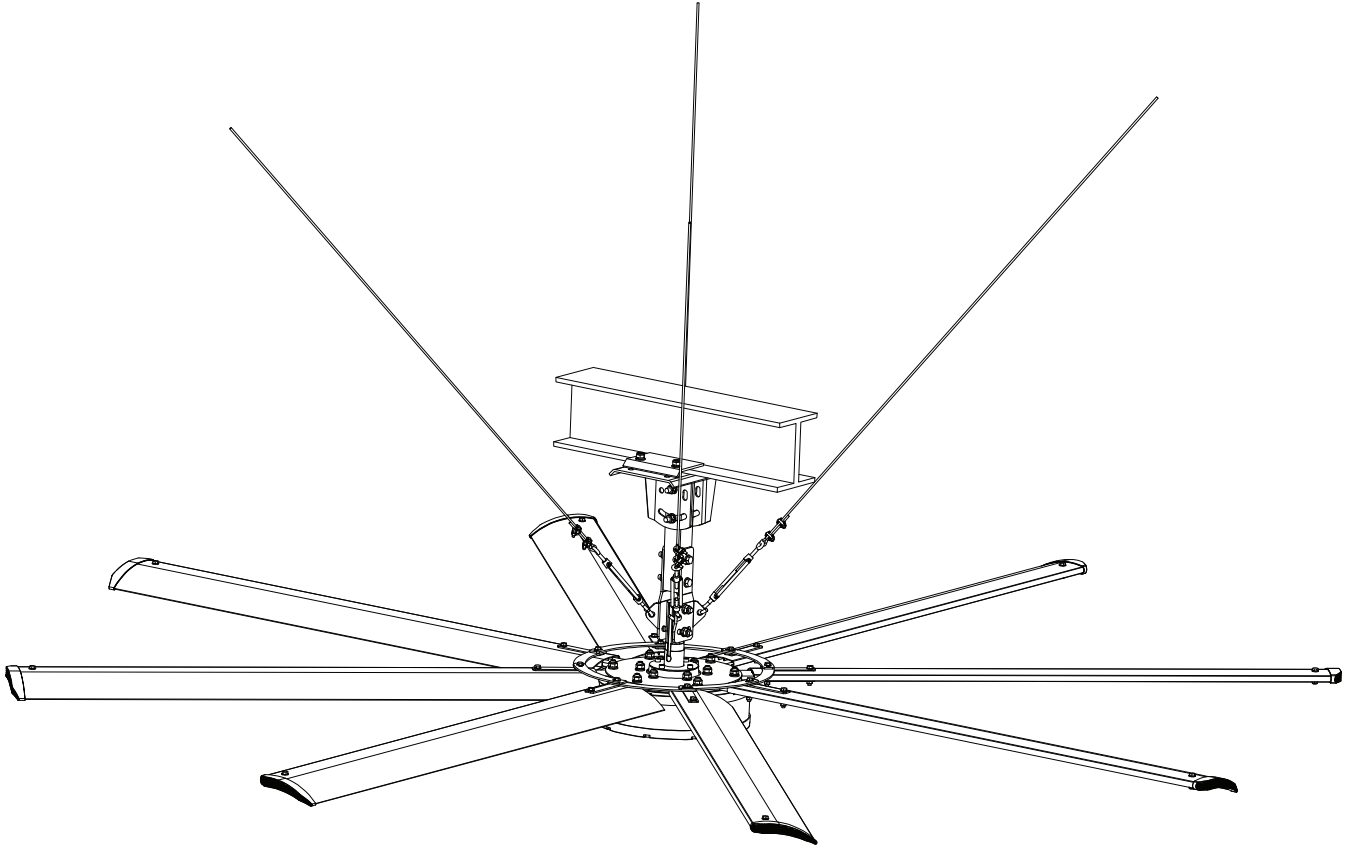




I-SMART ECOMAX

Permanent Magnet DC Brushless (PMSM) HVLS Large Industrial Ceiling Fan

FOR PRODUCT PURCHASE:



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FOR AFTER SALES SERVICE:



HELP SQUAD SERVICES, INC.

297 D. Tuazon Ave., Brgy. San Jose, Quezon City
Phone Nos.: 0908-8908597 (Smart) / 0917-1042611 (Globe) 0917-1082201 (Globe)
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SPECIFICATION

Model	Voltage	Max Power	Max. Rotation Speed	Dia.	Max. Air Volume	Blade Qty	N.W.
Iwata i-Smart ECOMAX-24	220V	1.5KW	50r/min	7.32M /24ft	14900m ³ /min	8 pcs	121kg

IMPORTANT:

For your safety, read this manual carefully before using your device.

Keep it carefully and consult it whenever necessary.

The responsibility of the Company cannot be engaged in the event of non-compliance with the instructions indicated below or in the event of incorrect use.

Outline

Thank you for purchasing Permanent Magnet DC brushless industrial fan (hereinafter referred to as fan). This manual describes how to use this product correctly. Before using (installation, wiring, operation, maintenance, inspection, etc.), please read this instruction carefully. In addition, please understand the safety notes of the product. Also, use the product after understanding the safety precautions of the product.

Safety Precautions

General Considerations

- In order to explain the details of the product, the illustrations in this manual sometimes show the state with the cover or safety cover removed. When running this product, be sure to install the cover according to the regulations and operate it according to the contents of the instruction manual.
- Due to product improvement or specification change, and in order to improve the convenience of the instructions, this instructions may be changed without notice.
- If you need to order the instruction manual due to damage or loss, please contact our sales and inform us of the data number on the cover.

⚠ DANGER

- Please pay attention to all information about safety in this instruction manual.
Caution: Failure to follow warnings may result in death or serious injury. The company will not be held responsible for any injury or equipment damage caused by the customer's failure to comply with this instruction manual.

In order to prevent electric shock

- Non-professionals should not perform maintenance, inspection or parts replacement.
Otherwise there will be electric shock or other hazards.
- Do not operate with the controller cover removed.
Otherwise there will be electric shock or other hazards.
- Do not perform wiring work when the power is on, otherwise there is a risk of electric shock.
Disconnect power to all equipment before performing inspections. However, even if the power is turned off, there is still residual voltage in the internal capacitor. When the DC voltage of the main circuit drops below 50V, after confirming that all indicators are off and the DC voltage of the main circuit has dropped to a safe level, wait for more than 1 minute before operating.

⚠ WARNING

Safety measures for restarting industrial fans

- Industrial fans may suddenly operate when they are energized, causing danger of death or serious injury.
Before turning on the power supply of the industrial fan, please make sure that there are no people near the industrial fan and no other objects blocking the touch.
Before turning on the power supply of the fan, please make sure that all the screws of the fan accessories are locked, and that there are no people or other objects within the reach of the fan blades when they rotate.
In addition, ensure that personnel are more than 1 meter away from the fan blades.

In order to prevent electric shock

- It is strictly forbidden to modify the industrial fan controller
Otherwise there is a risk of electric shock or physical injury. If the customer modifies the product, the company will not bear any consequences.
- Do not remove the cover of the controller or the key operation panel or touchpad while the power is on
Otherwise there is a risk of electric shock and affect the operation of the industrial fan.

In order to prevent fire

- Before powering on, please confirm whether the rated voltage of the industrial fan is consistent with the power supply voltage.
If the main circuit power supply voltage is used incorrectly, the product will definitely be damaged and there will be a risk of fire.

Important

- the Use Environment of the Product
The maximum temperature of the surrounding environment when using this product is +40°C; the maximum relative humidity of the surrounding air is 90% (+25°C); Altitude: ≤1000 meters, not suitable for places with corrosive gas, dust, steam or flammable and explosive gas.
- Please check the following precautions before installation
 1. After unpacking, check whether all accessories are complete (please refer to the list of accessories and names)
 2. Check whether the voltage and frequency are in line with the local power supply.
 3. Check whether the fan head is flexible and whether the fan blades are deformed or not.

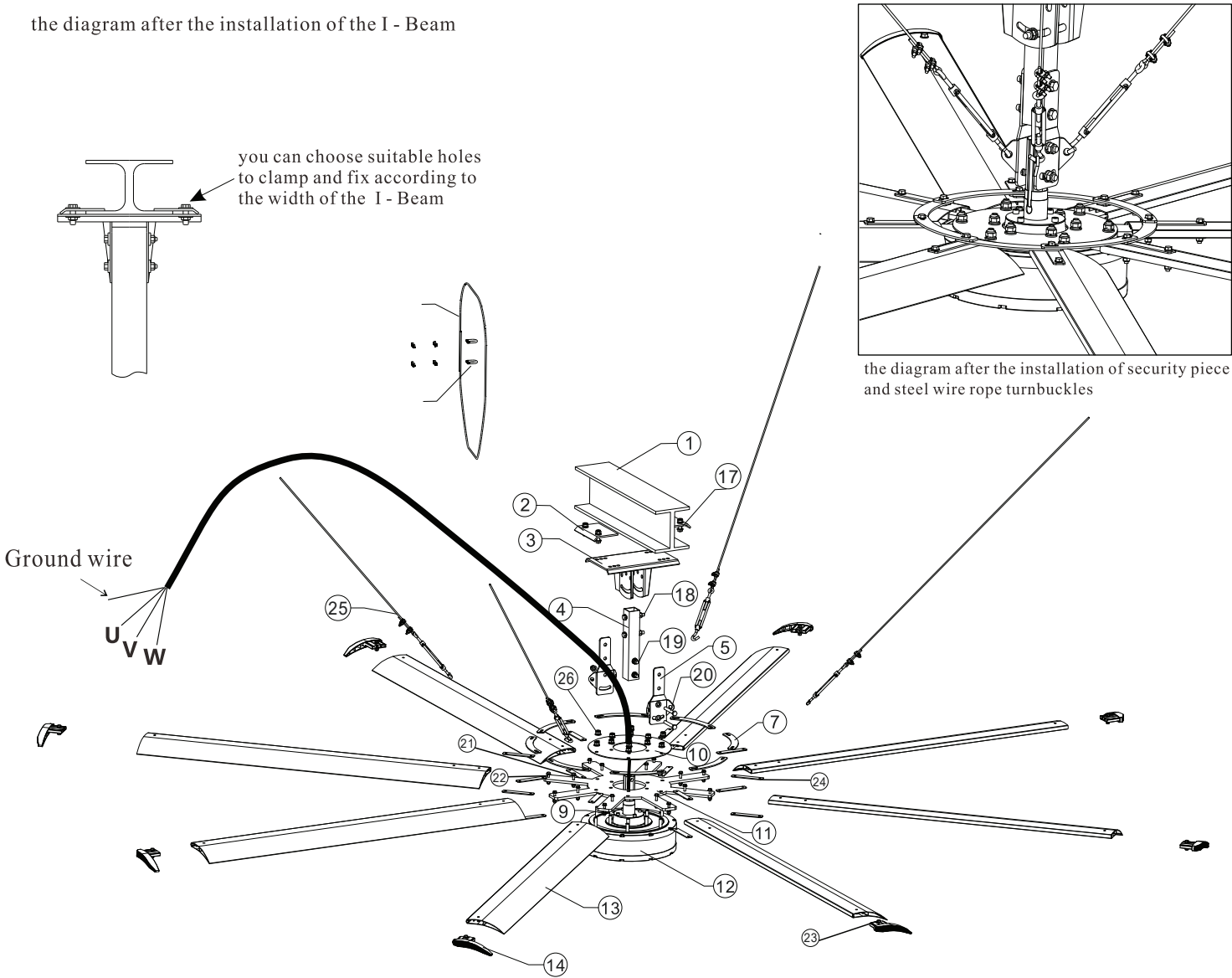
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Components and Installation

2.1 Each Part Name

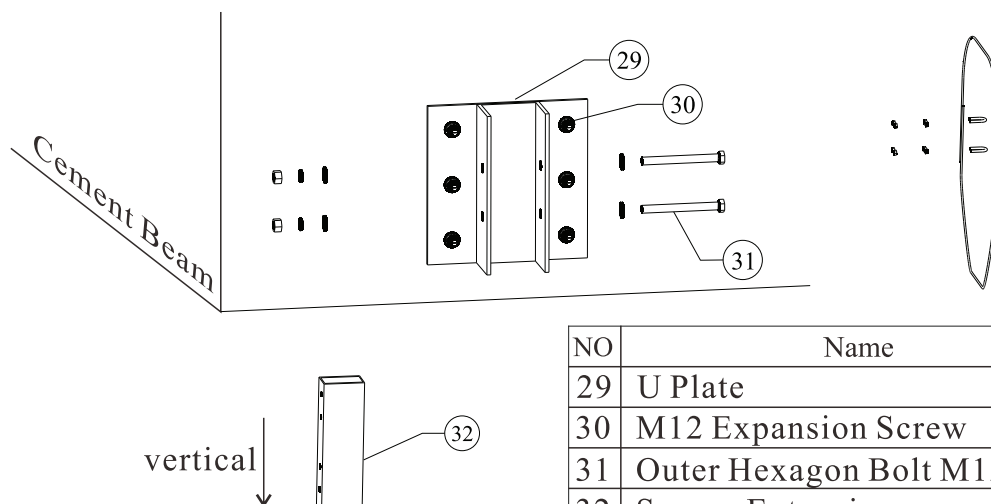
◆ I - Beam Installation

the diagram after the installation of the I - Beam



NO	Name	QTY	NO	Name	QTY
1	I - Beam		15	Security Steel Wire Rope	4
2	Press Plate	2	16	Steel Wire Rope Clamp	2
3	Fix Plate	1	17	Outer Hexagon Bolt M12*45	4
4	Square Extension	1	18	Outer Hexagon Bolt M12*90	2
5	Folded Plate	2	19	Outer Hexagon Bolt M12*90	2
		2	20	Outer Hexagon Bolt M12*80	2
7	Blade Security Piece	6	21	Outer Hexagon Bolt M8*50	8
		2	22	Outer Hexagon Bolt M8*45	8
9	Motor Upper Cap	1	23	Outer Hexagon Bolt M8*40	8
10	Leaf foot pressure plate	1	24	Blade Fix Gasket	16
11	The Connecting Rod between Blisk and Blade	1	25	Hexagon Bolt M6*25	4
12	Motor	1	26	Nut M12	22
13	Blade	8			
14	Wind Deflector	8			

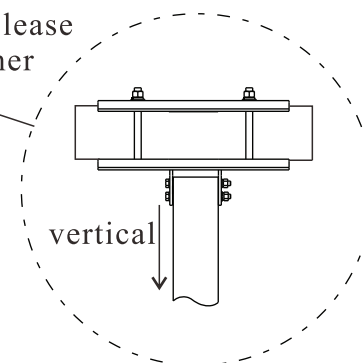
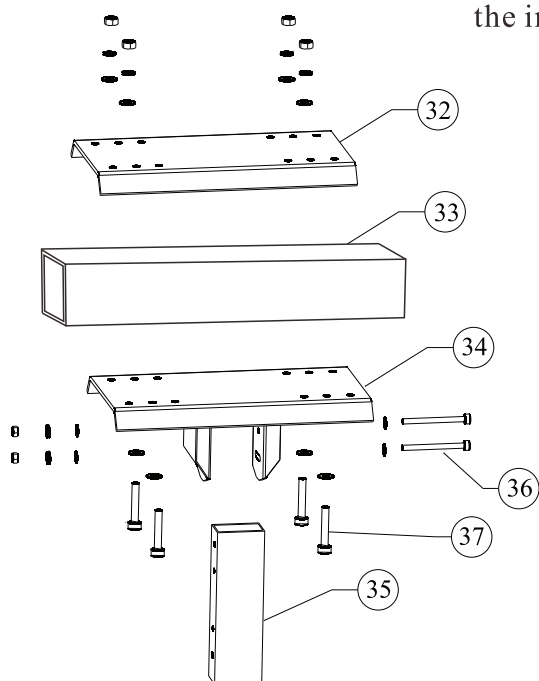
◆ Vertical Cement Beam Installation



NO	Name	QTY
29	U Plate	1
30	M12 Expansion Screw	6
31	Outer Hexagon Bolt M12*110	2
32	Square Extension	1

◆ □ - Steel Structure Installation

When installing the tray support please use a spirit level to measure whether the installation is vertical



the diagram after installation

NO	Name	QTY
33	Bracket Top Plate	
34	□ - Steel	1
35	Bracket Clamp Plate	1
36	Square Extension	1
37	Outer Hexagon Bolt M12*110	2
38	Outer Hexagon Bolt M12*110	6

2.2 Installation Steps

I- Beam Installation Steps

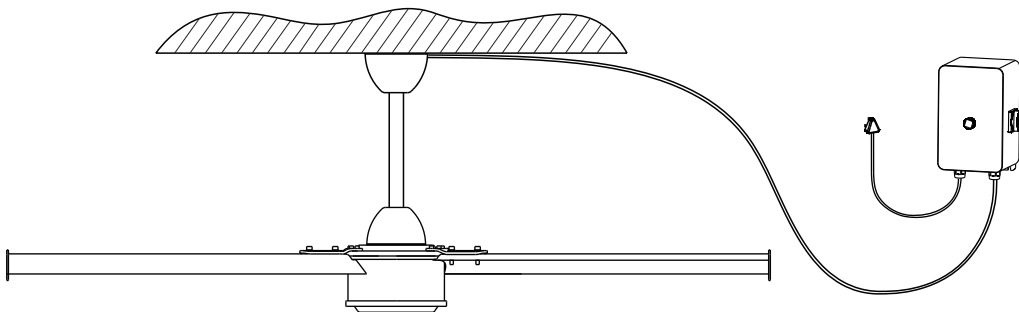
Numbers appear in the following installation steps, please refer to "2.1 each part name"(page 2).

- 1.First of all,on the ground,you should install [14] into [13] and lock them with bolts.
- 2.When working on the ground,install [11][10][8][9] on the motor [12] in sequence and secure them with nuts and screws.
- 3.When working at heights,please pay attention to safety and wear various safety equipment.
Non-professionals are not allowed to install.First,place [3] under the I- beam [1],clamp it in place with [2], and then lock it with screws.Please refer to the completed structural diagram of I- beam installation.
- 4.Clamp [5] to the two holes of the motor shaft of [12] in sequence,install [6] to the four holes of [8] on the left and right,and put [4] into [5][6] in the middle,and then tighten all screws.After the whole assembly is completed,install the whole body under [3] and lock it with screws.
- 5.Pass [15] above [1] and below [3],and then lock it with [16].
- 6.Install [13] into [11] side by side,then place [7] on top of [13],tighten with screws in turn,and check the tightening of all bolts.
- 7.Connect the wires at high altitude.The wires must be fixed along the inner edge of the I- beam and cannot be hung randomly.
- 8.Fix the [26] connecting wire rope in 4 directions,then hook it on the hole of [5] and adjust it to the appropriate tightness.
- 9.Install the control box at the appropriate location and connect the wires.
- 10.The motor wire is connected to the UVW terminals inside the controller,and the power wire is connected to the RST/LN terminals in the control box.The wiring will be introduced in detail in the wiring part.
- 11.For vertical cement beams and- □ structure and other complex structures,please refer to the diagram to understand

3 Controller Wiring

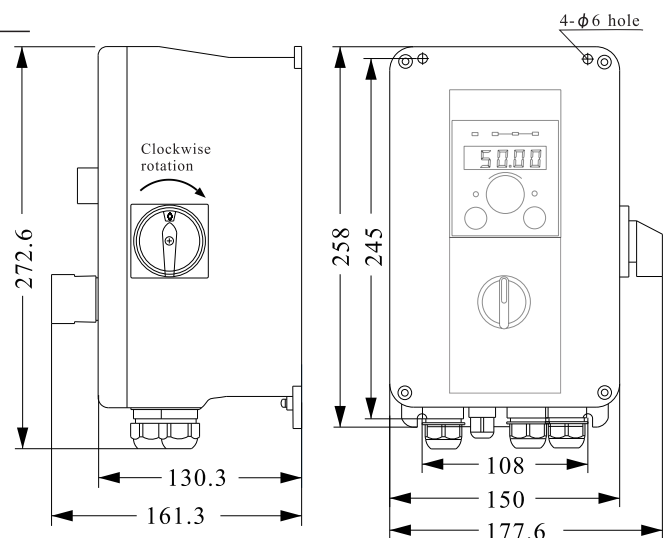
◆ External Wiring

External wiring as shown in the following diagram



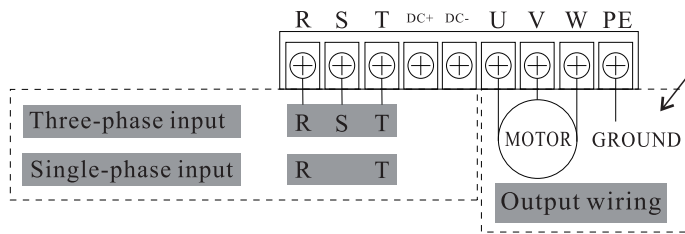
◆ Controller Installation and Dimension

There are 4 holes at the bottom of the control box. Fix 4 expansion bolts into the installation surface, or use self-tapping countersunk head cross drywall screws with plastic expansion rubber plugs (when the installation surface is not cement but steel, expansion bolts cannot be used, it can be fixed with drill-tail screws).



◆ Main Circuit Terminal Wiring

Single-phase power supply/three-phase power supply wiring (standard with power on-off switch)



The fan should rotate counterclockwise. If the direction of rotation is clockwise after the installation is complete, please exchange any two wires in the U.V.W to make it rotate counterclockwise.

Applicable models:

Single phase:FI110-2S(0.75-2.2)G

Three phase :FI110-2T(0.75-2.2)G

FI100-4T(0.75-4.0)G

Single-phase wiring:

Terminal marking	name	explain
R T	Single-phase AC power input terminal	Connecting to single-phase AC power
U V W	Inverter output terminal	Connecting a three-phase motor
PE	Ground terminal	Inverter ground terminal

4

Controller Operation Instructions

Start the fan

1. Turn on the power switch
2. Press "RUN" key
3. Rotate the encoder knob

Close the fan

1. Rotate the encoder knob until the digital display area shows "0"
2. Press "STOP" key
3. Turn off the power switch

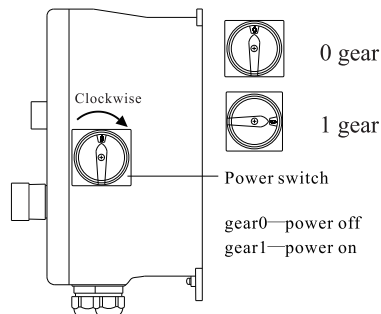
1. Forbidden for non-professionals to disassemble the inverter without permission
2. Forbidden to adjust the inverter parameters without permission
3. If you find abnormal noise from the fan, please cut off the power supply in time and contact customer service

◆ Power Switch/Forward/Reverse Switch Description

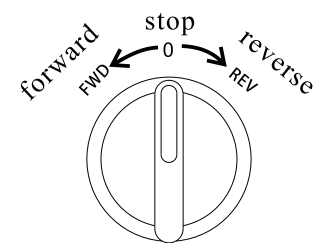
Iwata i-Smart ECOMAX-24



Motor output wire
220V Wiring
Power input wire

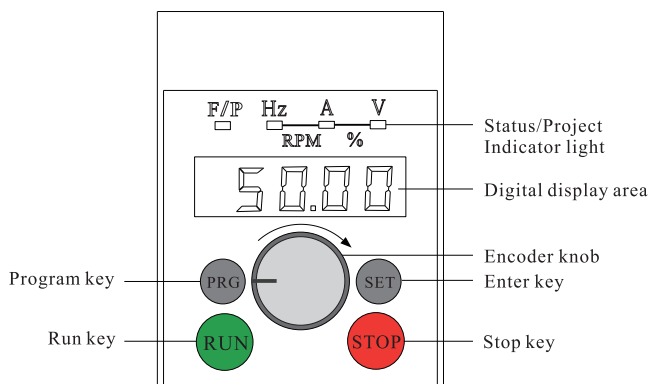


power on-off switch (standard)



Forward and reverse switch (optional)

◆ Introduction to the Functions of the Panel Buttons



	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

keyboard with encoder

Controller Debug and Troubleshoot

In case of failure, please turn off the fan, contact our after-sale service department, do not repair it by yourself. Please check the fault code, read the fault diagnosis and treatment methods in the inverter manual

◆ Debugging Steps and Parameters

Step number	Function code	Set value	Function Description
1	P0.13	1	restore factory defaults
2	P0.04	determined by the motor	Enter the rated frequency of the motor
3	P0.05		Enter the upper limit frequency or maximum speed of the motor demand operation
4	P0.10	0	If the motor is in the reverse direction, it can be set to 1 to achieve the purpose of changing the direction of the motor without changing the motor wiring.
5	P0.11	12.0kHz	The carrier frequency above 3Hz (if the electromagnetic noise of the motor is large, it can be increased, generally around 12K)
6	P2.03	determined by the motor	Enter the rated frequency of the motor
7	P2.04		Enter the rated speed of the motor
8	P2.06		Input motor rated current

◆ Fault Diagnosis and Treatment Method

Code	Display	Possible Causes	Solutions
E001	Overcurrent during acceleration	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The acceleration time is too short. 4: Manual torque boost or V/F curve is not appropriate. 5: The voltage is too low. 6: The startup operation is performed on the rotating motor. 7: A sudden load is added during acceleration. 8: The AC drive model is too small power class.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time. 4: Adjust the manual torque boost or V/F curve. 5: Adjust the voltage to normal range. 6: Select rotational speed tracking restart or start the motor after it stops. 7: Remove the added load. 8: Select an AC drive of higher power class.
E002	deceleration overcurrent	1. The deceleration time is too short 2. The output of the inverter is grounded or short-circuited 3. There is no parameter identification for the motor in the vector control mode 4. There is a sudden load during deceleration 5. The manual torque rise is too large or the V/F curve is not set properly 6. Low voltage	1. Increase the deceleration time 2. Check the insulation of the motor and cables. 3. Parameter identification of the motor 4. Check the load 5. Reduce the torque boost value or modify the V/F curve value 6. Check the power supply voltage or check the bus voltage value
E003	Constant speed overcurrent	1. The output of the inverter is grounded or short-circuited 2. There is no parameter identification for the motor in the vector control mode 3. There is a sudden load during operation 4. Low voltage 5. Inverter selection is too small	1. Check the insulation of the motor and cables. 2. Parameter identification of the motor 3. Check the load 4. Check the power supply voltage or check the bus voltage 5. Use a frequency conversion with a larger power level device
E004	Accelerating overvoltage	1. The input voltage is too high 2. The acceleration time is too short 3. During the acceleration process, there is an external force that drives the motor to run 4. The braking unit and braking resistor are not installed.	1. Adjust the voltage to the normal range 2. Increase the acceleration time 3. Check the load 4. Install braking unit and braking resistor

E005	deceleration overvoltage	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: The acceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install the braking unit and braking resistor.
E006	Constant speed overvoltage	1. The input voltage is too high 2. During the operation, there is an external force that drives the motor to run	1. Adjust the voltage to the normal voltage 2. Adjust the load or install braking unit and braking resistor
E007	control power failure	1. Input voltage not within specification 2. The relay does not suck	1. Adjust the voltage to within the normal range
E008	Undervoltage fault	1. The input voltage is low or the contacts are in poor contact 2. The bus voltage is abnormal 3. The relay or contactor does not pull in 4. The control board is abnormal	1: Reset the fault. 2: Adjust the voltage to normal range. 3: Contact the agen.
E010	input phase loss	1. Phase loss of three-phase input power 2. The driver board is abnormal	1: Eliminate external faults
E011	output phase loss	1. The lead wire from the inverter to the motor is abnormal 2. The inverter output three-phase unbalanced or lack of phase 3. The driver board is abnormal 4. Module exception	1: Eliminate external faults. 2: Check whether the motor three-phase winding is normal.
E012	Short circuit to ground	The motor is short circuited to the ground.	Replace the cable or motor.
E014	AC drive overload	1: The load is too heavy or locked- rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.
E015	Motor overload	1: PC.01 is set improperly. 2: The load is too heavy or locked- rotor occurs on the motor. 3: The AC drive model is of too small power class.	1: Set PC.01 correctly. 2: Reduce the load and check the motor and the mechanical condition. 3: Select an AC drive of higher power class.
E016	Module overheat	1. The ambient temperature is too high 2. The air duct is blocked 3. The fan is damaged 4. Module overheating device damage	1. Improve the ambient temperature 2. Clean the air duct 3. Replace the fan 4. Seek technical support
E018	External device failure	Input external fault signal through multi-function digital terminal X	reset operation
E021	Current detection failure	1. Current Hall detection damage 2. Drive board failure	1: Replace the faulty current sensor. 2: Replace the faulty drive board.
E026	Motor identification fault	1. Improper setting of motor parameters 2. The parameter identification time is too long	1. Reset the motor parameters 2. Check whether the inverter is connected to the motor
E028	Fast current limit fault	1. Excessive load or motor stall 2. Inverter selection is too small 3. The motor is not 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 right The motor performs rotation self-learning.

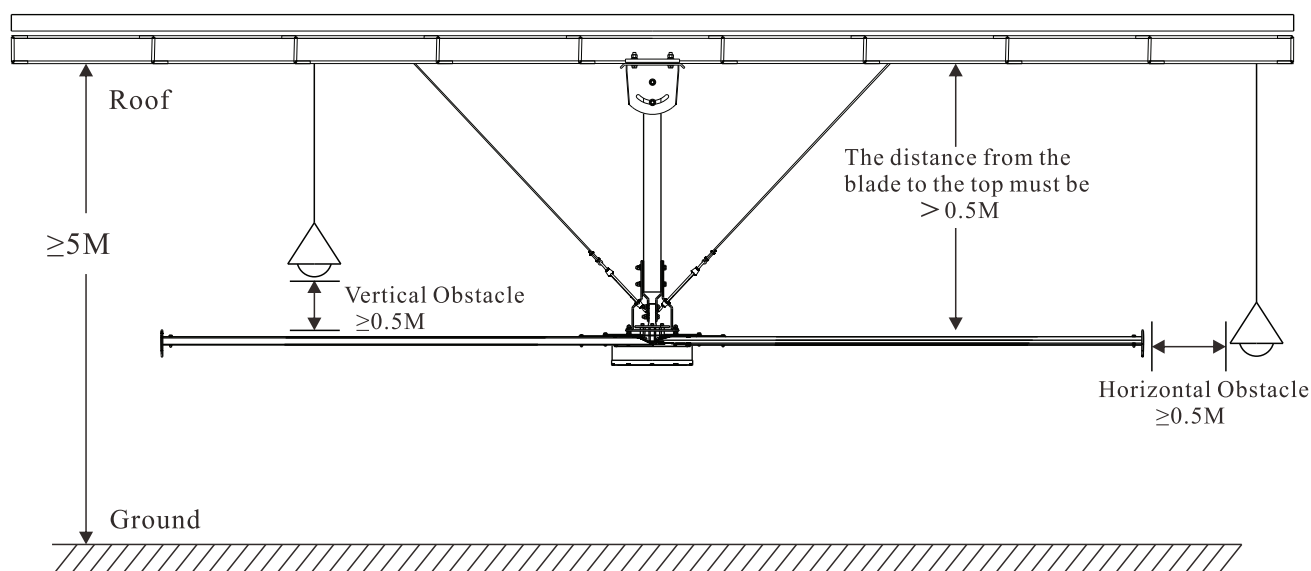
Regular Inspection and Maintenance

Electronic equipment and other components cannot be used permanently. Even under normal working conditions, if it exceeds service life, malfunctions will occur. In order to prevent such failures, regular inspections must be carried out. It is recommended that after the machine is installed, an inspection should be carried out every 3 or 4 months. Before inspection, please turn off the power supply!

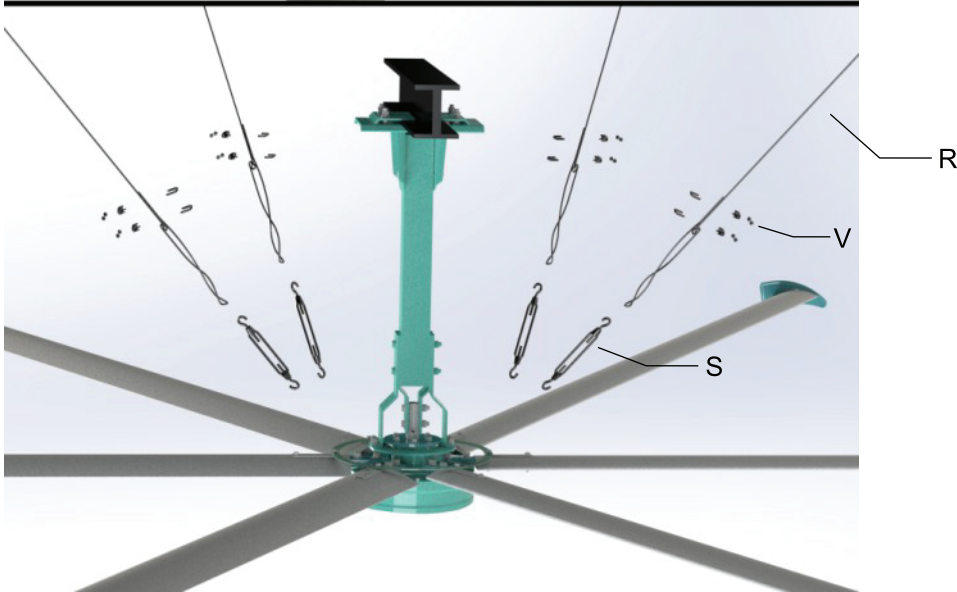
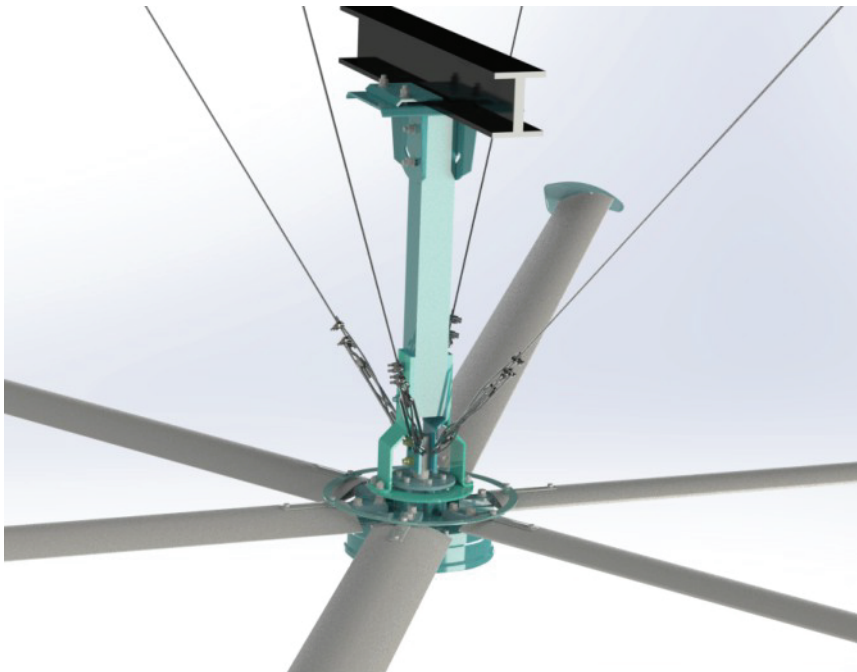
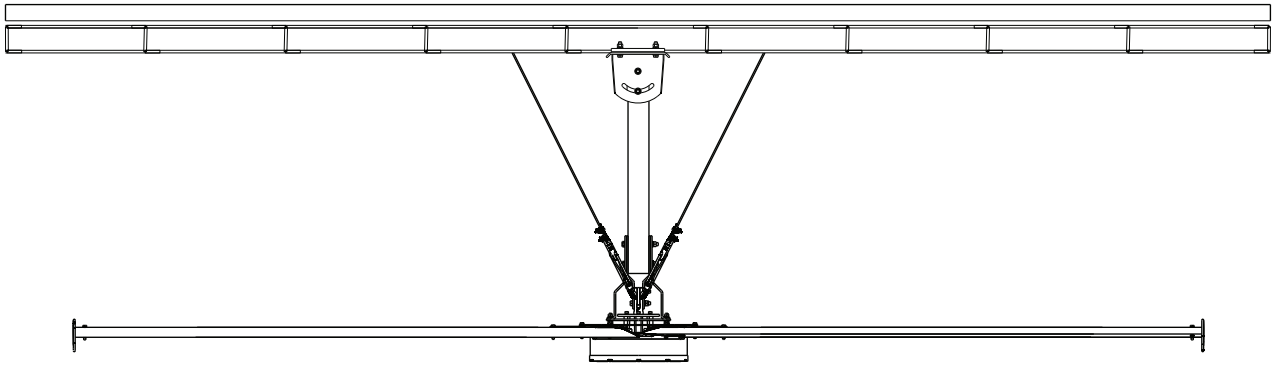
Regular Inspection and Maintenance Chart

Inspection Part	Inspection Contents	Countermeasures
the Whole Fan	•Are there any parts that have discolored due to aging? •Whether the parts are damaged or deformed? •Whether there is dirt, dust?	•Replace damaged parts •Contact our after-sales service department •Use a dry towel to remove dust and garbage, do not wash with water
Motor	•Whether there is abnormal vibration or abnormal sound when fan is running?	•Turn off the fan, consult our after-sales service department - Check the condition of the components and tighten the connection, and press all the fastener screws
Control Box	•Check whether the fan is dusty or dirty •Check whether the power and motor wires, internal connecting wires are discolored, damaged or dropped •Check whether the cladding of the wire is damaged, cracked or discolored •Check connection terminals are damaged, in loose •Check whether the capacitor is swollen, leaking, discolored or cracked	•Clean or replace fan •Repair or replace damaged wires and connections •Contact our company for after-sales service, if it cannot be replaced or repaired, replace the entire controller

Installation Requirements



◆ Steel Wire Rope reinforced structure



NO	Name	QTY
R	Steel Wire Rope	4
S	Steel Wire Rope Basket Tightening Device	4
V	Steel Wire Rope Clamp	12