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**INSTRUCTION MANUAL OF
HVLS CEILING FAN**



**MODEL: CLF-37HVLS /
CLF-50HVLS**

Read carefully these instructions before using the appliance
and keep them for future reference



THE PERMANENT MAGNET FREQUENCY CONVERSION LARGE CEILING FAN

Permanent Magnet Frequency Conversion
Large Ceiling Fan
Operation Manual



Variable speed



Natural wind

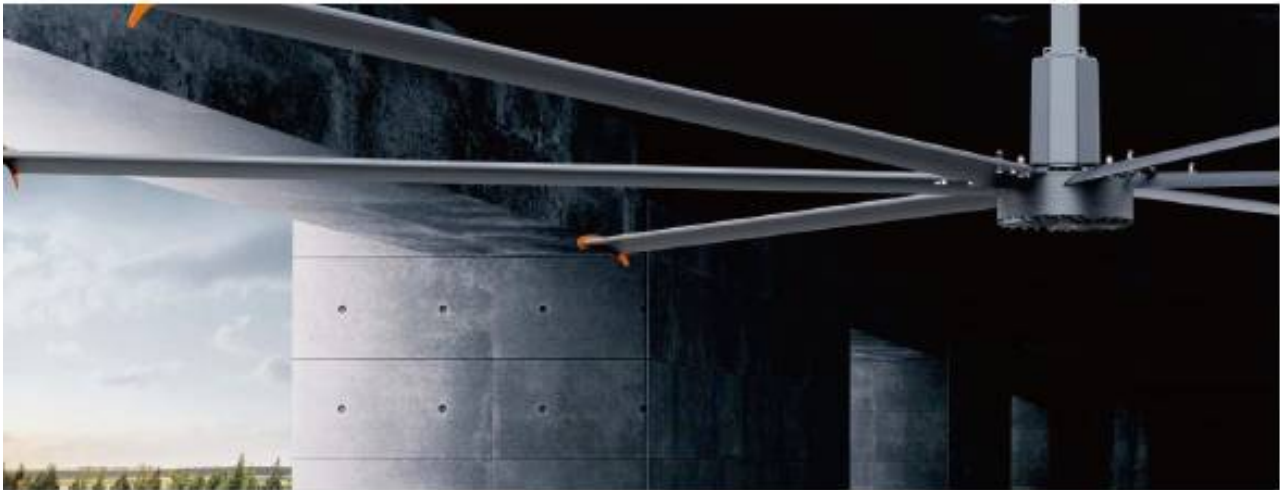


Intelligent control



Energy saving comfort

The technical data and installation dimensions
in this manual are for reference only.



I. Safety Precautions

General

Some figures in the Installation Flow Chart are in exploded view in order to explain the installation process. Please operate the product according to this manual.

▲ Danger

Please read this manual carefully before installation.

▲ In order to prevent electric shock:

Nonprofessionals are not allowed to repair, inspect or replace the parts.

Do not carry out wiring work within 1 minute of switching on or off the power, otherwise there will be a risk of electric shock (the capacitor will also have power in a short time of switching off the power). When to replace or move the power supply, please cut off the power and wait for all indicators to be off for 1 minute before operation.

▲ Warning

Use the correct controller according to the product model. Do not use unmatched controller, which may cause damage to the motor or controller.

Please confirm whether the power is connected according to the marks and whether there is any obstacle within the operating range of the product before operation. After operation, please check whether the rotation direction of the product is correct (clockwise as viewed from below).

This product shall not be operated in freezing, corrosive, explosive and severely dusty environment.

▲ Installation

The installation and maintenance must be carried out by professionally trained or experienced personnel with electrician certificates.

II. Introduction

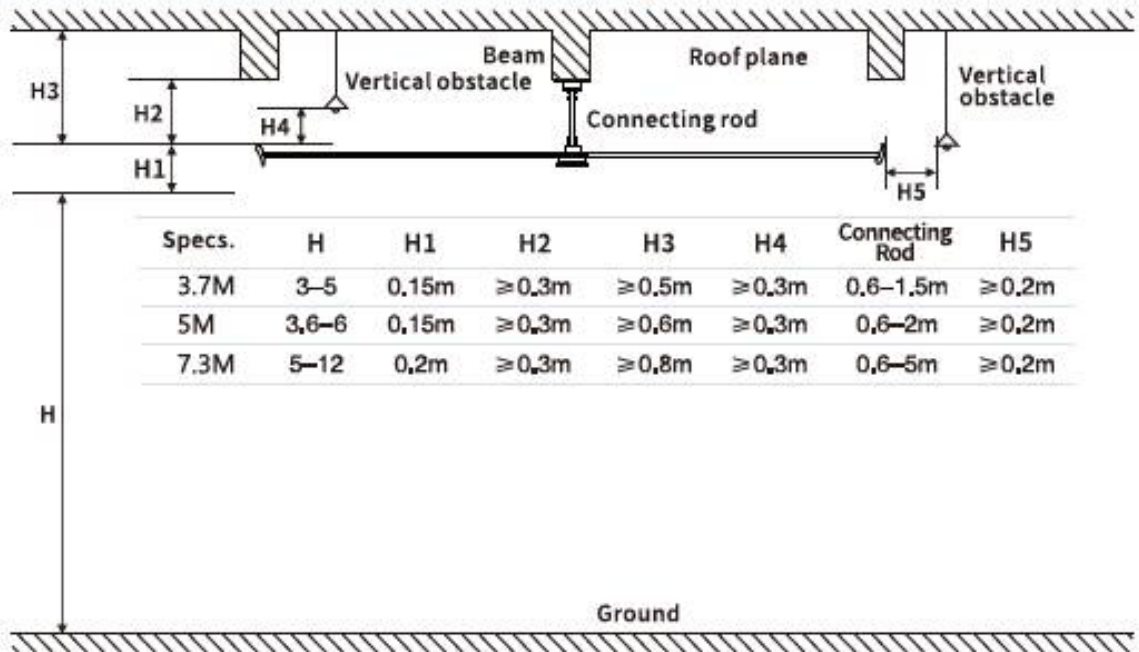
ADS-G Series permanent magnet frequency conversion large ceiling fan is specially developed to save energy, reduce consumption and create a comfortable work environment. The independently designed permanent magnet motor is featured by small size, light weight, high efficiency, low noise, variable frequency speed regulation, compact structure and beautiful shape. It is a new type of ceiling fan which is widely used in industrial plants, logistics warehouses, waiting rooms, exhibition halls, gyms and supermarkets for ventilation and cooling. The fan can produce a large amount of airflow to the ground to form a certain height of airflow layer for overall air circulation. It is like the natural breeze system and you can intimately experience the natural wind.

III. Technical Parameters

Model	ADS-G37A Series	ADS-G50A Series	ADS-G73A Series	ADS-G73B Series
Diameter (m)	3.7	5	7.3	7.3
Power (kW)	0.37	0.75	1.1	1.5
Voltage (V)	220/380/460			
Frequency (Hz)	50/60			
Air volume (m ³ /min)	5000	10000	13000	15500
Rotating Speed (rpm)	100	80	55	60
Number of blades (Pcs)	5	5	6	6
Noise (dB(A))			38	
Motor weight (kg)	16	22	36	42
Fan weight (kg)	49	62	107	113
Coverage area (m ²)	380	500	1500	1700
controller	S Series / M Series / H Series			
Mounting bracket	I-beam/ square steel / concrete			

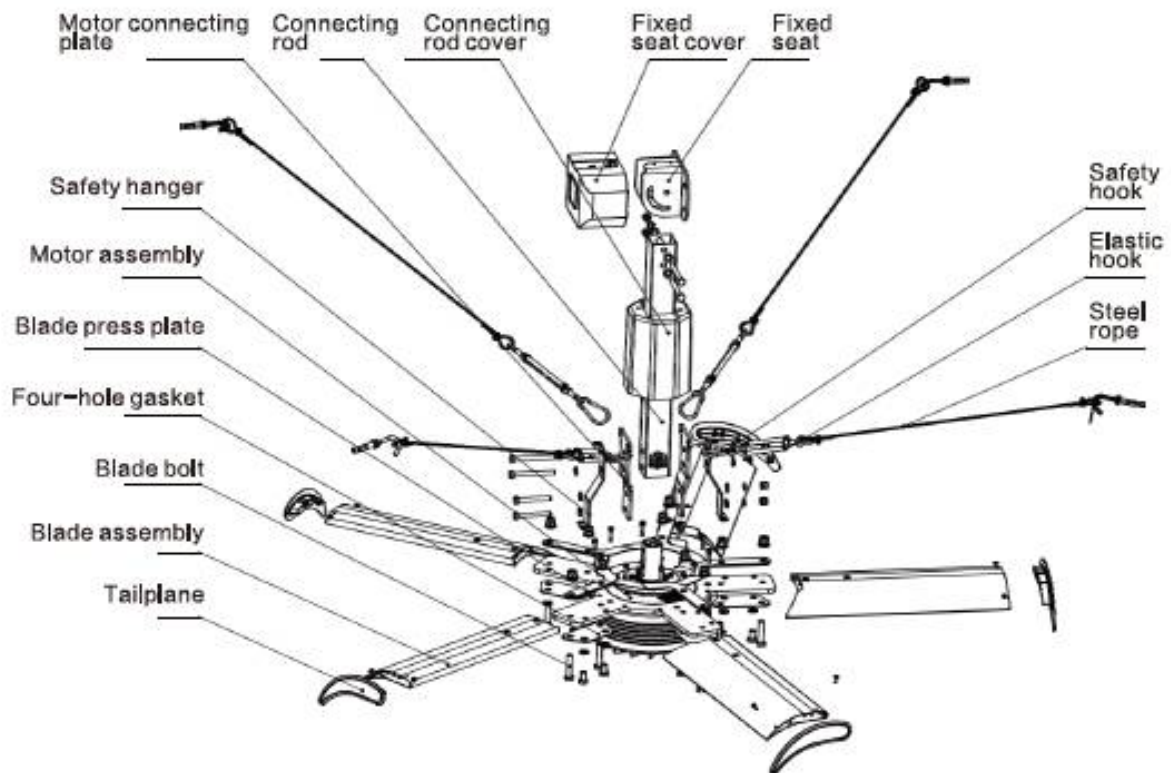
Other specifications can be customized according to user needs.

IV. Installation Data



V. Ceiling Fan Structure and Installation Steps

5.1 Concrete structure installation steps of 3.7-5m ceiling fan



5.1.1 Unpack the product and check whether the accessories are complete.

Accessories:

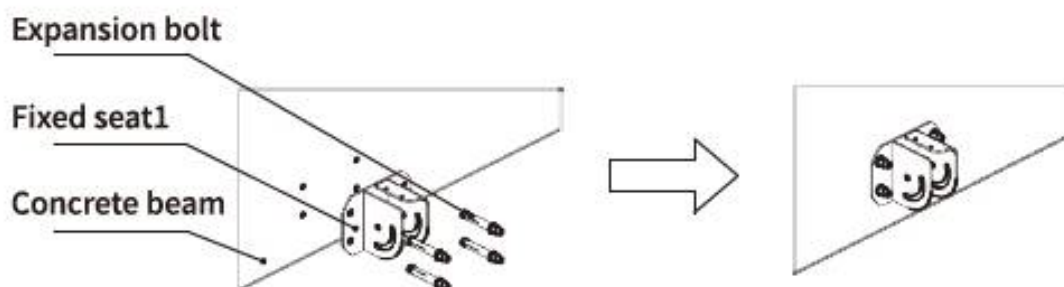
General Accessories of Ceiling Fan				Concrete Structure	
Name	Qty.	Name	Qty.	Name	Qty.
Motor assembly	1	M10X100 Hex bolt	4	Rubber sheathed cable	1
M 12x60 Hex bolt (full thread)	10	M10X80 Hex bolt	2	Fixed seat	1
M 12x16 Hex bolt (full thread)	10	Ø10 Large washer	12	Fixed seat cover	1
M12 Hex nylon nut	10	Ø10 Standard spring washer	6	M10X80 Expansion bolt	4
Ø12 Standard spring washer	10	M10 Hex nylon nut	6	M10X80 Expansion bolt hook	4
Blade press plate	5	M6 Steel rope clamp	8	I-shaped Steel Structure	
Four-hole gasket	5	20m Steel rope	1	Name	Qty.
Blade assembly	5	Elastic hook	4	I-shaped steel press plate	2
Connecting rod assembly	1	Safety hook	4	M10X60 Hex bolt (full thread)	4
Motor connecting plate	2	Connecting rod cover	1	Ø10 Large washer	8
Safety hanger	2	M5X10 Cross recessed screw	2	Ø10 Spring washer	4
M6X14 Socket head cap screw	4	Permanent magnet motor controller	1	M10 Hex nylon nut	4

Square Steel Structure		Installation Tools	
Name	Qty.	Name	Qty.
Ceiling bracket	1	13-16 Open end wrench	2
M10X150 Hex bolt (full thread)	4	14-17 Open end wrench	2
Ø10 Large washer	8	Cross screwdriver	1
Ø10 Spring washer	4	Slotted screwdriver	1
M10 Hex nylon nut	4	5mm Inner hex spanner	1

5.1.2 Determine the installation position of the fan, mark it with the fixed seat, drill the mounting hole with a 12mm drill bit (hole depth>60mm) and then install the M10x80 expansion bolts to fix the fixed seat.

Accessories

Fixed seat1	1
Expansion bolt	4

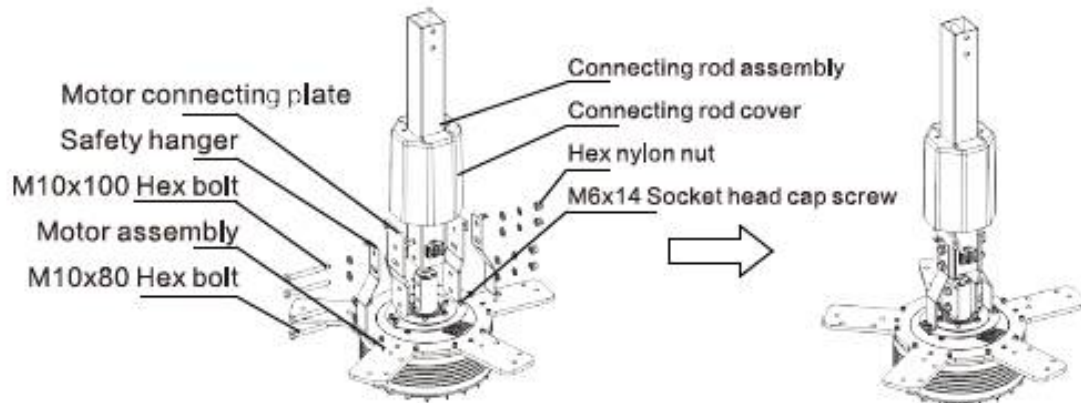


Attention: Pay attention to safety during the work and install expansion bolts securely.

5.1.3 Install the connecting rod on the motor and screw it without tightening.

Accessories:

Motor assembly	1	Connecting rod cover	1	M10X80 Hex bolt	2
Connecting rod assembly	1	M5X10 Slotted screw	2	M10 Hex nylon nut	4
Motor connecting plate	2	M6X14 Hex bolt	4	Ø10 Large washer	8
Safety hanger	2	M10X100 Hex bolt	2	Ø10 Spring washer	4

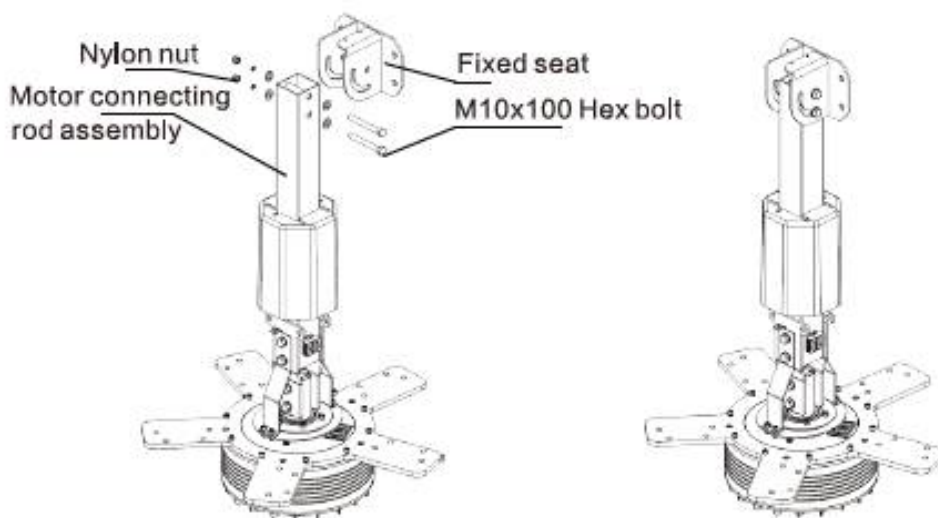


Attention: Check whether the blade bracket on the motor assembly is installed in the wrong direction (See the figure above).

5.1.4 Install the installed connecting rod motor assembly on the fixed seat and screw it without tightening.

Accessories:

Motor connecting rod assembly	1
M10X100 Hex bolt	2
M10 Hex nylon nut	2
Ø10 Large washer	4
Ø10 Spring washer	2

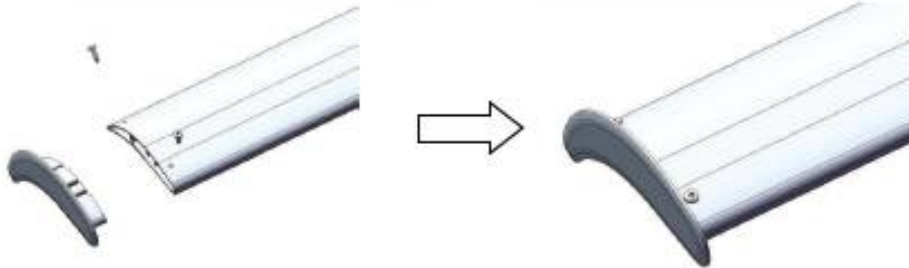


5.1.5 Install the blade tail on the blade and lock it.

Accessories:

Blade	5
Tailplane	5

ST4.8X10 Self tapping screw	10



5.1.6 Install the tail blade assembly on the motor, install the screws and pull the blade outward from the center of the motor. Install the blade screws without tightening.

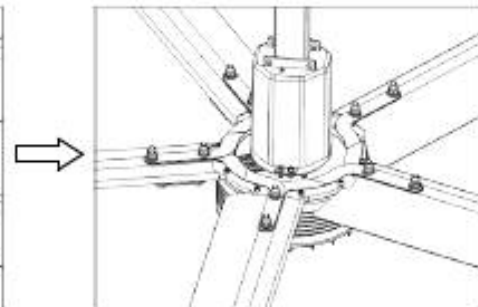
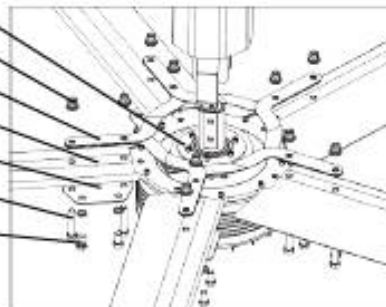
Accessories:

Blade assembly	5
Four-hole gasket	5
Blade press plate	5
M12X60 Hex bolt (full thread)	10

M12X16 Hex bolt (full thread)	10
M12 Hex nylon nut	10
Ø12 Spring washer	20

Connecting rod assembly

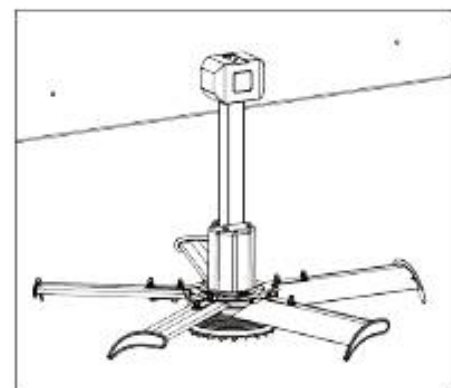
- Hex nylon nut
- Blade press plate
- Blade assembly
- Four-hole gasket
- M12x60 Hex bolt
- M12x16 Hex bolt



Attention: Before tightening the fan blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.

5.1.7 Adjust the levelness of the motor and the verticality of the connecting rod, tighten the connecting rod and blade screws, install the fixed base cover and tighten the screws.

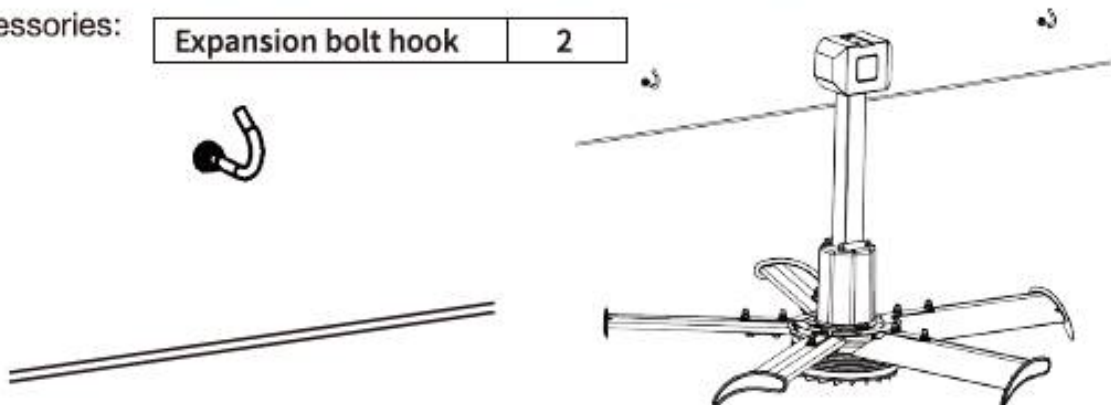
Attention: Before tightening the fan blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.



5.1.8 Determine the position of the expansion bolt hook, drill the mounting hole with a 12mm drill bit (hole depth > 60mm), install the M10x80 expansion bolt hook with the opening upward and tighten the expansion screw hook.

Accessories:

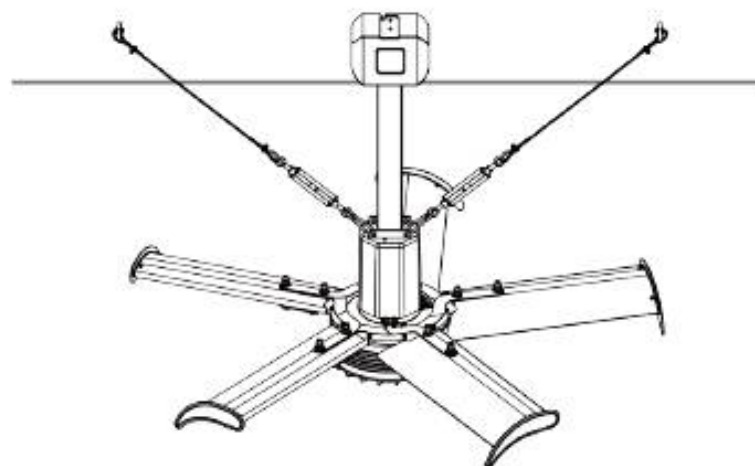
Expansion bolt hook	2
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5.1.9 Fix the steel rope on the elastic hook with the steel rope clamp and fix the other end on the steel rope hook. Install the hook on the connecting plate of the ceiling fan motor. One end of the steel rope is fixed on the expansion screw hook with the steel rope clamp and adjust the tension of the steel rope with the elastic hook (Until the steel rope is just straight).

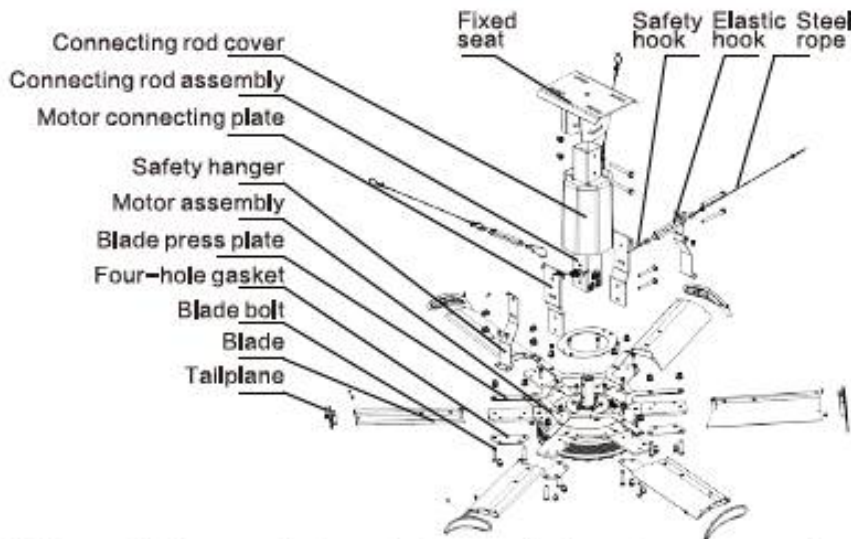
Accessories:

M6 Steel rope clamp	4	Elastic hook	2
6X10S+FC-6 30m Steel rope	1	Steel rope hook	2



Attention: The included angle between the steel rope and the connecting rod is greater than 30° and less than 45°. The steel rope clamp shall be securely installed and the steel rope can be adjusted by the elastic hook without too tight.

5.2 installation steps of 7.3 m ceiling fan



5.2.1 Unpack the product and check whether the accessories are complete

Accessories:

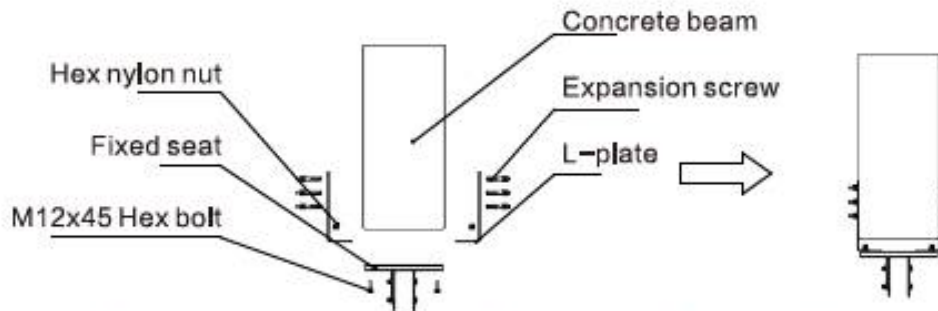
General Accessories of Ceiling Fan				Concrete Structure	
Name	Qty.	Name	Qty.	Name	Qty.
Motor assembly	1	Ø8 Spring washer	4	L-plate	2
M12X60 Hex bolt (full thread)	12	M12X150 Hex bolt	2	M12X45 Hex bolt (full thread)	4
M 12x16 Hex bolt (full thread)	12	M12X130 Hex bolt	2	Ø 12 Large washer	8
M12 Hex nylon nut	12	M12X100 Hex bolt	2	Ø12 Spring washer	4
Ø12 Standard spring washer	24	Ø10 Large washer	12	M12 Hex nylon nut	4
Ø12 Flat washer	12	Ø10 Standard spring washer	6	M12X100 Expansion screw	4
Four-hole gasket	6	M10 Hex nylon nut	6	M 12x100 Expansion screw	4
Blade assembly	6	M6 Steel rope clamp	8	I-shaped steel structure	
Connecting rod assembly	1	20m Steel rope	1	Name	Qty.
Connecting rod cover	1	Elastic hook	4	I-shaped steel press plate	2
M5X10 Cross recessed screw	2	Safety hook	4	M12X60 Hex bolt (full thread)	4
Motor connecting plate	2	Connecting rod cover	1	Ø12 Large washer	8
Safety hanger	2	M5X10 Cross recessed screw	1	Ø12 Spring washer	4
M8X16 Socket head cap screw	4	Permanent magnet motor controller	1	M12 Hex nylon nut	4

Square Steel Structure		Installation Tools	
Name	Qty.	Name	Qty.
Ceiling bracket	1	13-16 Open end wrench	2
M10X150 Hex bolt (full thread)	4	14-17 Open end wrench	2
Ø10 Large washer	8	Cross screwdriver	1
Ø10 Spring washer	4	Slotted screwdriver	1
M10 Hex nylon nut	4	5mm Inner hex spanner	1

5.2.2 Determine the installation position of the ceiling fan, mark it with the fixed seat L-plate, drill the mounting hole with a 14mm drill bit (hole depth>80mm), install the M12x100 expansion screw, install the L-plate on the expansion screw, adjust the levelness of the L-plate, tighten the expansion screw and install the fixed seat under the L-plate and tighten it.

Accessories:

Fixed seat	1	Ø12 Spring washer	4
L-plate	2	M12 Hex nylon nut	4
M12X45 Hex bolt (full thread)	4	M12X100 Expansion screw	4
Ø12 Large washer	8		

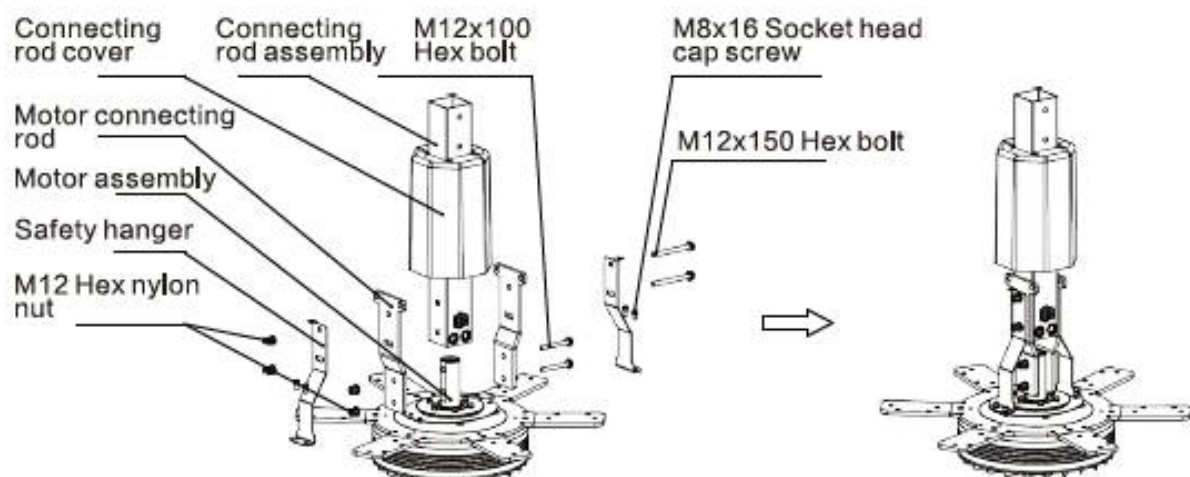


Attention: Both the L-plate and the fixed seat shall be installed horizontally and symmetrically at both ends.

5.2.3 Install the connecting rod on the motor, install the connecting rod screws and safety hanger screws without tightening.

Accessories:

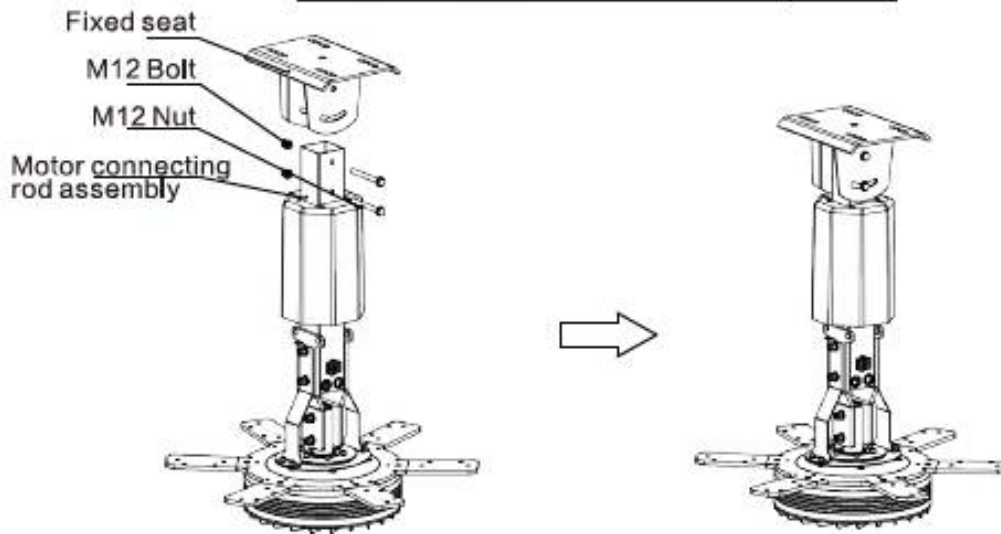
Motor assembly	1	Connecting rod cover	2	M12X100 Hex bolt	2
Connecting rod assembly	1	M5X10 Cross recessed screw	2	Ø12 Large washer	8
Motor connecting plate	2	M8x20 Socket head cap screw	4	12 Standard spring washer	4
Bracket connecting plate	2	M12X150 Hex bolt	2	M12 x100 Hex bolt	4



5.2.4 Install the mounted motor connecting rod assembly on the fixed seat and screw it without tightening.

Accessories:

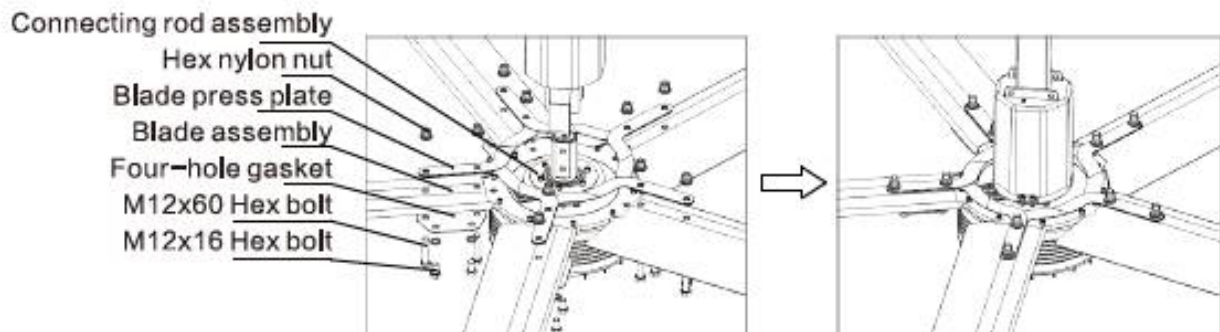
Motor connecting rod assembly	1
M12X130 Hex bolt	2
Ø12 Large washer	4
Ø 12 Standard spring washer	2
M12 Hex nylon nut	2



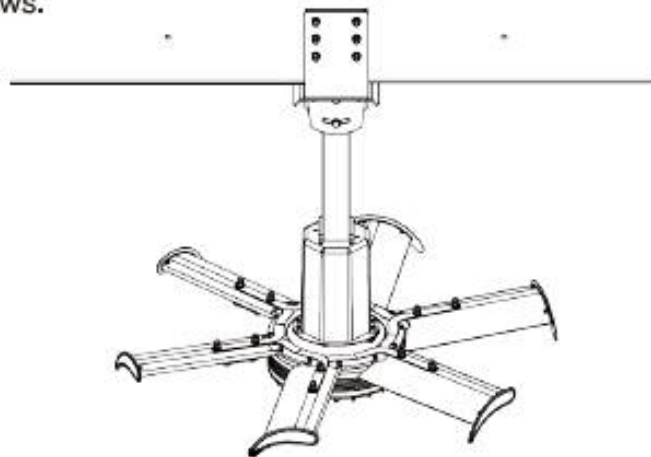
5.2.5 Install the tail blade assembly on the motor, install the screws and pull the blade outward from the center of the motor. Screw the blade without tightening.

Accessories:

Blade assembly	6	Blade press plate	6	Ø12 Spring washer	24
M12x60 Hex bolt (full thread)	12	Four-hole gasket	6	Ø12 Flat washer	12
M12x16 Hex bolt (full thread)	12	M12 Hex bolt	12		



5.2.6 Adjust the levelness of the motor and the verticality of the connecting rod, tighten the connecting rod and blade screws, install the fixed seat cover and tighten the screws.

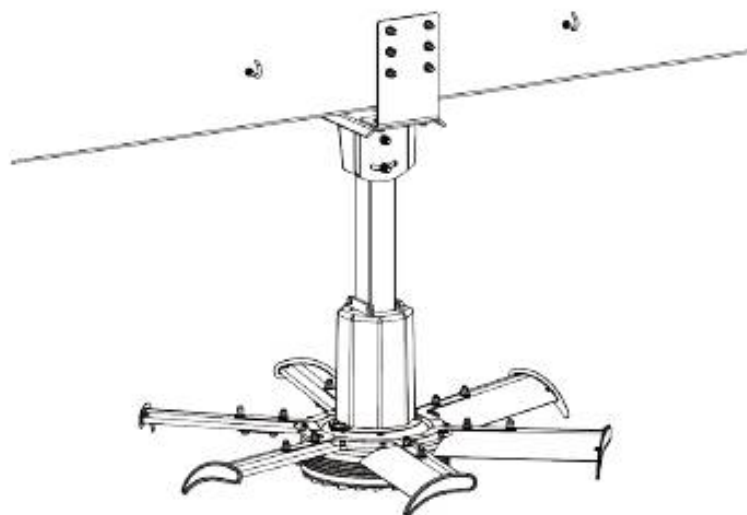


Attention: Before tightening the blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.

5.2.7 Determine the position of the expansion screw hook, drill the mounting hole with a 14mm drill bit (hole depth>80mm), install the M12X100 expansion screw hook with the opening upward and tighten the expansion screw hook.

Accessories:

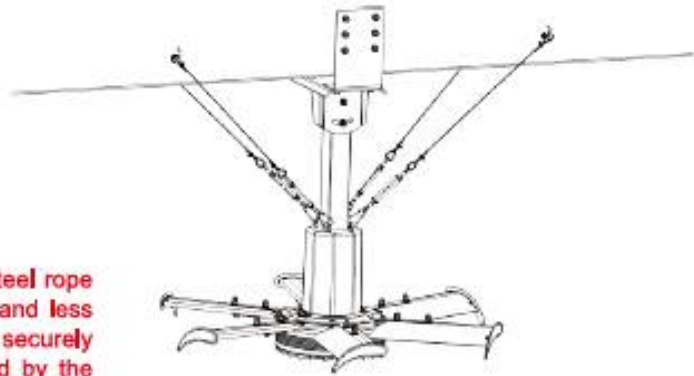
Expansion screw hook	4
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5.2.8 Fix the steel rope on the O end of the turn buckle with the steel rope clamp, install the end of the turn buckle on the connecting plate of the fan motor, fix the end of the steel rope on the expansion screw hook with the steel rope clamp and adjust the tightness of the steel rope with the turn buckle (the steel rope is just straight).

Accessories:

M6 Steel rope clamp	8
6X10S+FC-6 30m Steel rope	1
Elastic hook	4
Steel rope hook	4



Attention: The included angle between the steel rope and the connecting rod is greater than 30° and less than 45°. The steel rope clamp shall be securely installed and the steel rope can be adjusted by the turn hook without too tight.

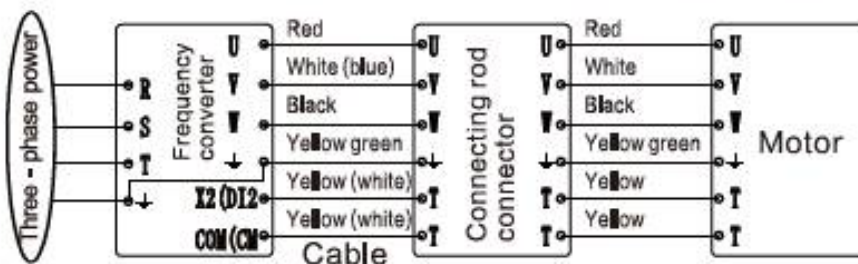
5.2.9 Insert the motor lead into the wiring clamp and the color is black, white, red, blue, blue and yellow green from bottom to top.

5.2.10 Select the location to install the controller, connect the motor and the mains power to the controller as required. Check whether there are obstacles around the fan to affect its operation and operate the fan according to the operation manual of the controller.

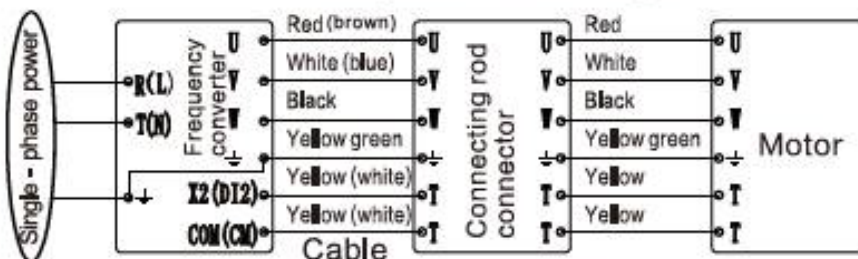
Attention: The phase sequence of the motor connected to the controller shall not be wrong.

Accessories:

Permanent magnet motor controller	1
Rubber sheathed cable	1

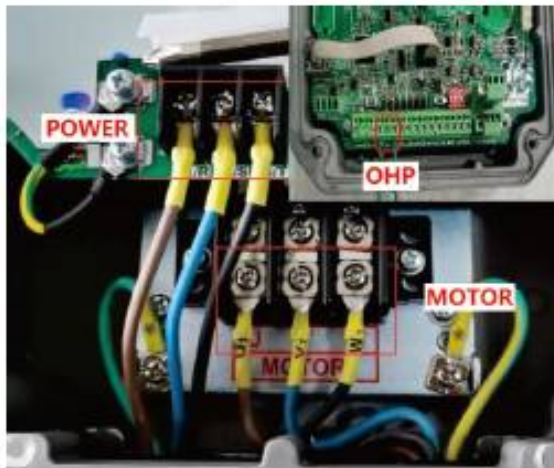


Three-phase Circuit Diagram

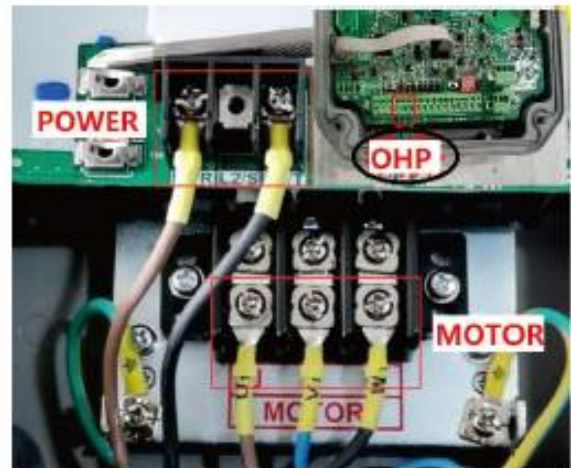


Single-phase Circuit Diagram

H/M series frequency converter : EM2000/2400



Three-phase Wiring (Actual Picture)



Single-phase Wiring (Actual Picture)

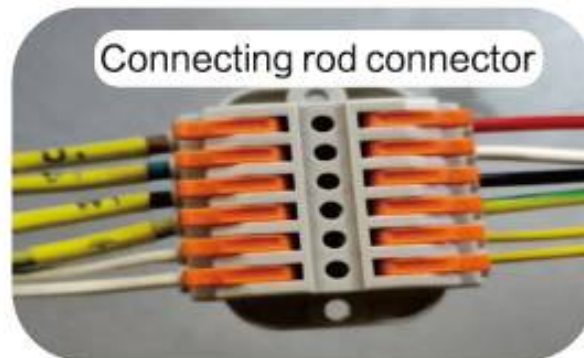
S series frequency converter : FI110



Three-phase Wiring (Actual Picture)

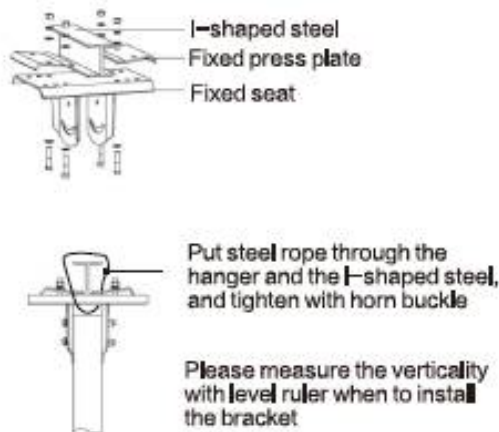


Single-phase Wiring (Actual Picture)

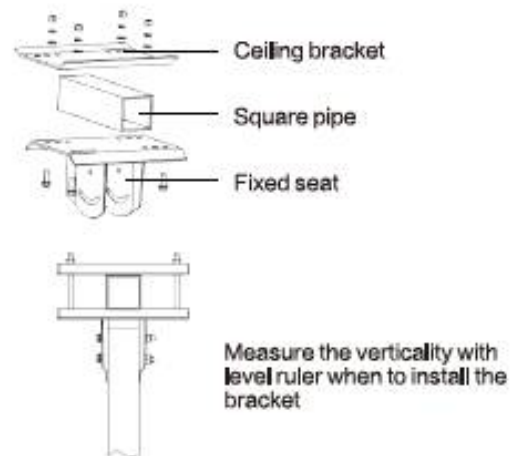


Warning: Do not connect the mains power directly to the ceiling fan. Confirm whether the power voltage matches the controller voltage. After connecting the power cord to pull the power cord to verify whether the power cord is reliable. When connecting the fast terminal, the power cord should be peeled 10 mm and inserted into the card slot depth of 17 mm.

5.3 Installation diagram of I-shaped steel structure of ceiling fan (the rest are the same as 5.2). Expansion screw hook is not available and the end of the steel rope can be tied to the I-beam with the steel rope clamp.



5.4 Installation diagram of square steel structure of ceiling fan (the rest are the same as 5.2). Expansion screw hook is not available and the end of the steel rope can be tied to the square steel beam with the steel rope clamp.

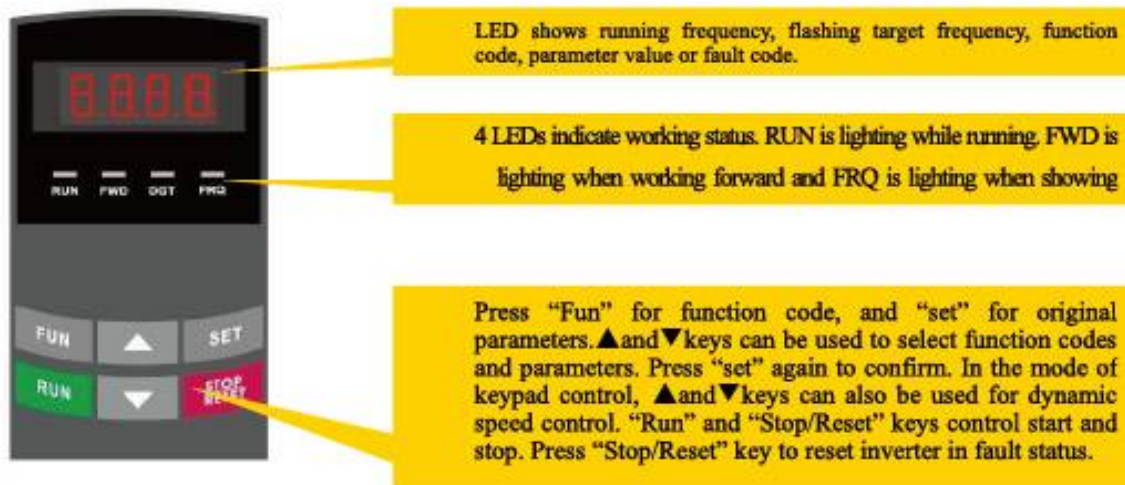


VI. Control Panel Operation

6.1 Frequency Converter

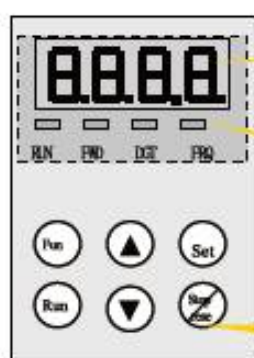
M series frequency converter

The panel covers three sections: data display section, status indicating section and keypad operating section



H series frequency converter

The panel covers three sections: data display section, status indicating section and keypad operating section



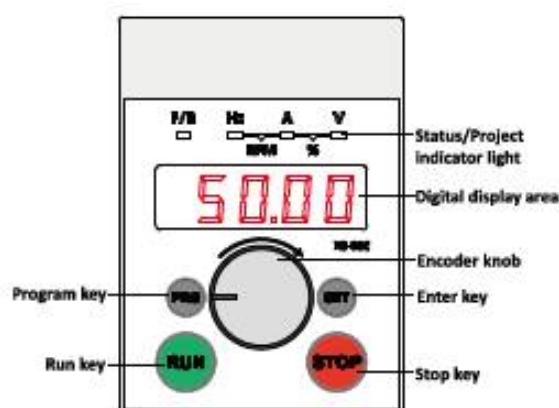
LED shows running frequency, flashing target frequency, function code, parameter value or fault code.

4 LEDs indicate working status. RUN is lighting while running. FWD is lighting when working forward and FRQ is lighting when showing

Press "Fun" for function code, and "set" for original parameters. ▲ and ▼ keys can be used to select function codes and parameters. Press "set" again to confirm. In the mode of keypad control, ▲ and ▼ keys can also be used for dynamic speed control. "Run" and "Stop/Reset" keys control start and stop. Press "Stop/Reset" key to reset inverter in fault status.

S series frequency converter

INTRODUCTION TO KEYBOARD KEY FUNCTIONS



	Program key	Level 1 menu entry or exit, programming mode switch
	Enter key	Enter the menu screen step by step, confirm and save the parameters
	Run key	In the keyboard operation mode, start the inverter
	Stop key	In the keyboard operation mode, stop the inverter, Press this key to reset the inverter after the fault occurs and the fault is rectified.
	Encoder knob	Left-handed value decreases/right-handed value increases, Move one character (or digit) to the right with each press

6.2 Troubleshooting

H/M series frequency converter

Fault Code	Description	Causes	Solutions
OC	Overcurrent protection	*Short circuit at output side *Motor is locked or overloaded	*Check whether the motor cable is damaged *Check whether the motor is stuck
OE	DC overvoltage protection	*Power voltage is too high. *Deceleration inertia is too large.	*Check whether the rated voltage is input *Increase deceleration time
PF1	Input phase loss protection	*Phase loss of input power	*Check whether the power input is normal
OL1	Converter overload protection	*Overload	*Reduce load *Increase the capacity of converter
OL2	Motor overload protection	*Overload	*Reduce load *Check mechanical devices *Increase the capacity of converter

Fault Code	Description	Causes	Solutions
LU	Undervoltage protection	* Input voltage is too low	* Check whether the power voltage is normal
OH	Converter overheat protection	The fin is too dirty *The Fan is damaged *Ambient temperature is too high	*Clean the air inlet and fin *Replace the fan *Increase the ventilation
ESP	External fault	* External emergency stop terminal functions	* Check the external terminal fault signal
Err2	Parameter measurement error	* Motor is not connected during parameter measurement	* Connect the motor correctly
Err3	Current fault before operation	* There is current alarm signal before operation	*Check whether the cable is securely connected * Contact the manufacturer
Err4	Current zero deviation fault	*Cable is loose *The current detection device is damaged	*Check and connect the cable again *Contact the manufacturer
PFO	Output phase loss	*Motor is disconnected *Motor is broken *Frequency converter has fault	*Check the motor connecting wire carefully *Replace the motor *Contact the manufacturer
GP	Grounding protection	*Motor cable is damaged and short-circuited to the ground *The motor insulation is damaged and short-circuited to the ground *Frequency converter has fault	*Replace the cable *Repair the motor *Contact the manufacturer
PCE	PMSM maladjustment fault	*Acceleration time is too short *Overload *Motor is locked	*Increase the acceleration time *Check whether the motor is overloaded
ALM on	Faulty	* Report fault	* Stop/Reset
OH1	Motor overheat protection	*Ambient temperature is too high *Open circuit of temperature control circuit *Motor temperature is too high	*Increase the ventilation *Repair the temperature control circuit *Increase motor heat dissipation
Key failure	Instruction is invalid	*Cable is loose *Frequency converter has fault	*Plug the cable securely *Turn off the power and power on again *Contact the manufacturer

6.3 Troubleshooting :

S series frequency converter : F110

Fault Code	Description	Causes	Solutions
E001	Acceleration overcurrent	<ol style="list-style-type: none"> 1. Acceleration time is too short 2. Output of converter is grounded or short-circuited 3. No motor parameter identification in the vector control mode 4. Sudden load during acceleration 5. Manual torque is raised too much or the V/F curve is set incorrectly 6. Voltage is too low (Bus voltage value) 7. The selected converter is too small 	<ol style="list-style-type: none"> 1. Increase the acceleration time 2. Check the insulation of motor and cable 3. Identify the motor parameters 4. Check the load 5. Reduce torque lifting value or modify V/F curve value 6. Check the power voltage or the bus voltage 7. Select a converter with higher power
E002	Deceleration overcurrent	<ol style="list-style-type: none"> 1. Deceleration time is too short 2. Output of converter is grounded or short-circuited 3. No motor parameter identification in the vector control mode 4. Sudden load during deceleration 5. Manual torque is raised too much or the V/F curve is set incorrectly 6. Voltage is too low 	<ol style="list-style-type: none"> 1. Increase the deceleration time 2. Check the insulation of motor and cable 3. Identify the motor parameters 4. Check the load 5. Reduce torque lifting value or modify V/F curve value 6. Check the power voltage or the bus voltage
E003	Constant speed overcurrent	<ol style="list-style-type: none"> 1. Output of converter is grounded or short-circuited 2. No motor parameter identification in the vector control mode 3. Sudden load during operation 4. Voltage is too low 5. The selected converter is too small 	<ol style="list-style-type: none"> 1. Check the insulation of motor and cable 2. Identify the motor parameters 3. Check the load 4. Check the power voltage or the bus voltage 5. Select frequency converter with higher power level
E004	Accelerating overvoltage	<ol style="list-style-type: none"> 1. Input voltage is too high 2. Acceleration time is too short 3. The motor is driven by external force during acceleration 	<ol style="list-style-type: none"> 1. Adjust the voltage to the normal range 2. Increase acceleration time 3. Check the load
E005	Deceleration overvoltage	<ol style="list-style-type: none"> 1. Input voltage is too high 2. Deceleration time is too short 3. The motor is driven by external force during acceleration 	<ol style="list-style-type: none"> 1. Adjust the voltage to the normal range 2. Increase deceleration time 3. Check the load
E006	Constant speed overvoltage	<ol style="list-style-type: none"> 1. Input voltage is too high 2. The motor is driven by external force during acceleration 	<ol style="list-style-type: none"> 1. Adjust the voltage to the normal range 2. Check the load
E007	Control power failure	<ol style="list-style-type: none"> 1. Input voltage is not within the specified range 2. Relay does not close 	<ol style="list-style-type: none"> 1. Adjust the voltage to the normal range
E008	Undervoltage fault	<ol style="list-style-type: none"> 1. Input voltage is too low or contact is poor 2. Bus voltage is not normal 3. The relay or contactor does not close 4. Control board is abnormal 	<ol style="list-style-type: none"> 1. Check the input power voltage 2. Check the bus voltage 3. Seek technical support or replace the contactor 4. Seek technical support

Fault Code	Description	Causes	Solutions
E010	Input phase loss	1. Phase loss of three-phase input power 2. The drive board is abnormal	1. Check the power supply 2. Seek technical support
E011	Output phase loss	1. The lead from converter to motor is abnormal 2. Three-phase imbalance or phase loss of converter output 3. Drive board is abnormal 4. Module is abnormal	1. Check the motor and cable 2. Seek technical support 3. Seek technical support 4. Seek technical support
E012	Short circuit to ground	1. Motor is short-circuited to ground 2. Misoperation	1: Check the motor and cable 2: PC.07 is set to 0 and disable the function
E014	Frequency converter overload	1. Load is too large or motor is locked 2. The selected converter is too small 3. No motor self-learning	1. Check the load and mechanical conditions 2. Replace the converter with higher power 3. Change the control mode to V/F (PO.00=1) and restart, or carry out rotation self-learning for the motor.
E015	Motor overload	1. Check whether the protection parameter PC.01 is set correctly 2. Load is too large or motor is locked 3. The selected converter is too small	1. Set parameters correctly 2. Check the load and mechanical conditions 3. Replace the converter with higher power
E016	Module overheating	1. Ambient temperature is too high 2. Air duct is blocked 3. Fan is damaged 4. Overheating components of module are damaged	1. Improve ambient temperature 2. Clean the air duct 3. Replace the fan 4. Seek technical support
E018	Motor overheating	1. Ambient temperature is too high 2. Open circuit of temperature control circuit 3. Motor temperature is too high	1. Increase the ventilation 2. Repair the temperature control circuit 3. Increase the motor heat dissipation
E021	Current detection fault	1. Current Hall detection is damaged 2. Drive board has fault	1. Check whether hall sensor and plug wire are loose 2. Seek technical support
E026	Motor identification fault	1. Motor parameters are set improperly 2. Parameter identification time is too long	1. Check whether hall sensor and plug wire are loose 2. Seek technical support
E028	Fast current limiting fault	1. Load is too large or motor is locked 2. The selected converter is too small 3. No motor self-learning	1. Check the motor and load 2. Self identification of motor parameters 3. Change the control mode to V/F (PO.00=1) and restart, or carry out rotation self-learning for the motor.z

Attention:

1. The installation and wiring work must be carried out by professionals according to the Operation Manual in order to prevent electric shock.
2. Check whether the surrounding room of the ceiling fan meets the requirements before operation. When the product is used for the first time, please confirm whether the power supply meets the requirements and whether the wiring is correct and secure. The power can only be turned on when it is confirmed to be safe.
3. The system has overvoltage, undervoltage, voltage loss regulation, phase loss, overload, collision, overheating and lightning protection functions.
4. If the ceiling fan is not used for a long time, please run it for 10min every other month in order to prolong the service life of the product.