



## CMC-HX Soft Starter

XI'AN XICHI ELECTRIC CO., LTD.

CMC-HX soft starter is a new intelligent asynchronous motor starting and protection device. It is a motor terminal control equipment that integrates start, display, protection, and data collection. With the fewer components, user can achieve more complex control functions. The Chinese and English interface display makes the operation much easier. As CMC-HX soft starter is inbuilt with a current transformer, the external one is not needed.

## Functions

- ◆ Reduce the motor starting current, reduce the distribution capacity, and avoid capacity investment;
- ◆ Reduce the starting stress, extend the life of the motor and related equipment;
- ◆ Smooth start and soft stop avoid the surge problem and water hammer effect of traditional start-up equipment;
- ◆ A variety of starting mode and a wide range of current, voltage and other settings can adapt to a variety of load conditions;
- ◆ Perfect and reliable protective function protects motor and related equipment in a more effective manner.

## 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.

### ◆ **Unique load application parameters**

It is built-in ten kinds of load types for users to choose. It provides a unique start control curve for each type of load to make soft start match the load, so as to achieve the best start and stop.

### ◆ **Multiple start and stop modes**

Voltage exponential curve start, voltage linear curve start, current exponential curve start, and current linear curve start. Programmable kick start torque and start

current limit can be applied in each mode. According to the different loads, you can choose the corresponding start curve to achieve the appropriate starting effect. The device is provided with a variety of stop modes including programmable soft stop, free stop, braking, and pump stop. Unique basic algorithm makes the motor start and stop accurately and smoothly.

◆ **Advanced communication function**

Standard Modbus RTU communication. Optional Ethernet/GPRS communication module makes user's network connection control easier and improves the system's automation level and reliability.

◆ **Analog signal control**

Users can input 4-20mA or 0-20mA standard signal, and conduct upper and lower limit setting of analog to achieve the start and stop control of motor and alarm. The data (pressure, temperature, flow, etc.) can also be transmitted via a soft starter. It is provided with 4-20mA or 0-20mA standard analog signal output function.

◆ **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.

◆ **Powerful anti-interference property**

All external control signals are subject to optoelectronic isolation, and different anti-noise levels are set to adapt to the application in special industrial environments.

◆ **Dual parameter function**

With two sets of basic parameters, it can control two motors with different power respectively.

◆ **Self-adaption of power frequency**

Self-adaption of power frequency 50/60 makes user easy to use.

◆ **Dynamic fault memory**

Up to 10 failures can be recorded, making it easy to find the cause of the malfunction.

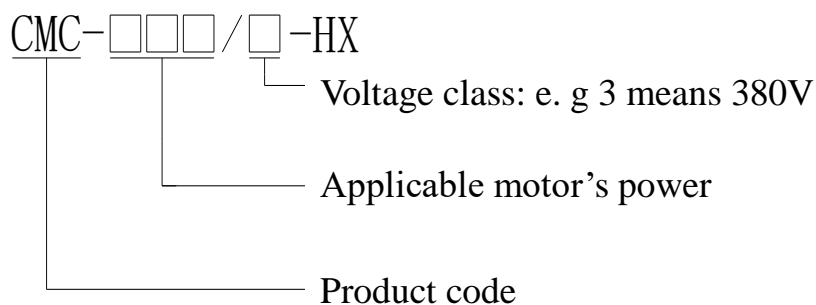
◆ **Perfect protective function**

It detects current and load parameters, having overcurrent, overload, underload, overheating, phase failure, short circuit, three-phase current imbalance, phase sequence detection, frequency error and other functions.

◆ **Friendly man-machine interface**

The use of LCD liquid crystal display panel, Chinese and English display interface makes programming and parameter adjustment more convenient.

## Description of soft starter's model



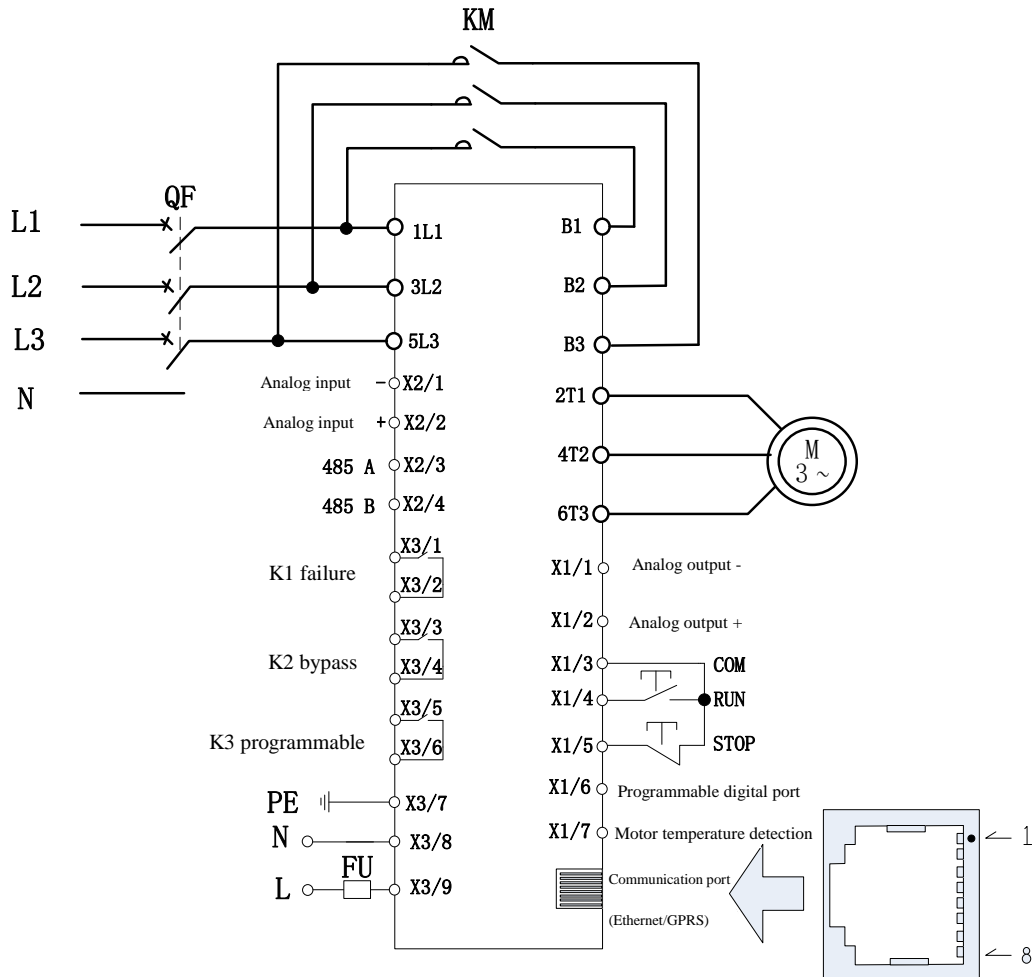
## Service conditions

Control power	AC110V--AC220V ±15% 50/60Hz
Three-phase power	AC380V ±15% Standard wiring AC380V, 660V, 1140V ±15% Internal delta connection AC380V ±15%
Nominal current	18A--1000A, 22 rated values in total
Applicable motor	Ordinary squirrel cage asynchronous motor
Starting mode	Voltage exponential curve, voltage linear curve, current exponential curve, current linear curve
Stop mode	Free stop, soft stop, brake, and pump stop
Logical input	Impedance 1.8 KΩ, power supply +24V
Start frequency	Frequent or infrequent start available, start is advised not to exceed 10 times each other

Protective function	Overcurrent, overload, underload, overheat, phase failure, three-phase current imbalance, phase sequence detection, overheat of motor and frequency error, etc.
Protection level	IP00, IP20
Cooling type	Natural cooling or forced air cooling
Installation type	Wall mounted
Environmental condition	When sea altitude is above 2,000m, soft starter should be derated for use. Ambient temperature: -25-+45 °C Relative humidity: less than 95%(20 °C±5 °C) Free of flammable, explosive and corrosive gas or conductive dust. Good ventilation for indoor installation and vibration is less than 0.5G

## Basic wiring diagram

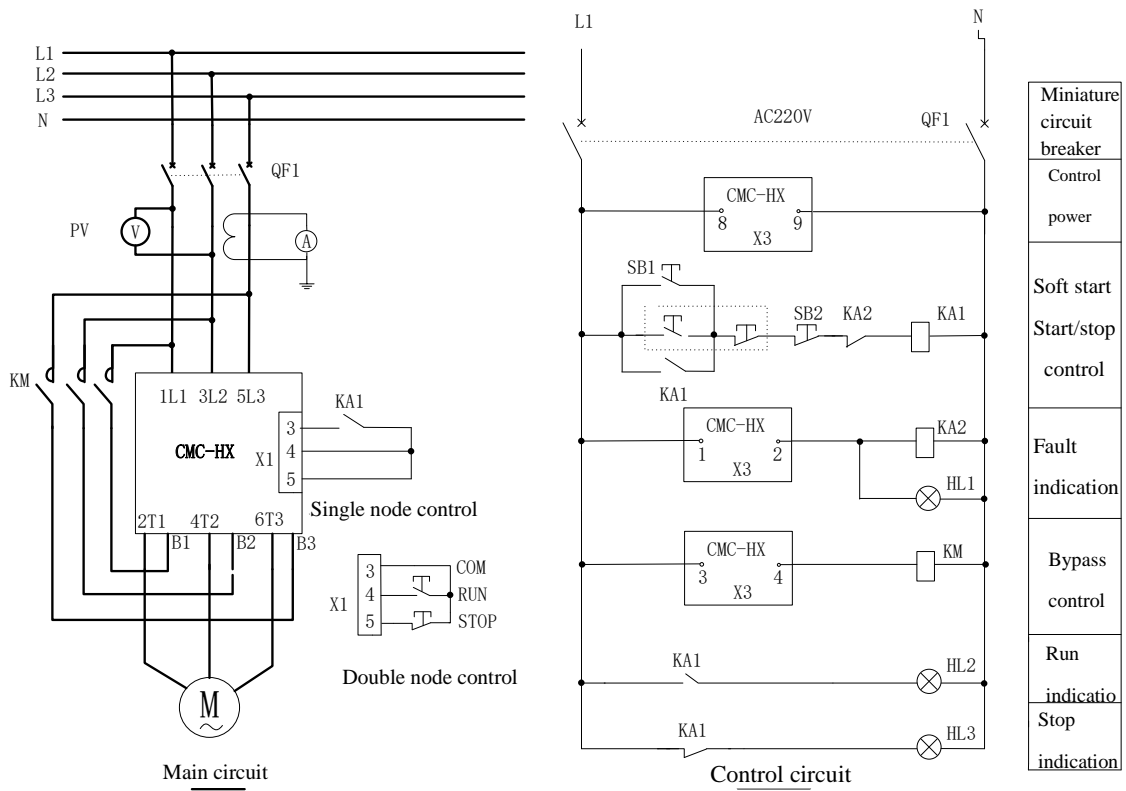
Soft starter's terminals 1L1, 3L2 and 5L3 are connected to three-phase power supply and terminals 2T1, 4T2 and 6T3 connected to electric motor. Soft starter's detection of phase sequence can be determined by parameter setting. When bypass contactor is used, one end of contactor is connected to terminals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



**NOTE:**

Communication port is a functional interface using optical fiber crystal head connecting terminal. As is shown in the figure, pins 1-8 are arranged in order from up to down. For specific definition of terminal, please refer to definition of terminal.

## Wiring diagram for typical application

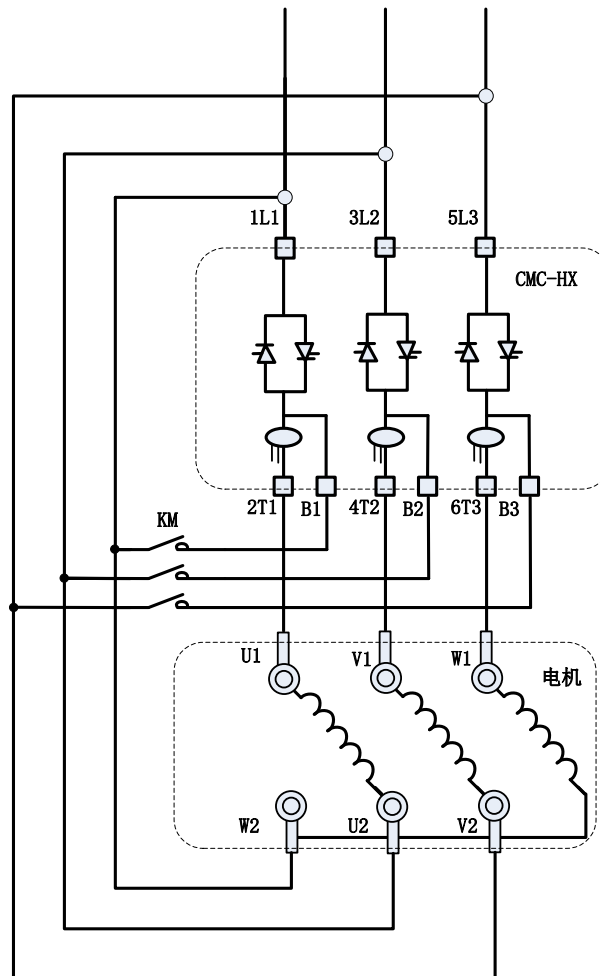


Notes:

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.

## Internal delta connection

When internal delta connection is adopted, please strictly follow the connection below.



Triangle inscribed

## Specification and Accessories Selection

Motor (KW)	Model of soft starter	Rated current (A)	Model of bypass contactor	Specification of primary line (copper line)
7.5	CMC-008-3	18	GSC1-25	4 mm <sup>2</sup>
11	CMC-011-3	24	GSC1-32	6 mm <sup>2</sup>
15	CMC-015-3	30	GSC1-40	10 mm <sup>2</sup>
18.5	CMC-018-3	39	GSC1-50	10 mm <sup>2</sup>
22	CMC-022-3	45	GSC1-63	16 mm <sup>2</sup>
30	CMC-030-3	60	GSC1-70	25 mm <sup>2</sup>
37	CMC-037-3	76	GSC1-95	35 mm <sup>2</sup>
45	CMC-045-3	90	GSC2-115F	35 mm <sup>2</sup>
55	CMC-055-3	110	GSC2-150F	35 mm <sup>2</sup>
75	CMC-075-3	150	GSC2-185F	50 mm <sup>2</sup>
90	CMC-090-3	180	GSC2-225F	30×3 copper bar
110	CMC-110-3	218	GSC2-265F	30×3 copper bar



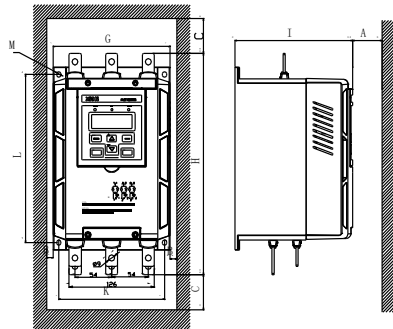
132	CMC-132-3	260	GSC2-330F	30×4 copper bar
160	CMC-160-3	320	GSC2-384F	30×4 copper bar
185	CMC-185-3	370	GSC2-500F	40×4 copper bar
220	CMC-220-3	440	GSC2-550F	40×4 copper bar
250	CMC-250-3	500	GSC2-630F	40×4 copper bar
280	CMC-280-3	560	GSC2-630F	40×4 copper bar
315	CMC-315-3	630	CDC8-800	40×5 copper bar
400	CMC-400-3	780	CDC8-1000	50×5 copper bar
470	CMC-470-3	920	CDC8-1250	50×6 copper bar
530	CMC-530-3	1000	CDC8-1250	50×6 copper bar

## Instructions to Installation of Accessories of Soft Starter

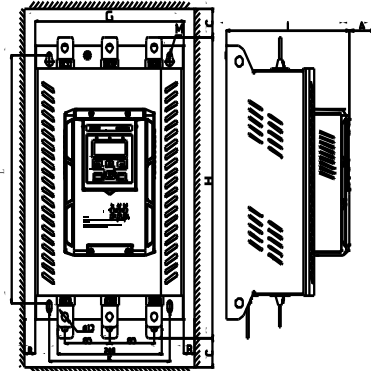
		<p>The steps for mounting accessories of CMC-HX soft starter are as follows:</p> <ol style="list-style-type: none"> <li>1. Lock keyboard box's fixing accessory onto door panel, as is shown in figure 1.</li> <li>2. Remove keyboard box from soft starter and dismount tapping screws at the back of keyboard box, as shown in figure 2.</li> <li>3. Insert keyboard box into fixing accessory as shown in figure 1, which is shown in figure 3.</li> <li>4. Use M3X15 tapping screws to fix keyboard box at the back of door panel, as shown in figure 4.</li> <li>5. Screw hex screws into DB9 female head of keyboard box, as shown in figure 5.</li> <li>6. Insert connection line of keyboard box into DB9 female head, as shown in figure 6.</li> <li>7. The installation of CMC-LX soft starter's accessories is completed.</li> </ol> <p><b>Note: Accessories for installation are as follows:</b></p> <p>Fixing accessory of keyboard box-1 pc            Cross round head tapping screw M3X15—2 pcs            Hex screw M3×5+5—2 pcs            External keyboard connection line—1 pc            All accessories are enclosed in packing bag.            Please check the number before installation.</p>
<p align="center"><b>Fig. 1</b></p>	<p align="center"><b>Fig. 2</b></p>	
<p align="center"><b>Fig. 3</b></p>	<p align="center"><b>Fig. 4</b></p>	
<p align="center"><b>Fig. 5</b></p>	<p align="center"><b>Fig. 6</b></p>	

**Appearance of Soft Starter and Opening Size (Unit: mm,  
with 380V as example)**

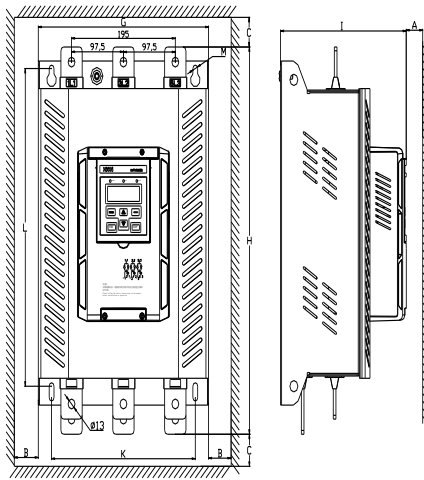
Model	Number	G	H	I	K	L	M	A	B	C	GW(kg)
CMC-008~022/3-HX	F005	172	320	172	156	240	6	20	10	100	4.5
CMC-030~045/3-HX	F005	172	320	172	156	240	6	20	10	100	4.7
CMC-055~075/3-HX	F005	172	320	172	156	240	6	20	10	100	5.1
CMC-090~185/3-HX	F006	285	474	235	230	390	9	20	10	100	20.6
CMC-220~315/3-HX	F007	320	512	235	270	415	9	20	10	100	25.6
CMC-400~530/3-HX	F008	400	647	235	330	495	9	20	10	100	37.6



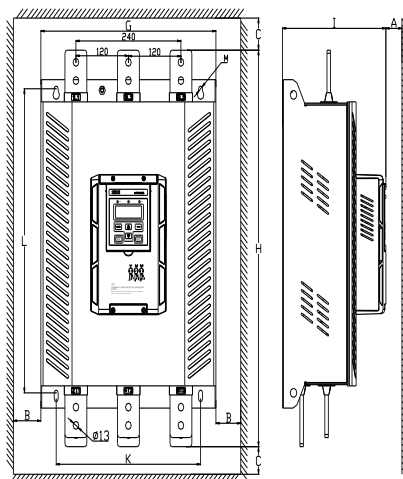
75KW product



90KW-185KW product



220KW-315KW product



400KW-530KW product

## Model Selection for Soft Starter

No.	Rated current (A)	380V		660V		1140V	
		Power (KW)	Size (mm)	Power (KW)	Size (mm)	Power (KW)	Size (mm)
1	18	7.5	F005	15	F005	22	F005
2	24	11		22		33	
3	30	15		30		45	
4	39	18.5		37		55	
5	45	22		45		65	
6	60	30		55		90	
7	76	37		75		110	
8	90	45		90		135	
9	110	55		110		165	
10	150	75		132		225	
11	180	90	F006	160	F006	280	F006
12	218	110		200		344	
13	260	132		250		400	
14	320	160		300		505	F007
15	370	185		350		584	
16	440	220	F007	400	F007	695	F007
17	500	250		456		789	
18	560	280		500	884	F008	
19	630	315		560	995		
20	780	400	F008	700	F008		
21	920	470					
22	1000	530					

Note:

Size F005:172×320×172, F006:285×474×235, F007:320×512×235,

F008:400×647×235(W×H×T)

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