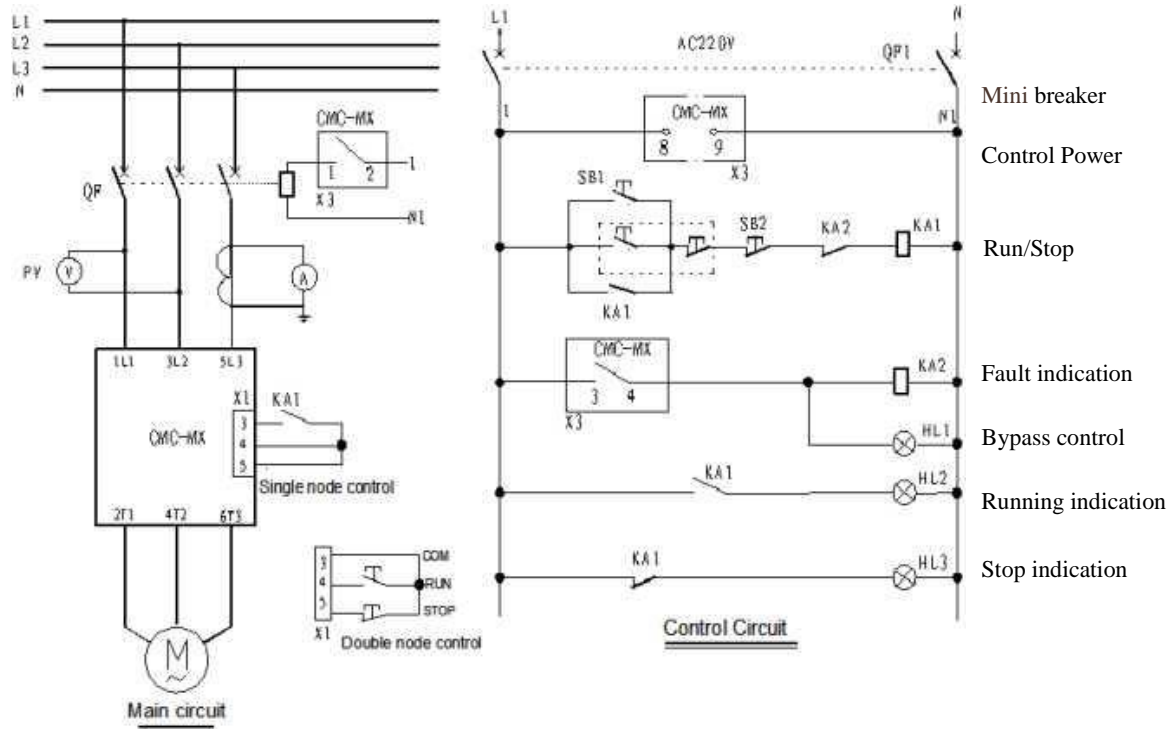
Delta inner connection diagram

When adopting delta inner connection, user must strictly connect in accordance with the following diagram, otherwise, motor or soft starter may be damaged. Before starting, soft starter will detect motor's wiring. If wiring is false, soft starter will indicate fault of false wiring.



Delta internal connection

Wiring diagram for typical application



Note:

1. The above diagram shows the single-node control mode. When contact closes, soft starter starts, otherwise, it stops. But it needs to be noted that LED panel's start is ineffective with this type of wiring. Terminals 3, 4 and 5 start and stop signal is a passive node.
2. PE grounding wire should be as short as possible. It should be connected to an earth connection point close to soft starter. The proper earth connection point should be on installation board and close to soft starter. Installation board should be grounded too. This earth connection is for function rather than protection.

Attached table 1: Standard connection fitting selection for soft starter

Motor (KW)	Model of soft starter	Rated current (A)	Bypass contactor	Copper wire
7.5	CMC-008/3-MX	18	CJX4-25	4 mm ²
11	CMC-011/3-MX	24	CJX4-32	6 mm ²
15	CMC-015/3-MX	30	CJX4-32	10 mm ²
18.5	CMC-018/3-MX	39	CJX4-40	10 mm ²
22	CMC-022/3-MX	45	CJX4-50	16 mm. ²
30	CMC-030/3-MX	60	CJX4-63	25 mm ²
37	CMC-037/3-MX	76	CJX4-80	35 mm ²
45	CMC-045/3-MX	90	CJX4-95	35 mm ²
55	CMC-055/3-MX	110	CJX4-115F	35 mm ²
75	CMC-075/3-MX	150	CJX4-150F	50 mm. ²
90	CMC-090/3-MX	180	CJX4-185F	30x3 copper bar
110	CMC-110/3-MX	218	CJX4-225F	30x3 copper bar
132	CMC-132/3-MX	260	CJX4-265F	30x4 copper bar
160	CMC-160/3-MX	320	CJX4-330F	30x4 copper bar
185	CMC-185/3-MX	370	CJX4-400F	40x4 copper bar
220	CMC-220/3-MX	440	CJX4-500F	40x4 copper bar
250	CMC-250/3-MX	500	CJX4-500F	40x4 copper bar

Note:

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

Inner Delta Connection Fitting Selection for Soft Starter

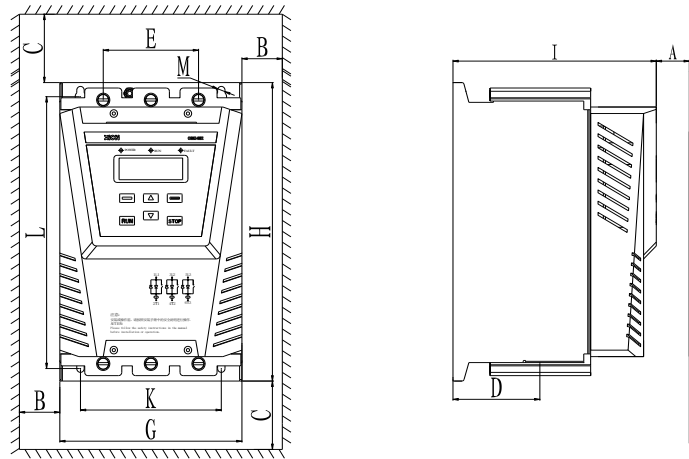
Motor (KW)	Rated current (A)	Model of soft starter	Copper wire
7.5	18	CMC-MX008/3	6 mm ²
11	24		10 mm ²
15	30	CMC-MX011/3	16 mm ²
18.5	39		16 mm ²
22	45	CMC-MX015/3	16mm ²
30	60	CMC-MX018/3	25 mm ²
37	76	CMC-MX022/3	35 mm ²
45	90	CMC-MX030/3	50 mm ²
55	110	CMC-MX037/3	70 mm ²
75	150	CMC-MX045/3	20X3
90	180	CMC-MX075/3	20X3
110	218		20X3
132	260	CMC-MX090/3	25X3bar
160	320	CMC-MX110/3	30X3bar
185	370		30X4bar
220	440	CMC-MX132/3	40X5 bar
250	500	CMC-MX185/3	40X5 bar
280	560		40X5 bar

Note:

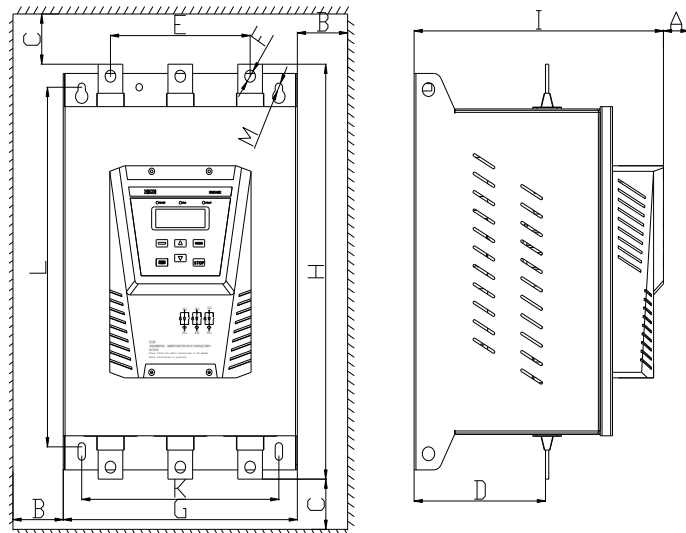
Inner delta connection means delta-thyristor and winding are in series in motor winding. The advantage of inner delta is to derate in selection of soft starter, the current in soft starter and motor inner delta connection is $1/\sqrt{3}$ of line current. Soft starter is selected according to rated current of line current/1.5 magnification in the above mentioned list. User may further derate in selection of soft starter according to practical situation.

Dimension and Hole Size of Soft Starter (Unit: mm)

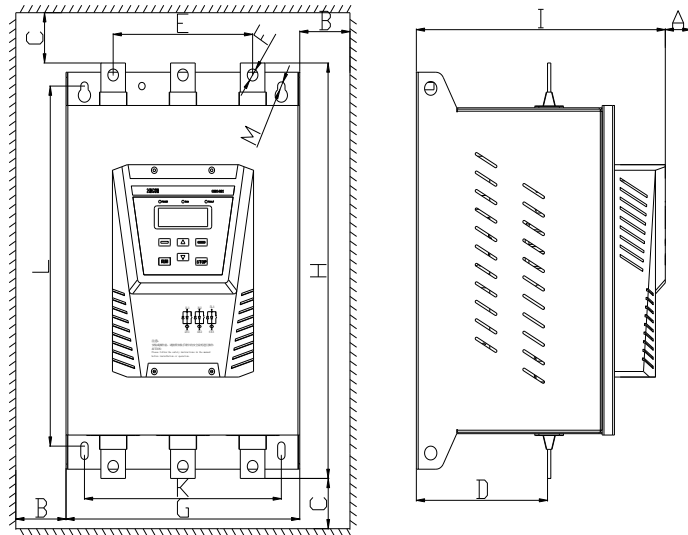
Model	G	H	I	K	L	M	E	D	A/B/C
CMC-008-55	173	275	192	133	250	7	90	86	50
CMC-075-160	285	450	305	230	390	9	170	158	50
CMC-185-250	320	523	330	270	415	9	195	158	50



55KW and below



75KW-160KW



185KW-280KW

Mode Selection of Soft Starter

NO	Rated Current (A)	380V	Size(mm)
		Applicable power(KW)	
1	18	7.5	173×275×192 (W×H×T)
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	
12	218	110	
13	260	132	
14	320	160	
15	370	185	320×523×330 (W×H×T)
16	440	220	
17	500	250	

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