MR. KEN

Aesthetics of Wind | Since 1985

Owners Manual

Gearless Direct Drive PMSM HVLS Ceiling Fan
High Volume Low Speed (HVLS) Fan
Installation, Operation, and Maintenance Manual

MODEL: BTDC20 , BTDC25 , BTDC30
(VFANS 2M, 2.5M, 3M)

CAUTION

READ INSTRUCTIONS CAREFULLY FOR SAFE INSTALLATION AND FAN OPERATION.

Suitable for 220V/50Hz eletrical supply

YF-2511

SAFETY INSTRUCTIONS

To reduce the risk of fire, electrical shock, or injury to persons, please observe the following:

1. Read all instructions and safety information before installing. This manual is not intended to instruct or assist untrained or unqualified persons. It is the responsibility of qualified, licensed installer, and user to apply common sense and care at all times during installation and operation.
2. This appliance is not intended for use by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
3. To avoid possible electric shock, be sure electricity is turned off at the main power box before wiring. Make sure electrical voltage and frequency is within the control capacity range.
4. Please make sure the location has stable power supply, with temperatures between 10°C to 40°C and that the ceiling fan is not exposed to direct sunlight, humidity, or wind blow over a long period of time.
5. Ceiling fan must be installed in areas that will not allow rotating fan blades to come in contact with any object when fan is in operation.
6. The mounting bracket must be firmly screwed to a strong ceiling support such as a concrete ceiling, steel structure, or a timber frame. If additional timber frames are to be added, those must be securely nailed or screwed between the beams. All support must be able to withstand motion of the moving fan as recommended.
7. For safety regulation, the safety cable must be secured firmly with the mounting bracket or with a separate anchor bolt with hook, which must be able to withstand motion of the moving fan as recommended.
8. After fan is completely installed, check to make sure that all connections are secured to prevent fan from falling and/or causing damage or injury. Refrain from using product in case of abnormalities, stop operation immediately and contact MR.KEN service center for help and support.
9. Condition of the ceiling fan, including all parts and suspension/support system, should be checked annually by qualified technicians or authorized personnel. Any alterations or replacements of any parts of the product must only be carried out by authorized personnel by MR.KEN service center.
10. Maintenance and cleaning of the ceiling fan should be carried out annually by qualified technicians or authorized personnel to ensure the normal functioning and prevention of damage to fan motor. Please exercise caution when cleaning so as to not cause bending of the blades, as it may result in damage or breakage of the product. Do not soak or expose product to chemical solvents that could cause discoloration or deformation of the product. Please contact MR.KEN service center for customer support and inquiries.

⚠ WARNING: This product is designed to use with only those parts supplied with this product and/or accessories designated specifically for use with this product. Using parts and/or accessories not designated for use with this product could result in personal injury or property damage.

⚠ WARNING: The company will not be responsible for any accidents and injuries caused by incorrect installation or modification that is not instructed by this manual.

PARTS LIST

Unpack and inspect fan carefully to be certain all contents are included.

Main Bracket

Extension Rod

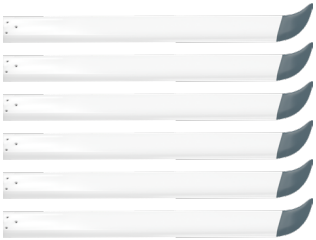
Upper Decorative Cover

Lower Decorative Cover

Motor PMSM Drive System

Cover (For No Light)
Lampshade Cover (For Light)

Fan Blades



Safety Chain

Inverter

Notes: Please be noted that different mounting structures has different bolts
(1) Normal structure / Side-beam structure: 6 expansion bolts (M10*80)
(2) I-beam structure / Round-tube structure: 4 M10*100 hexagonal bolts

Hardware Bag

Expansion Bolts M10*80	x 6	
Hexagonal Bolts M8*65	x 4	
Nylon Locking Nuts M8	x 4	
Hexagonal Bolts M6*65	x 1	
Nylon Locking Nuts M6	x 1	
Hexagonal Bolts M6*22	x 18	
Hexagonal Bolts M6	x 18	
Hexagonal Screws M4*10	x 4	
Hexagonal Screw M6*12	x 1	

Remote Control (optional)

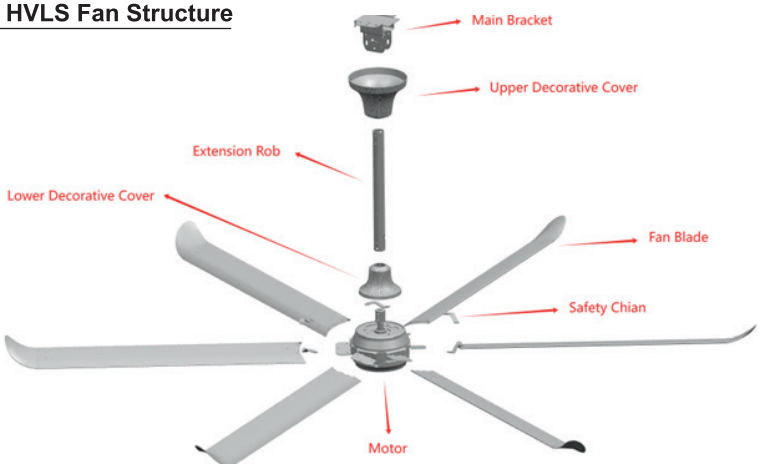
Transmitter	x 1	
Screw	x 2	
AAA Battery	x 2	

Wall Control (optional)

Wall Control	x 1	
Screw	x 2	

INSTALLATION GUIDE

• PMSM HVLS Fan Structure



• PMSM Drive System Package

• Single Unit Fan Blades and Extension Tube Package

INSTALLATION STEPS

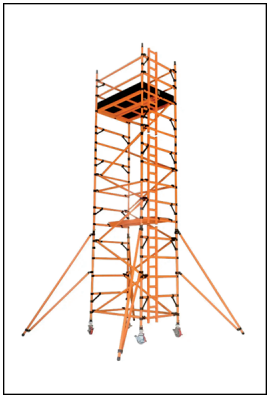
Precautions Before Installation

1. Ceiling fan installation involves working at heights—ensure proper safety measures are followed, and only trained professionals should perform the installation
2. Installers must wear safety helmets, use safety harnesses, and take all necessary precautions
3. Apply thread-locking adhesive to all screws to ensure secure fastening
4. Verify that there are no obstructions near the installation site that could interfere with the fan's rotation

Selecting a Proper Aerial Work Platform

1. Choose a stable and secure aerial work platform (such as a scissor lift or scaffolding) that meets safety regulations and provides sufficient reach for the installation height
2. Ensure the platform is set up on a level, solid surface and is properly secured before use
3. Verify that the platform has guardrails and fall protection measures in place
4. Only trained and authorized personnel should operate the aerial work platform.

Self-propelled Working Platform



Scaffolding

Mounting Options

Accommodate customers' specific needs, ensuring compatibility with various structural plant requirements

A：Normal Concrete Structure

B：Side-beam Structure

C：I-beam Structure

D：Round-tube Structure

Quick Installation Guide

1. Mounting

Normal structure / Side-beam structure

① Drill holes on the ceiling or on the side of the crossbeam. The position of the drill holes must fit the installation holes of the upper mount. Use a ϕ12mm drill bit to reach a depth of 60-70mm, then fix 2 to 4 expansion bolts (M10*80) on each side, and finally fix the upper mount with nuts (see Figure 1.1)

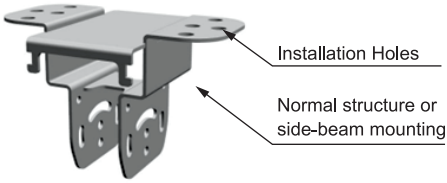


Figure. 1.1

I-beam structure / Round-tube structure

① using two M10*100 hexagonal bolts and nuts each side to fix the upper mount (see Figure 1.2 and 1.3)

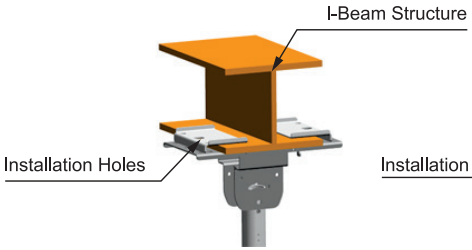


Figure. 1.2

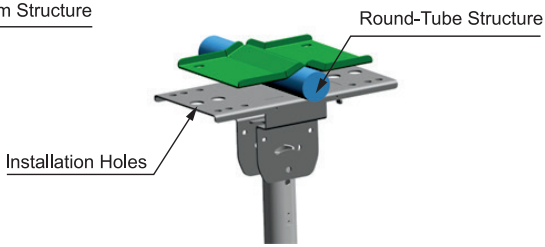


Figure. 1.3

2. Inverter

① Insert the inverter into the hollow frame of the upper mount. The power cord, motor wire, and LED light wire (optional) of the inverter are led out from the end shown in Figure 2

② Wrap the inverter and wires with the upper mount together with zip tie to prevent the inverter from loosening. The tie should be stuck in the positioning groove of the upper mount

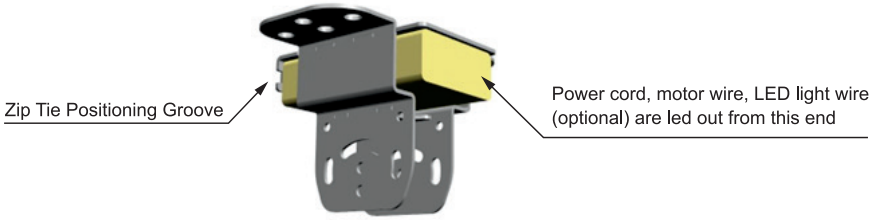


Figure. 2

3. Extension Tube

① Distinguish the upper end and lower end of the extension tube. The one with an open slot is the lower end of the extension tube, vice versa the upper end (see Figure 3.1)

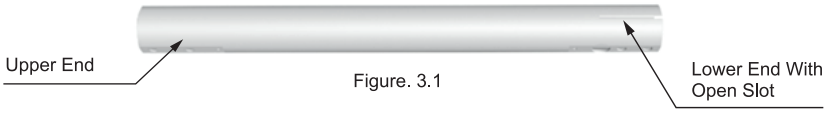


Figure. 3.1

② Unscrew two M4*10 hexagonal screws near the upper end of the extension tube, and install the lower decorative cover from the upper end to the lower end, and then install the upper decorative cover (see Figure 3.2)

③ Insert the upper end of the extension tube into the upper mount, align their installation holes. Then use two M8*65 hexagonal bolts, flat washers, spring washers, and M8 nylon locking nuts to tighten the structure while keeping the extension tube perpendicular to the upper mount (see Figure 3.3)

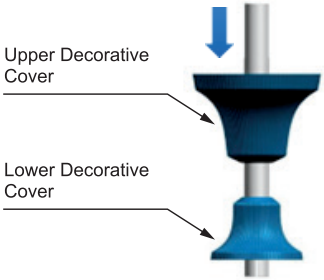


Figure. 3.2

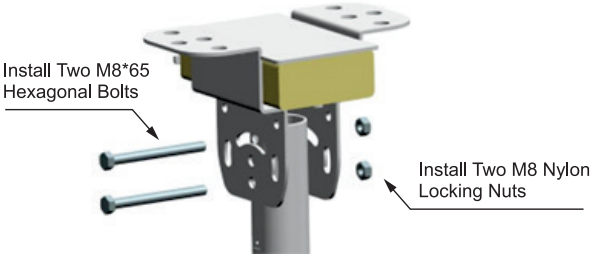


Figure. 3.2

④ Connect the safety rope by inserting a M6*65 hexagonal screw through the holes beneath the inverter frame, and passing the upper terminal of SS304 wire rope which is extended from the middle of the extension tube (see Figure 3.4). Then use flat washer, spring washer, and a M6 nylon locking nut to fasten

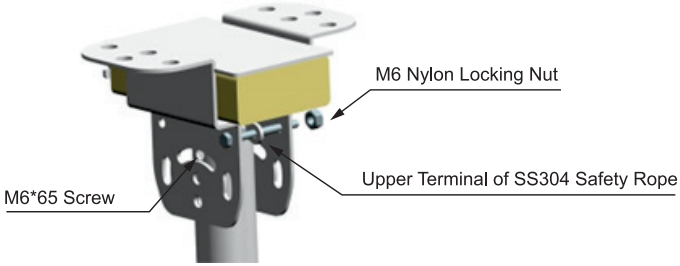


Figure. 3.4

⑤ Connect the 4-core motor connection wire on the inverter with the one on the extension tube, buckle the plastic plug (see Figure 3.5)

⑥ Connect the 2-core LED light connection wire on the inverter with the one on the extension tube, buckle the plastic plug (optional, see Figure 3.6)
Note: safety buckle on male and female plugs should correspond to each other

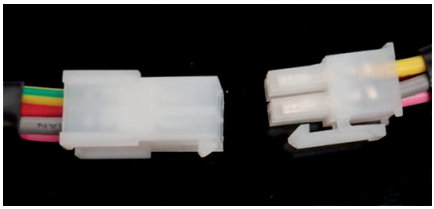


Figure. 3.5 (motor wire)

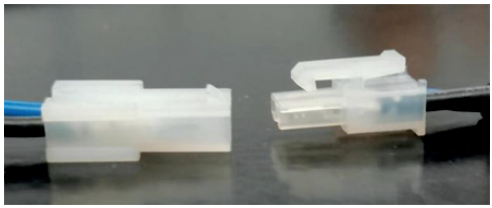


Figure. 3.6 (Optional LED light wire)

⑦ Connect the 220V power cord under the power-off state. The power can only be switched on when the fan installation is completed and all personnel are under safe condition

⑧ Push the upper decorative cover upward to cover the upper mounting, and fix it by installing two M4*10 hexagonal screws, flat washers, and spring washers on the extension tube to prevent it from sliding down (see Figure 3.7 and Figure 3.8)

Figure. 3.7

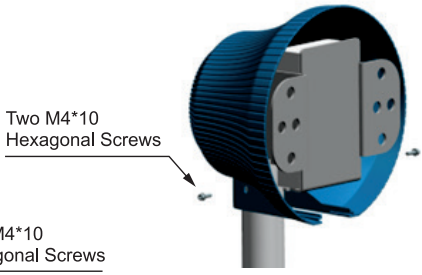


Figure 3.8

4. Motor

① Insert the motor into the extension tube, align their installation holes. Then use two M8*65 hexagonal bolts, flat washers, spring washers, and M8 nylon locking nuts to tighten the structure (see Figure 4.1)

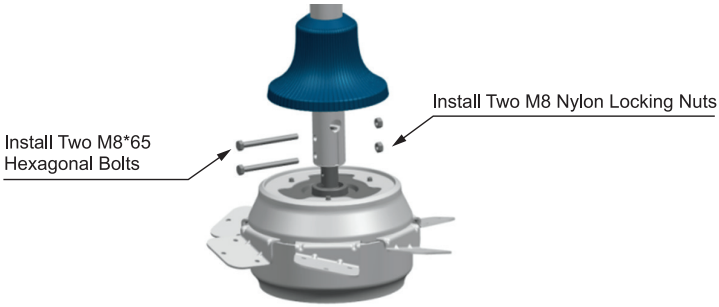


Figure. 4.1

② Connect the 4-core motor connection wire on the motor with the one on the extension tube, buckle the plastic plug (see Figure 3.5)

③ Connect the 2-core LED light connection wire on the motor with the one on the extension tube, buckle the plastic plug (optional, see Figure 3.6)

④ Connect the safety rope by giving a M6*12 hexagonal screw, flat washer, spring washer through the lower terminal of SS304 wire rope, and fix it on the hole of the motor shaft (see Figure 4.2)

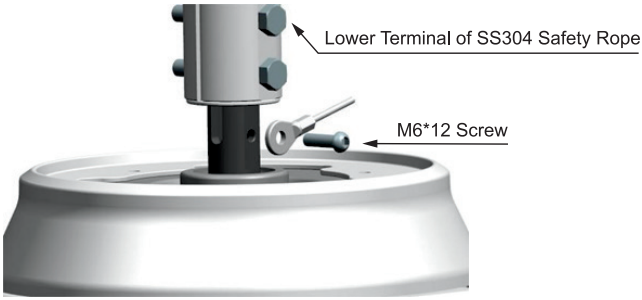


Figure. 4.2

⑤ Push the lower decorative cover downward to cover the installations on motor shaft, where there are two pre-installed M4*10 hexagonal screws on extension tube that prevent the lower cover from sliding down. Please be aware there should be a gap between the cover and the motor (see Figure 4.3)

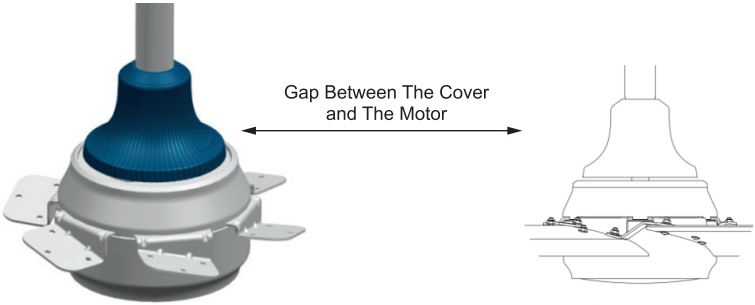


Figure. 4.3

5. Blades and Safety Chain

① Pull out the black fan plug at the front end of the fan blade, insert the blade with the blade holder on the motor, align their installation holes. Then use three M6*22 hexagonal bolts, flat washers, spring washers, and M6 nylon locking nuts to tighten the blades and the safety chain
(attention: the head of the screws must facing downward during the installation, see Figure 5.1)

② Follow the principle of symmetrical installation, install all remaining fan blades

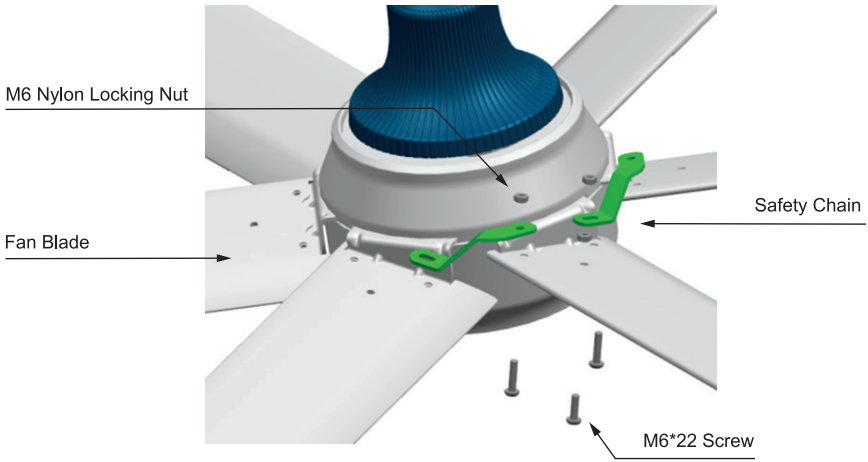


Figure. 4.3

6. Overall Inspection

After installing all the blades, please check the following items:

① The levelness of the fan. If a serious tilt happens in extension tube or fan blades, it is necessary to use a spirit level to readjust the position;

② The safety distance between the fan blades and the obstacles. If the safety distance does not meet the requirements shown in Figure 6.1, please readjust it.

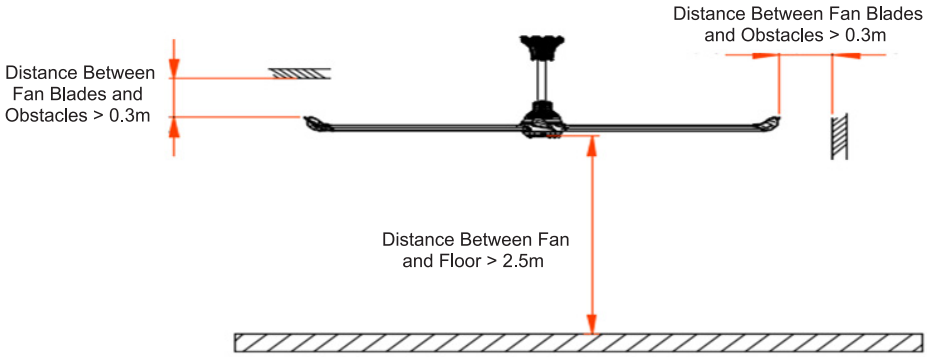
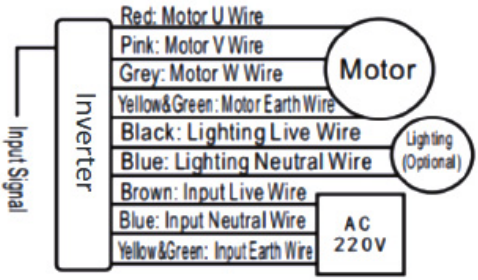


Figure. 6.1

7. Inverter Wiring Diagram



REMOTE CONTROL

Turn on the power supply under safe condition, when the controller make a long beep sound, the remote control can then be used. See the below instruction.

WALL CONTROL (OPTIONAL)

Lock/Unlock: when it is locked, cannot control any buttons

Forward/Reverse: long press 2s for clockwise or anti-clockwise rotation, wind blows downward or upward

Fan gear: short press to increase the RPM

Fan gear: short press to decrease the RPM

Fan on/off: short press to start and stop the fan

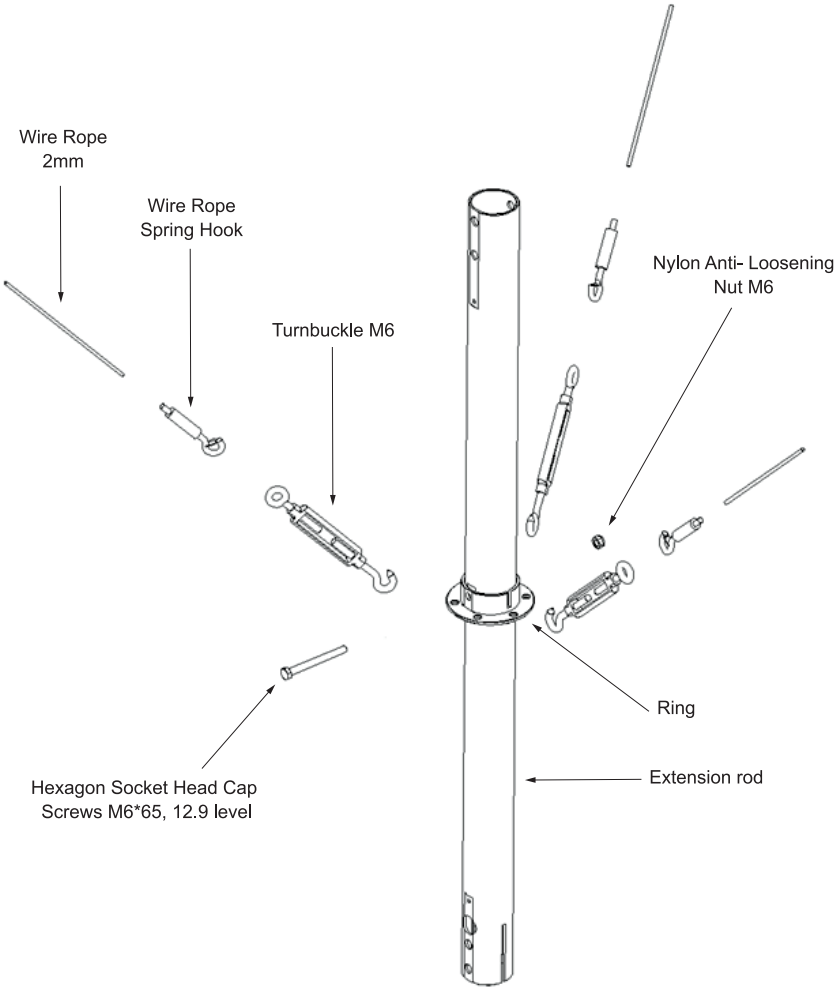
LED light on/off: short press to turn on the light (optional)

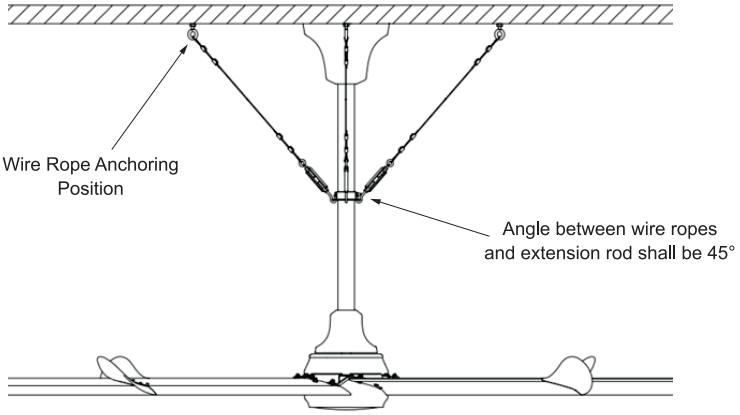
Timed shutdown: short press to activate and change different mode

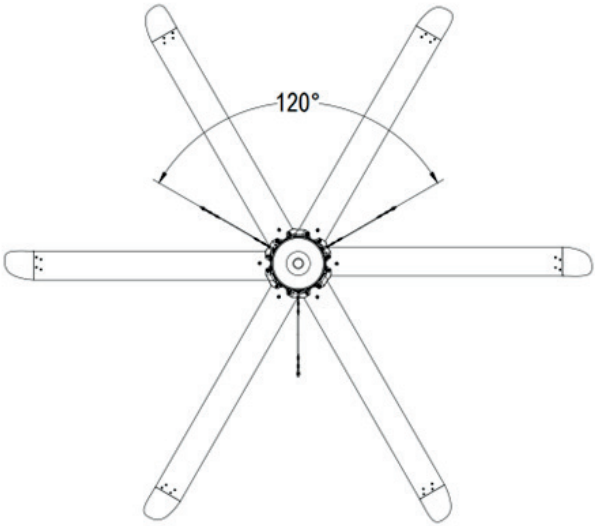
When connected to power and short press, changes wind mode
Whoosh: the fan constantly changes from scale 2-4
Sleep: Short press, the fan constantly changes from scale 1-3

When the whole power is off and reconnected to the power
Code matching: within 10s, long press this button for 2s to connect with the inverter

EXTENSION SAFETY CABLE CONNECTION (OPTION)







Angle between two wire ropes shall be 120°

● Clean the Obstacles Around the Fan

Observe whether there are obstacles around the fan blades, then slowly rotate the fan manually, and then check the obstacles that may be touched when the fan is shaking. Obstructions such as chandeliers can be appropriately shortened or moved to other nearby locations.

TROUBLE SHOOTING LIST

The VFD controller may have the following abnormal conditions during the operation, please refer to the possible solutions below for further analysis:

NO.	Abnormal Conditions	Possible Reasons	Solutions
1	**No display upon the buttons after power on**	1. VFD input power not available 2. Wiring between buttons and controlling board defective 3. VFD internal defects	1. Check the input power 2. Replace the cables between buttons and control board 3. Ask help from the supplier
2	**PMSM drive system does not rotate**	1. PMSM drive system defects or blocking 2. Anti-reverse setting is inconsistent with the running direction 3. Frequency reference signal zero. 4. Lack of phase in drive system wiring	1. Firstly, check the mechanical defects if there are any, then replace the drive system 2. Set to reverse or change the direction of rotation 3. Checking the frequency reference signal 4. Checking the drive system wiring
3	**The PMSM drive system rotates in reverse direction**	1. PMSM drive system wiring phase sequence mistake	1. Change the phase sequence of the motor wiring
4	**PMSM drive system vibrates obviously**	1. Mechanical vibration 2. Motor anchoring parts not stable 3. Power supply not stable	1. Adjust the concerned mechanical parts 2. Adjust the anchoring parts 3. Check the load of power input
5	**PMSM drive system obvious noise**	1. Bearing wears out or with poor lubrication 2. Low carrier frequency	1. Replace the drive system 2. Improve the carrier frequency.

PRODUCT SERVICE & MAINTENANCE

Cautions

1) Make sure to shut down the power of the control panel, and maintain the circuit breaker OFF
2) Clean and clear the dust screen of air entrance and exist at regular intervals
3) Do not place the control panel and PMSM drive system into the water for cleaning
4) Use a soft cotton cloth together with non-solvent cleaning agent to remove stains on the surface of the control panel and the fan blades, and do not use gasoline, pine perfume, decontamination powder, or alkaline detergent to scrub the fan and control panel
5) If the fan is not to be used for a long time, the leakage protection switch in the control panel should be turned off

Daily Checking and Maintenance

Please use the PMSM HVLS fan under the circumstances advised by this manual, and further do the daily routine checking and maintenance according to this chart

Checking Point	Content	Methods	Ref. Standards
Operation Circumstances	Temperature	Infra.Sensor	-10℃～40℃
	Humidity	Humidometer	5%～95%，condensation not allowed
	Dust, Dirt, Water or Leakage	Visual Inspection	No dust, oil dirt, water or leakage.
	Vibration	Observation	Stable Operation without abnormal vibration
	Fluid	Smelling and Visual Inspection	No distinct odors or smokes
VFD (variable frequency driver)	Noise	Listening	No distinct noise
	Fluid	Smelling&Visual Inspection	No distinct odors or smokes
	Appearance	Visual Inspection	No defects or deformation
	Heating and Dissipation	Visual Inspection	No dirt or cotton lint to block the air exhaust. Fan operates well with right air velocity and air volume. No distinct heating.
PMSM Drive System	Heating	Sensor	No distinct heating or smell of burning.
	Noise	Listening	No distinct noise.
	Vibration	Observation and Listening	No distinct vibration or noise.
Operation Parameters	Input Current	Ammeter	Within the specs.
	Input Voltage	Voltmeter	Within the specs.
	VFD Output Current	Ammeter	Within the specs.
	VFD Output Voltage	Voltmeter	Within the specs.

BRIEF SUMMARY

The 1.5-3m HVLS ceiling fan with PMSM (Permanent Magnet Synchronous Motor) technology represents the pinnacle of energy-efficient air movement solutions for large spaces. These advanced fans deliver superior performance through their brushless motor design, which achieves up to 30% greater energy efficiency compared to conventional motors while maintaining whisper-quiet operation. The PMSM motor's exceptional torque characteristics enable smooth start-ups and consistent low-speed operation, perfectly suited for HVLS applications. With intelligent control capabilities, these fans automatically adjust to optimal speeds for maximum comfort and energy savings. The rugged, maintenance-free motor construction ensures reliable operation with minimal wear, while its compact design allows for sleek, aerodynamic fan profiles. Particularly valuable in industrial and commercial settings, PMSM powered HVLS fans significantly reduce long-term operating costs through their unmatched combination of high efficiency, precise speed control, and extended service life, making them the smartest investment for sustainable climate control solutions.

Applications

Public Commercial Center: Supermarket, Mall, Wholesaling Market, Exhibition Center, Showroom, Automobile Service Center
Manufacturing: Industrial Factory, Workshop, Warehouse, Transit Center, Parcel Sorting Area
Entertainment: Large-scale Playground, Park, Travel Resort, Scenic Spots, Food Court
Sporting: Stadium, Gym, Indoor Training Center
Public Transport: Waiting Room, Platform, Ticket Office, Terminal Building, Bus Station
Others: Agriculture Plants, Winery, Church, Restaurant, Classroom, Auditorium

Operation Conditions

1) The fan should be installed indoors or in a similar indoor environment, and there should be no flammable, corrosive gases, or conductive dust in the surrounding air; The installation should be carried out according to the instructions in the installation manual, ensuring that the fixing screws are correctly installed and tightened; Visually inspect whether the fan is tilted about 2 meters below the fan to ensure that it is running horizontally
2) Safe distance between fan blades and obstacles: more than 30cm
3) Fan installation height: more than 2.5 meters
4) If the length of the extension rod is longer than 100cm, SS304 ropes and security bolts need to be installed to ensure smooth operation of the fan
5) For the fan powered by 220V, its input voltage range should be 160-260V, 50/60Hz
6) For the fan powered by 110V, its input voltage range should be 100V-140V, 50/60Hz
7) Environmental temperature -10 ℃~45 ℃; Relative humidity of air: not exceeding 95%

SAFETY CAUTIONS

Read Before Use: Carefully review this manual prior to installation and operation to ensure proper and safe usage.

Inspection After Unpacking: Verify that all components are intact and undamaged upon unboxing. Do not proceed with installation if any defects, missing parts, or shipping damage are found—contact the supplier immediately.

Keep Away from Children & Vulnerable Persons: Store all fan components securely, away from children, elderly, or disabled individuals to prevent accidents.

Professional Installation Required: Only qualified personnel should handle installation, wiring, and motor grounding to ensure compliance with safety standards.

Avoid Metal Debris in Control Panel: When drilling into the control panel, ensure no metal fragments or particles enter the interior to prevent electrical hazards.

Proper Leveling Mandatory: After installation, confirm that the fan is perfectly balanced both horizontally and vertically to avoid operational issues.

Verify Power Supply Compatibility: Ensure the local power supply matches the fan's voltage and frequency specifications before energizing the unit.

Indoor Use Only | Dry Hands Required: This fan is designed for indoor ceiling mounting. Never operate with wet hands or in wet conditions to prevent electric shock.

Ceiling Mounting Only: Any improper installation or misuse voids liability. The supplier is not responsible for accidents resulting from unauthorized modifications or applications.

Operational Safety Precautions: Only authorized technicians may access the control panel during operation; Maintain the recommended clearance zone around rotating blades; Remove all potential obstacles within the fan's rotation radius; Never touch moving blades with objects or body parts.

Non-compliance with these instructions may result in injury or equipment failure. The manufacturer disclaims liability for accidents caused by negligence.

PRODUCT SPECIFICATION

Series Name	VF15S Series (IP53)		
Model	VF15S-D2000	VF15S-D2500	VF15S-D3000
Diameter	2000mm	2500mm	3000mm
	80in	100in	120in
Blades Qty	6	6	6
Hanging Weight	20KG	22KG	24KG
Power	110W	180W	280W
Max Speed	120 RPM	105 RPM	95 RPM
Max. Air Volume	2130m^3/min	2750m^3/min	3360m^3/min
Power Supply	Single Phase 220V / 110V	Single Phase 220V / 110V	Single Phase 220V / 110V
Max. Current (Amps)	0.9A	1.0A	1.3A
Noise Level	<36db	<36db	<36db
Area Covered	Ø8-11m	Ø10-13m	Ø12-15m

Notes:

- The specifications and features described in this manual are subject to change based on product model variations and customer-specific requirements. The final standard shall be determined by the actual product delivered to your company
- We reserve the right to modify or optimize product configurations without prior notice to ensure continuous improvement and performance enhancement
- For the latest product information, please consult our official documentation or contact our support team