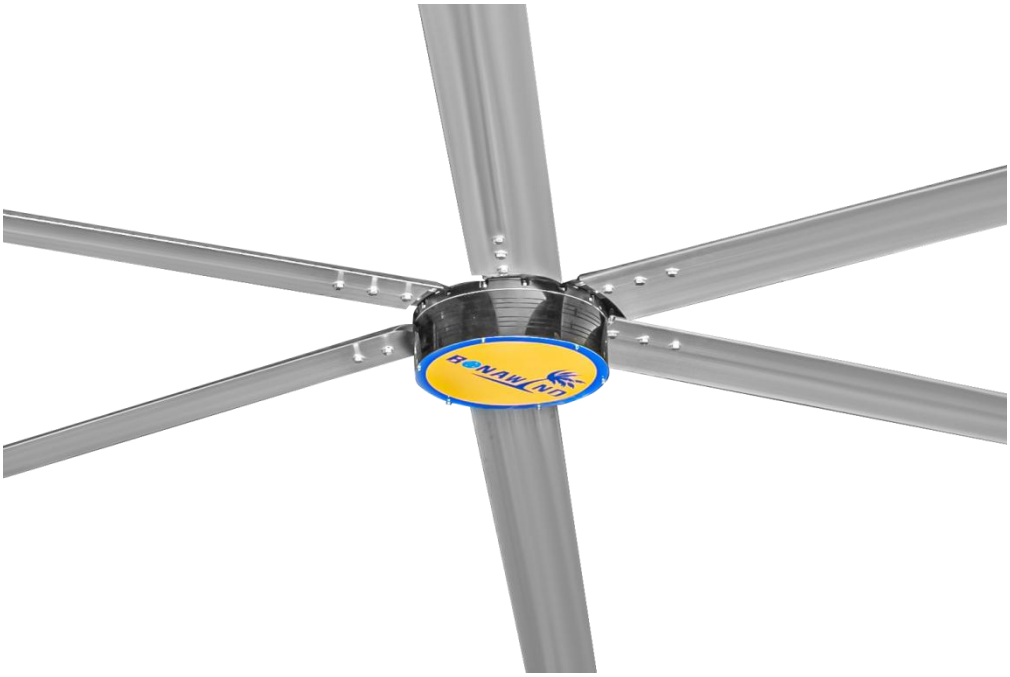
Industrial Ceiling Fan Installation Manual



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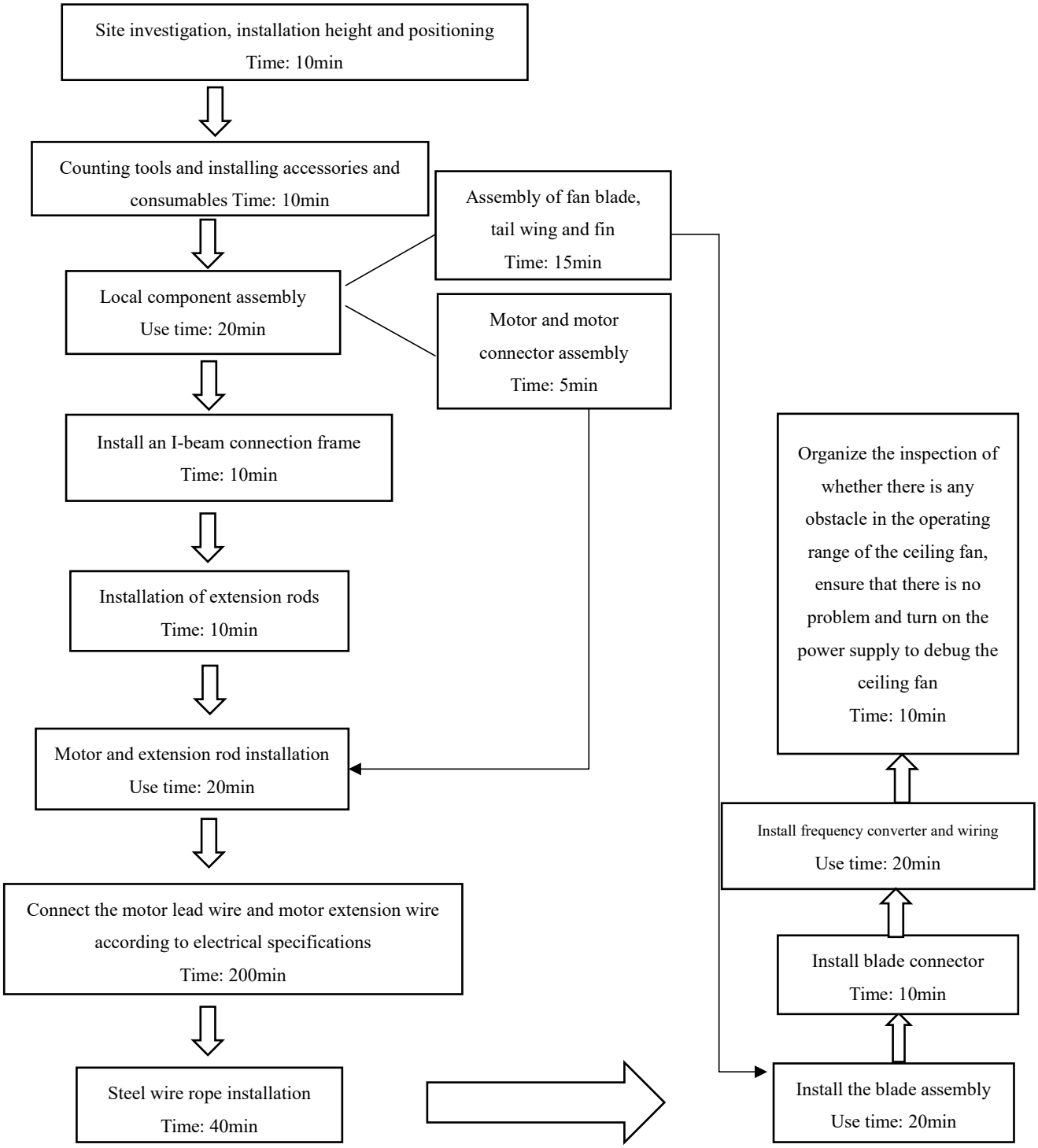
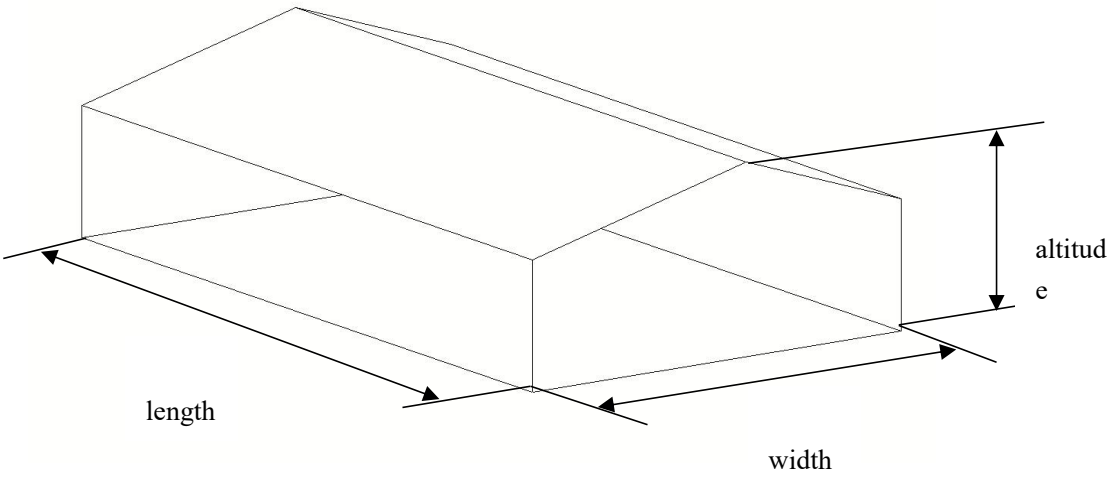
I. Installation process



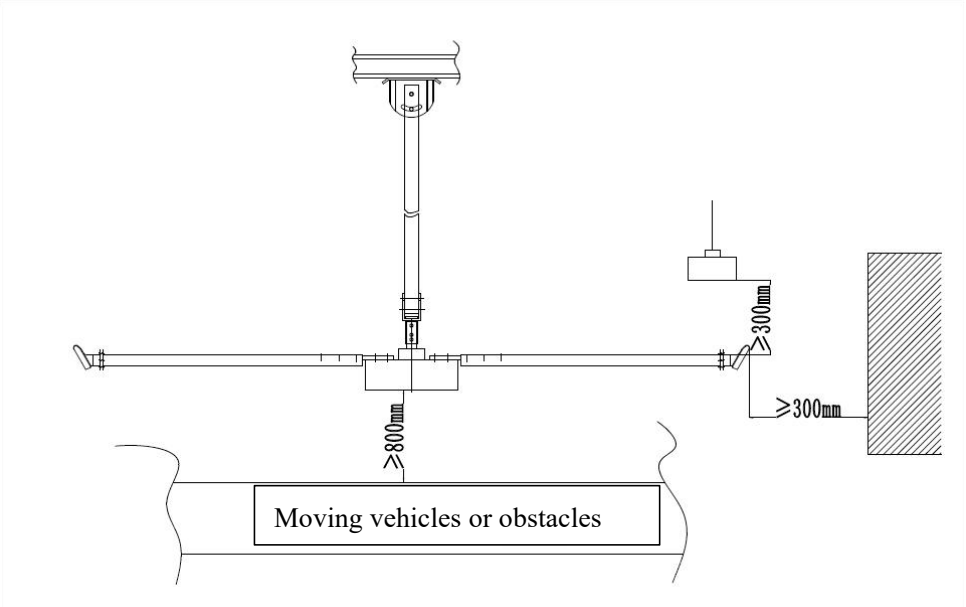
II. Pre-installation preparations

1) Site survey installation height and positioning

① According to the length, width and height of the measured site, determine the installation position and number of ceiling fans.



② The total height of the building should be greater than 4.5m, the minimum safety distance between the fan and the obstacle is 0.3m, and the lowest point of the fan is more than 0.8m away from the obstacle (such as cars, etc.) below it



2) Inventory tools and install accessories and consumables

① Tool list:

5mm hex key, Phillips screwdriver, 19mm hex socket, 22mm hex socket, 24mm hex socket,

8mm open wrench, 19mm open wrench, 22mm open wrench, 24mm open wrench, level, scissors/puller, electric wrench, power drill, aerial work platform, tape measure, rangefinder

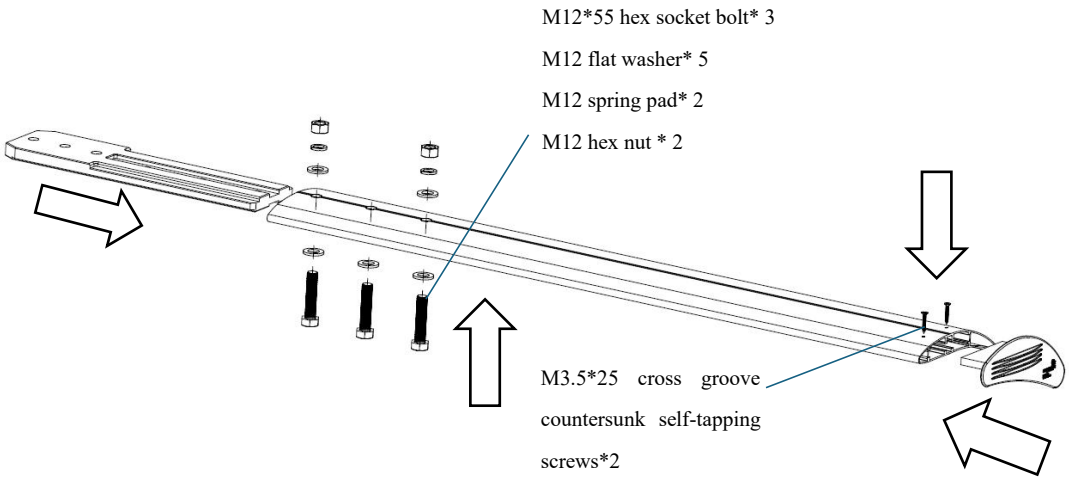
② Consumables list:

Electrical tape, conduit, pipe joints, corrugated hose, cable tie and other wiring consumables

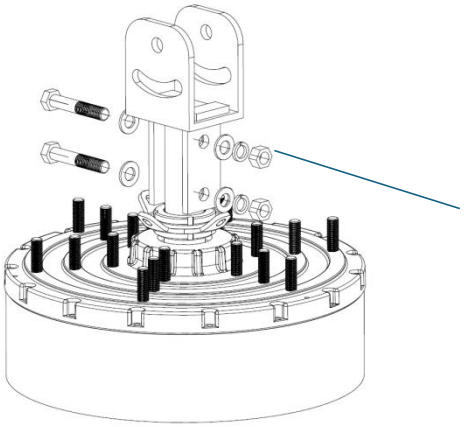
III. Installation steps description

1) Local component assembly

①. Insert the fins into the fan blades and align their 3 holes. Fasten the bolts from the concave side to the convex side of the fan blades using 3 M1255 hexagon bolts. Fasten the bolts at both ends with 2 sets of M12 nuts, flat washers and spring washers, and leave the middle set of nuts, flat washers and spring washers unfastened for later use. After confirming that the outer arc of the tail fin is consistent with the arc of the fan blade, insert the tail fin into the tail of the fan blade and fix it with 2 M3.525 self-tapping screws. (Tools used: 19mm hexagon socket wrench, 19mm open-end wrench, Phillips bit, electric wrench, pistol drill)



② Use two sets of M14*80 hexagonal bolts, M14 nut and M14 flat spring pad to fasten the motor connection bracket and motor shaft rod, and pay attention to not clamp the lead wire. (The tools used: 22mm hexagonal socket, 22mm open wrench, electric wrench)



M14*80 hex socket bolt*2

M14 flat washer*4

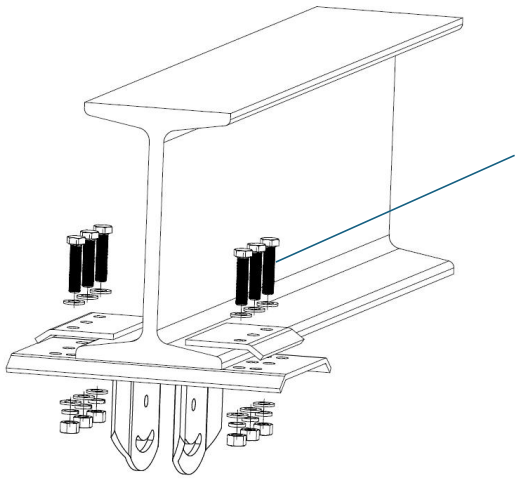
M14 cushion* 2

M14 hex nut * 2

③ Fix the decorative plate under the motor with 6 sets of M6*10 hexagonal cylindrical head bolts, M6 flat washers and M6 spring washers (tools used: 19mm hexagonal socket, electric wrench and climbing equipment)

2) Install the I-beam connection frame

Six sets of M16*70 hexagonal bolts, M16 nuts, M16 flat spring washers and two pressure plates are used to fix the I-beam connection bracket on the I-beam and tighten it. (Tools used: 24mm hex socket wrench, 24mm open wrench, electric wrench, climbing equipment)



M16*70 hex socket bolt*6

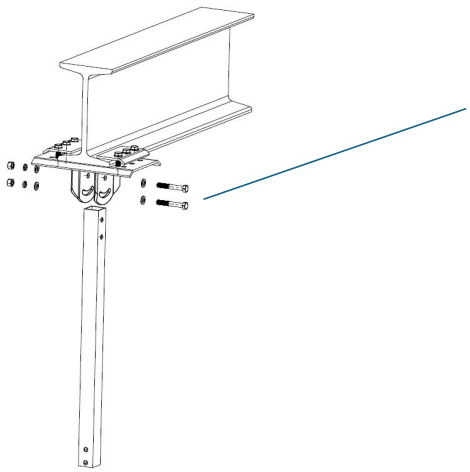
M16 flat washer*12

M16 ammunition pads* 6

M16 hex nut * 6

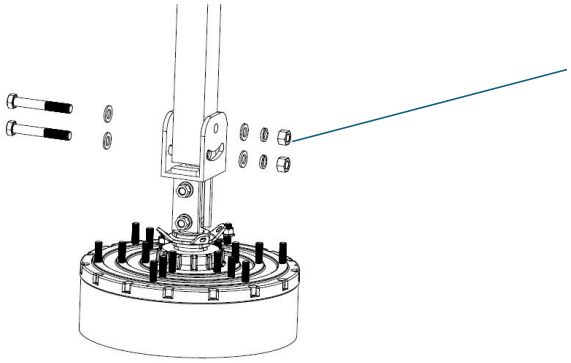
3) Install extension rods

Install the extension rod on the I-beam connection frame using two sets of M16×110 hex bolts, M16 nuts, and M16 flat washers through non-tightening assembly (adjust the rod vertically with a level before tightening). (Tools required: 24mm hex socket wrench, 24mm open-end wrench, electric wrench, level, and climbing equipment)



4) Motor and extension rod installation

Install the motor (Component 2-b) with two sets of M16×110 hex bolts, M16 nuts, and M16 flat washers. The extension rod assembly should be non-tightened (to be secured after motor balance adjustment). (Tools required: 24mm hex socket, 24mm open-end wrench, electric wrench, level, and climbing equipment)

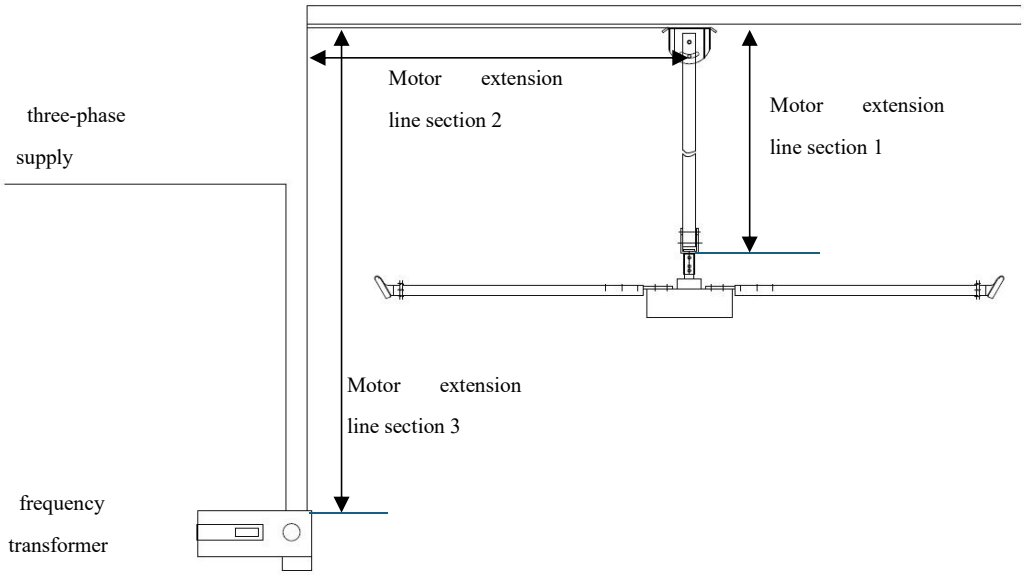


5) The motor lead wire is connected with the motor extension wire and wiring is arranged according to electrical specifications

① Connect the four lead wires of the motor with the four wires of the motor extension wire in accordance with the electrical specifications, and wrap the joint part with electric adhesive cloth

② The extension cable routing is divided into three sections: the first section is the vertical segment from the motor lead wire to the I-beam, the second section extends the I-beam to its end, and the third section runs from the I-beam's end to the frequency converter. The first section uses corrugated tube for wire protection with adhesive tape wrapped at joints. The second and third sections employ conduit protection, with special attention to elbow protection

at bends. (Tools: scissors, wire stripper, climbing equipment; Materials: electrical tape, conduit, hose ends, fiberglass conduit flexible hose, cable ties)



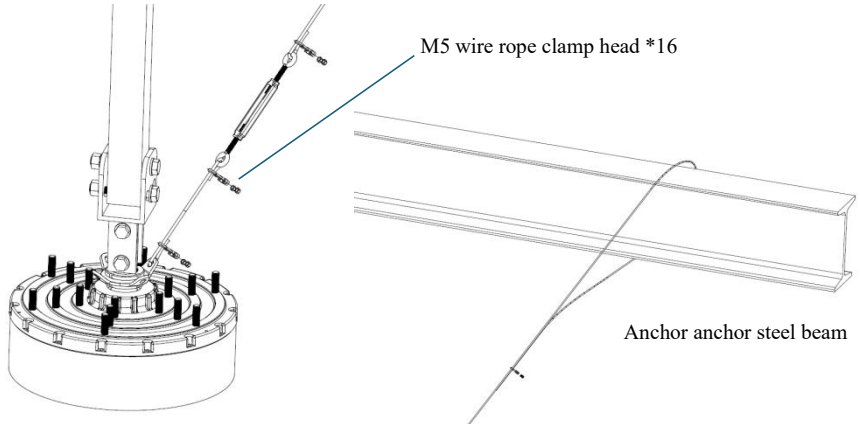
6) Wire rope installation

① Rotate both ends of the turnbuckle to the outermost end at the same time. Connect one end of the turnbuckle to the 4 holes of the anti-drop buckle of the motor using a 20cm steel wire rope, and fix them respectively with M5 steel wire rope clamps.

② Search for steel wire rope anchor points around the motor with the motor as the center. Cut 4 steel wire ropes of appropriate length based on the straight-line distance from the motor to the anchor points. Fix one end of each of the 4 steel wire ropes to the anchor points using 4 M5 steel wire rope clamps, and ensure that the anchor points are reliable and firm. When selecting anchor points, ensure that the bearing load is more than 1T.

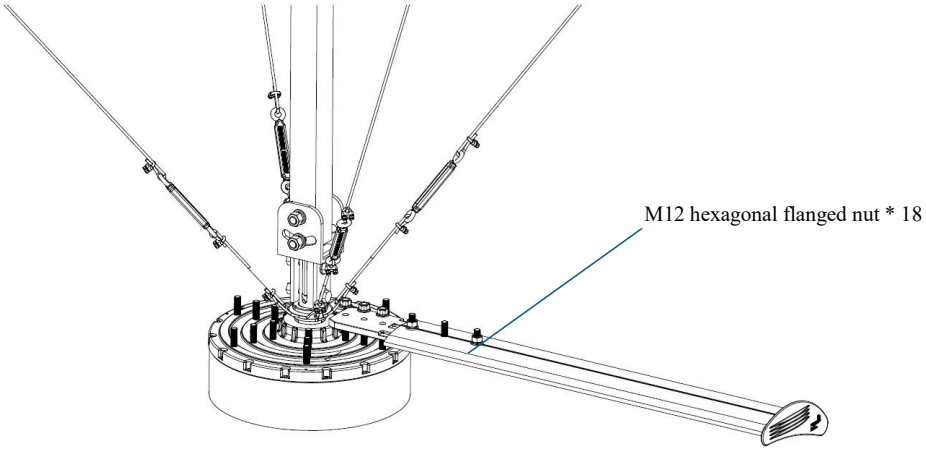
③ Pass the other ends of the steel wire ropes of the 4 anchor points into the corresponding 4 turnbuckles, and fasten them respectively with 4 M5 steel wire rope clamps.

④ Adjust the turnbuckle to tighten the steel wire rope, and keep the motor in a horizontal state with the help of a level during this process. (Tools used: 8mm open-end wrench, climbing equipment)



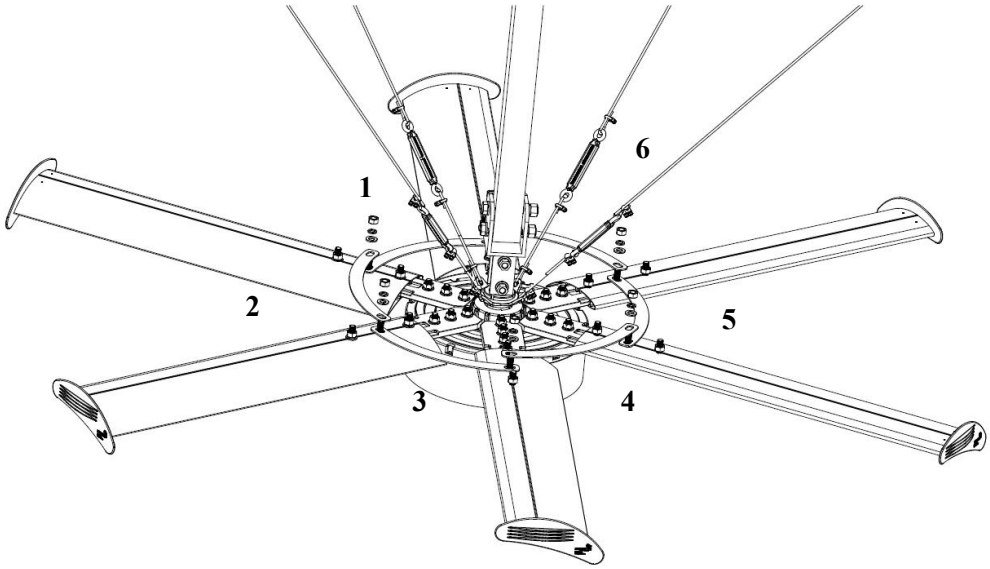
7) Install the blade assembly

Connect and tighten the fin end of the blade assembly 2-a with the motor end with 3 M12 hexagonal flange nuts. The installation order of 6 blades is installed symmetrically in pairs. (Tools used: 19mm hexagonal socket, electric wrench, climbing equipment)



8) Install blade connection plate

① Place the fan blade connecting plates into the bolts at the corresponding positions in the figure in the order of 1, 3, 5, 2, 4, 6, and fasten the six connecting plates using M12 nuts and M12 flat washers.



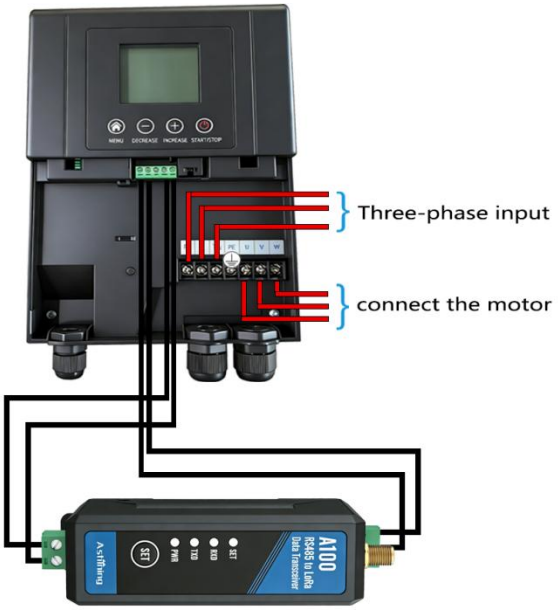
9) Wiring Diagram for the Control Box

① Mount the ceiling fan control box on the wall at a suitable location.

② Connect the three-phase motor extension wires to the U, V, W terminals of the frequency converter, and attach the yellow-green wire to the PE terminal.

③ Connect the three-phase power supply wires to the R, S, T terminals of the frequency converter, and connect the power ground wire to the ground terminal of the converter(Tools required: Phillips screwdriver, power drill).

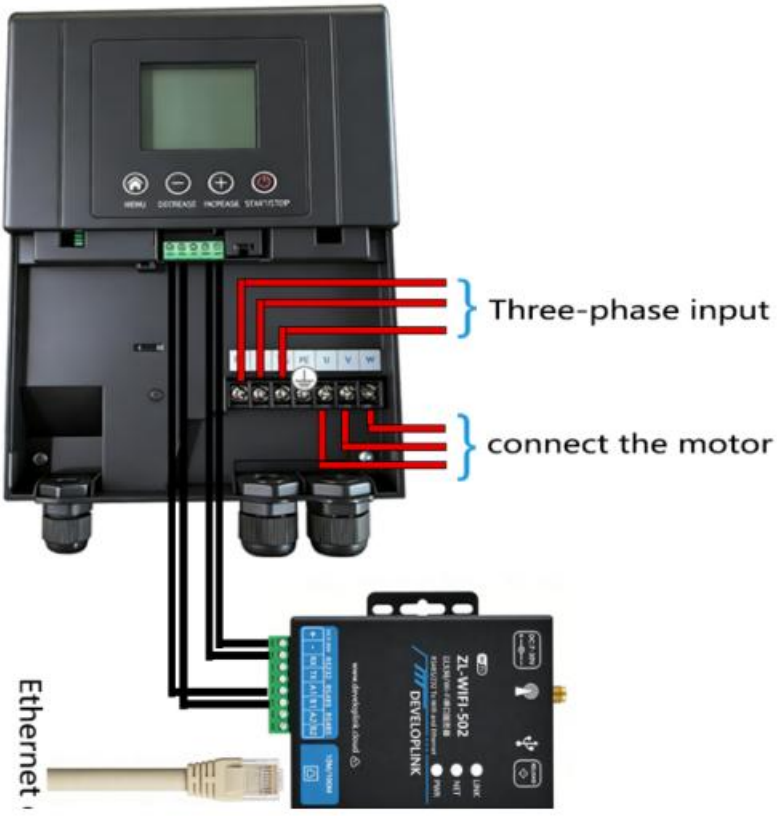
Inverter+LoRa:



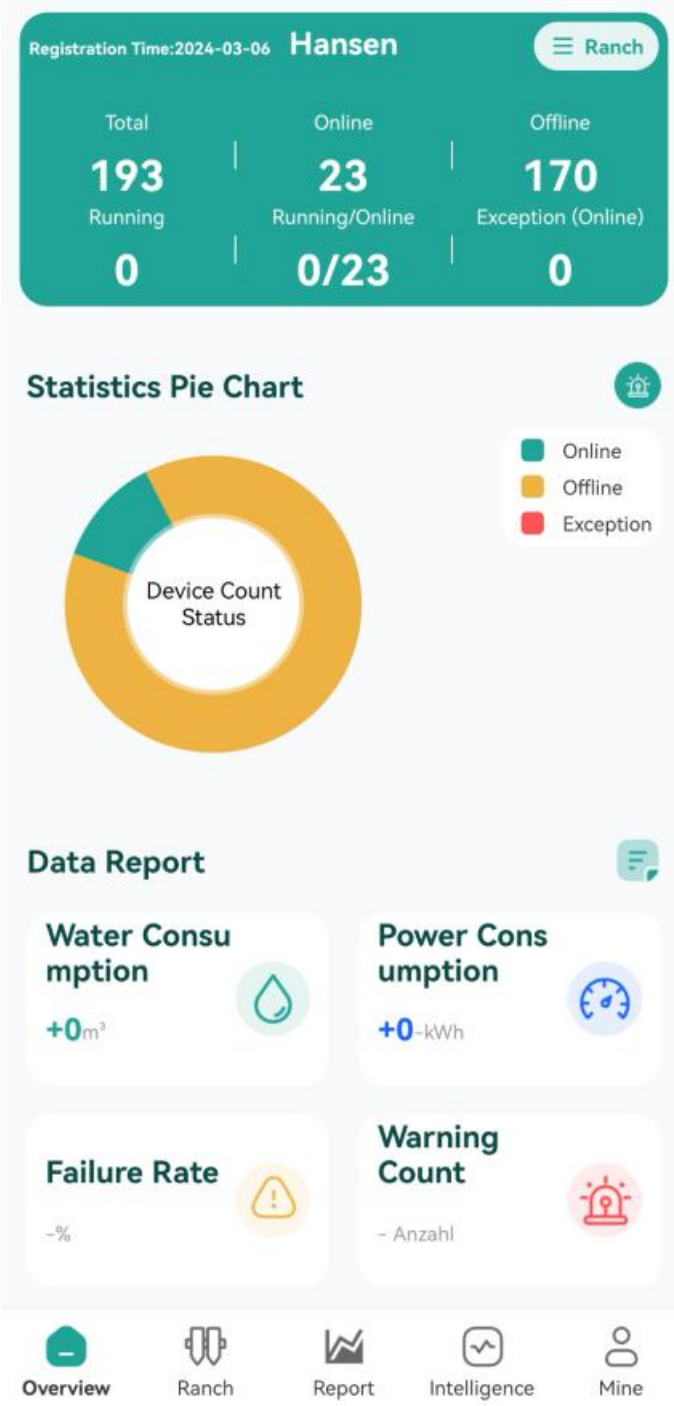
Through LoRa, the system can connect to our control screen, enabling individual or batch

start/stop control of fans. It also allows for automatic operation based on strategies such as temperature and THI (Temperature-Humidity Index).

Inverter+Gateway:



Through the gateway, the system can connect to our control screen, enabling individual or batch start/stop control of fans. It also supports automatic operation based on strategies such as temperature and THI (Temperature-Humidity Index).



IV. Operation debugging and troubleshooting after installation

1) Organize the site and check whether there is any obstacle in the operating range of the ceiling fan. After ensuring that there is no problem, turn on the power supply and debug the ceiling fan

① Organize and store the packaging waste, tools and equipment on the site to ensure that there is no obstruction or foreign matter in the rotation radius of the fan;

② After evacuating the fan working range, start the power supply and observe whether the fan blade turns correctly, whether there is any abnormal sound or other mechanical abnormalities,

If the direction is not correct, switch any two of the U, V and W wiring of the inverter output.
If there is abnormal noise or other abnormal phenomena, please report to the supplier in time.
If there is no abnormality, the debugging is successful. Tighten the cover plate of the inverter with screws.

2) Common fault codes and troubleshooting suggestions

Fault Code No.	Fault Code	Fault Description	Possible Causes	Countermeasures
1	E.SC	Output Short Circuit Fault	1. Output short circuit or grounding 2. Overload	1. Check the wiring 2. Seek service from the manufacturer
2	E.OC1	Overcurrent During Acceleration	1. Too short acceleration time 2. Excessively high torque boost or inappropriate V/F curve	1. Extend the acceleration time 2. Reduce the torque boost voltage and adjust the V/F curve
3	E.OC2	Overcurrent During Deceleration	Too short deceleration time	Extend the deceleration time
4	E.OC3	Overcurrent During Operation	Sudden load change	Reduce load fluctuation

Fault Code No.	Fault Code	Fault Description	Possible Causes	Countermeasures
5	E.OC4	Software Overcurrent	Same as E.OC1, E.OC2, E.OC3	Same as E.OC1, E.OC2, E.OC3
6	E.H.SC	Hardware Protection Circuit Fault	Hardware problem	Seek service from the manufacturer
7	E.Gnd	Ground Fault	1. Motor or frequency converter output grounding 2. Poor contact of frequency converter input and output wires	1. Check the wiring 2. Check whether the motor is aging
8	E.OU1	Overvoltage During Acceleration	1. Too high input voltage 2. Frequent on/off of power supply	Check the power supply voltage
9	E.OU2	Overvoltage During Deceleration	1. Too short deceleration time 2. Abnormal input voltage	1. Extend the deceleration time 2. Check the power supply voltage
10	E.OU3	Overvoltage During Operation	1. Abnormal power supply voltage 2. Load with energy feedback	1. Check the power supply voltage 2. Install or reselect the braking resistor
14	E.UL	Underload	1. Loose connection of frequency converter output wires 2. Loss of frequency converter load	1. Check the wiring 2. Check the frequency converter load

Fault Code No.	Fault Code	Fault Description	Possible Causes	Countermeasures
15	E.OL1	Frequency Converter Overload	1. Overload 2. Too short acceleration time 3. Excessively high torque boost or inappropriate V/F curve 4. Too low grid voltage	1. Reduce the load or replace with a frequency converter of larger capacity 2. Extend the acceleration time 3. Reduce the torque boost voltage and adjust the V/F curve 4. Check the grid voltage
16	E.OL2	Motor Overload	1. Overload 2. Too short acceleration time 3. Too small protection coefficient setting 4. Excessively high torque boost or inappropriate V/F curve	1. Reduce the load 2. Extend the acceleration time 3. Increase the motor overload protection coefficient 4. Reduce the torque boost voltage and adjust the V/F curve
17	E.CUr	Current Detection Error	1. Damage to current detection device or circuit 2. Problem with auxiliary power supply	Seek service from the manufacturer
18	E.LU	Undervoltage During Operation	1. Abnormal power supply voltage 2. Start of large load in the power grid	1. Check the power supply voltage 2. Separate the power supply
19	E.EF1	Normally Open Terminal External Equipment Fault	Signal input to the external equipment fault input terminal of	Check the signal source and related equipment

Fault Code No.	Fault Code	Fault Description	Possible Causes	Countermeasures
			the frequency converter	
20	E.EF2	Normally Closed Terminal External Equipment Fault	Signal input to the external equipment fault input terminal of the frequency converter	Check the signal source and related equipment
21	E.OH	Frequency Converter Overheating	1. Air duct blockage 2. Too high ambient temperature 3. Fan damage	1. Clean the air duct or improve the ventilation condition 2. Reduce the carrier frequency 3. Replace the fan
22	E.SP1	Input Phase Loss	1. Input voltage phase loss 2. Too low input voltage	1. Check the input connection wires 2. Check whether the power grid has phase loss
23	E.SPO	Output Phase Loss	Poor connection or disconnection between the frequency converter and the motor	Check the wiring
24	E.EEP	Memory Fault	Hardware fault	Contact the manufacturer
25	E.End	Operation Time Expired	The internally set allowed operation time is reached	Contact the agent or manufacturer
26	E.PID	PID Feedback Fault	1. Disconnection of PID feedback signal	1. Check the feedback channel

Fault Code No.	Fault Code	Fault Description	Possible Causes	Countermeasures
			wire 2. Fault of the sensor used to detect the feedback signal 3. Feedback signal inconsistent with the setting	2. Check whether the sensor is faulty 3. Verify whether the feedback signal meets the setting requirements
27	E.485	RS485 Communication Fault	Error in data transmission and reception during serial communication	1. Check the wiring 2. Seek service from the manufacturer
28	E.doG	Interference Malfunction	Malfunction caused by surrounding electromagnetic interference	Add absorption circuit to the interference source around the frequency converter
30	E.OC5	Hardware Overcurrent Circuit Fault	Hardware problem	Seek service from the manufacturer
31	E.CAN	CAN Communication Fault	Error in data transmission and reception during CAN communication	1. Check the wiring 2. Seek service from the manufacturer

Annex 1: List of accessories

number	name	Component quantity	remarks
1	platen	2	
2	I-beam connection frame	1	

3	extension rod	1	
4	5mm stainless steel wire rope	1	
5	M5 wire rope clamp	16	
6	empennage	6	
7	High strength aluminum alloy fan blade	6	
8	Fan blade connector	6	
9	Permanent magnet synchronous motor	1	
10	acanthus	1	
11	fin	6	
12	Motor connection bracket	1	
13	M8 stainless steel OO flower bolts	4	Used for wire rope tensioning
14	Motor extension cable	1	25m long
15	frequency transformer	1	
16	12.9 grade M16*70 hex socket bolt	6	Used for installing I-beam connection frame
17	8M16 hex nut	10	Used for installing I-beam connection frame and extension rod
18	8.8 grade M16 flat pad	20	Used for installing I-beam connection frame and extension rod
19	8.8 grade M16 ammunition pad	10	Used for installing I-beam connection frame and extension rod
20	12.9 grade M16*110 hex socket bolt	4	Used to install extension rods
21	12.9 grade M14*80 hex socket bolt	2	Used to install motor connectors
22	8 grade M14 hex nut	2	Used to install motor connectors
23	8.8 grade M14 flat pad	4	Used to install motor connectors
24	8.8 grade M14 ammunition pad	2	Used to install motor connectors
25	8.8 grade M12*55 hex socket bolt	18	Used to install blades and connectors
26	8mm M12 hex nut	18	Used to install blades and connectors
27	8.8 grade M12 flat pad	36	Used to install blades and connectors
28	8.8 grade M12 spring pad	18	Used to install blades and connectors
29	M3.5*25 cross groove countersunk self-tapping screw	12	Used to fix the tail wing

30	8.8 grade M6*10 hexagonal cylindrical head bolt	6	Used for fixed decorative panels
31	M6 flat pad	6	Used for fixed decorative panels
32	M6 cushion	6	Used for fixed decorative panels

Annex 2: Exploding Drawing