

KALE FANS

User Guide Manual

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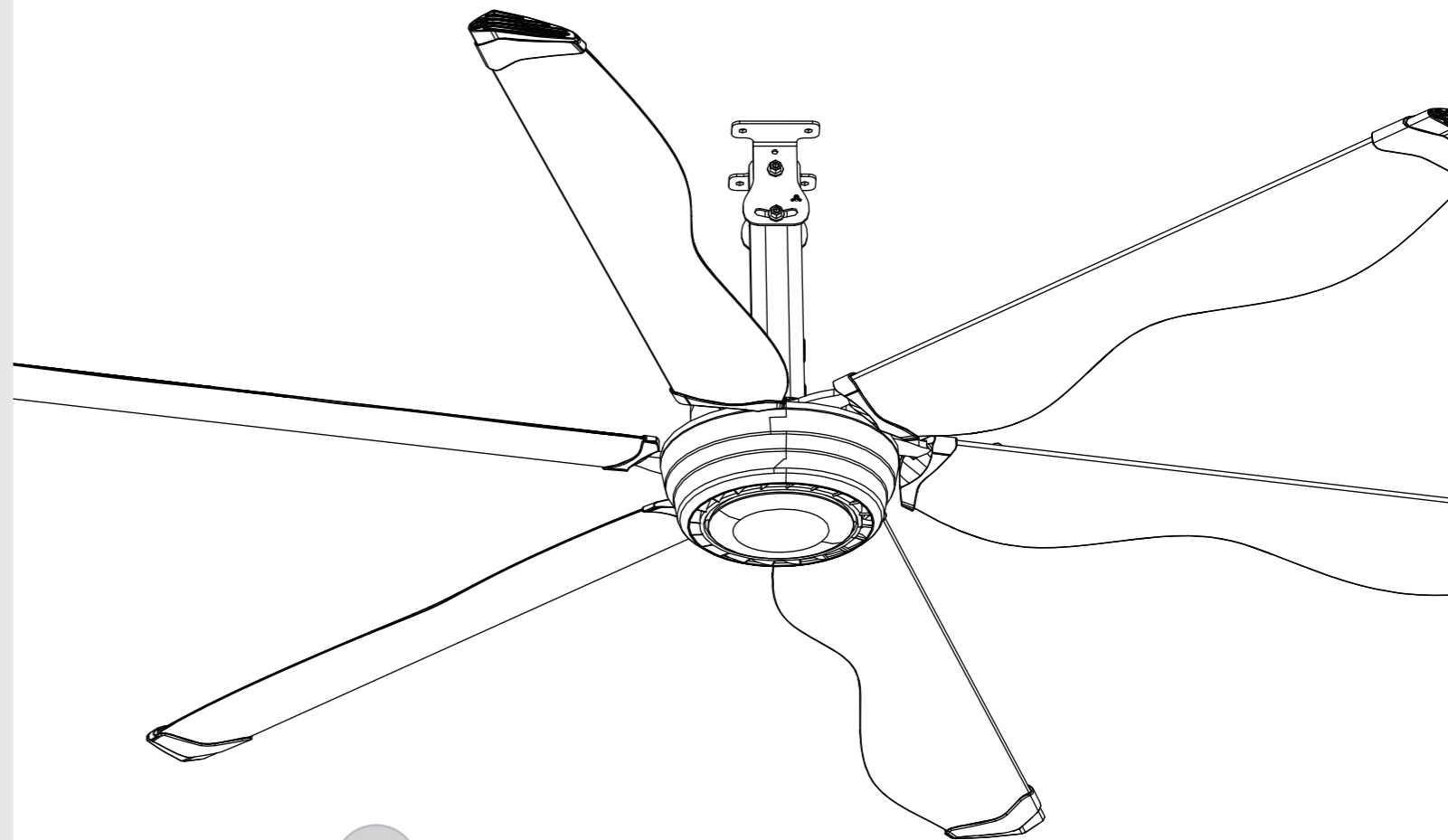
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KaLe Environmental Technology(Shanghai)Corp.

SHVLS FAN



KALE SHVLS FAN

KALEFANS® SHVLS
Aircool™ Series

Quick Start Guideline

In order to safely use the product, please carefully read the operation instruction manual.

ENGLISH

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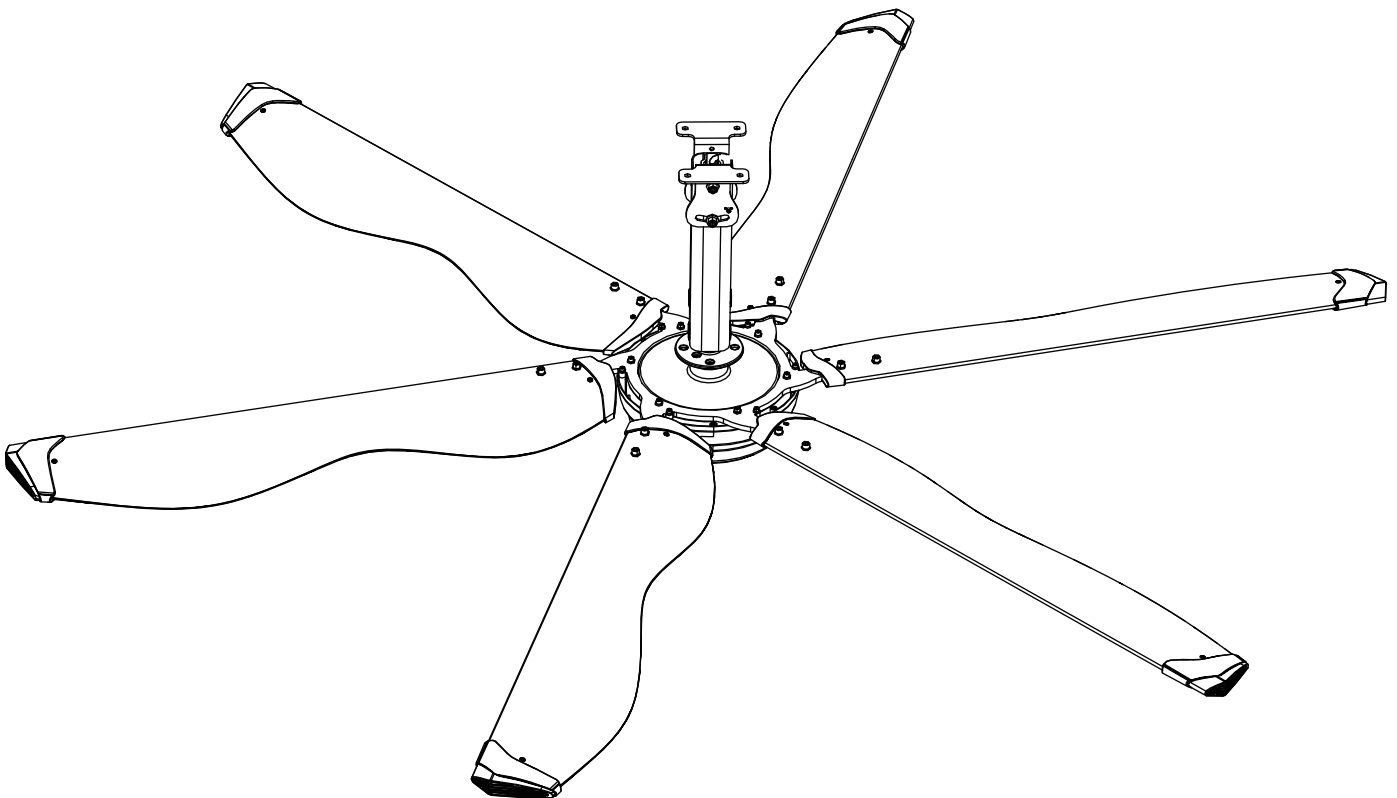
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Preface

Thanks and congratulate for your purchasing of Kale Aircool Series big energy-saving fan! Now you have acquired the most effective shortcuts to pass a cool summer and warm winter. No matter in the industrial or public occasion applications, there is always professional solutions with Kale fans. As a brand new R&D product, Aircool is the unique choice for commercial public spaces.

If you have any question and comments on our products, you can contact with our customer service representatives by accessing to our website www.kalefans.net. Before the usage, please do read the operation instruction manual carefully.

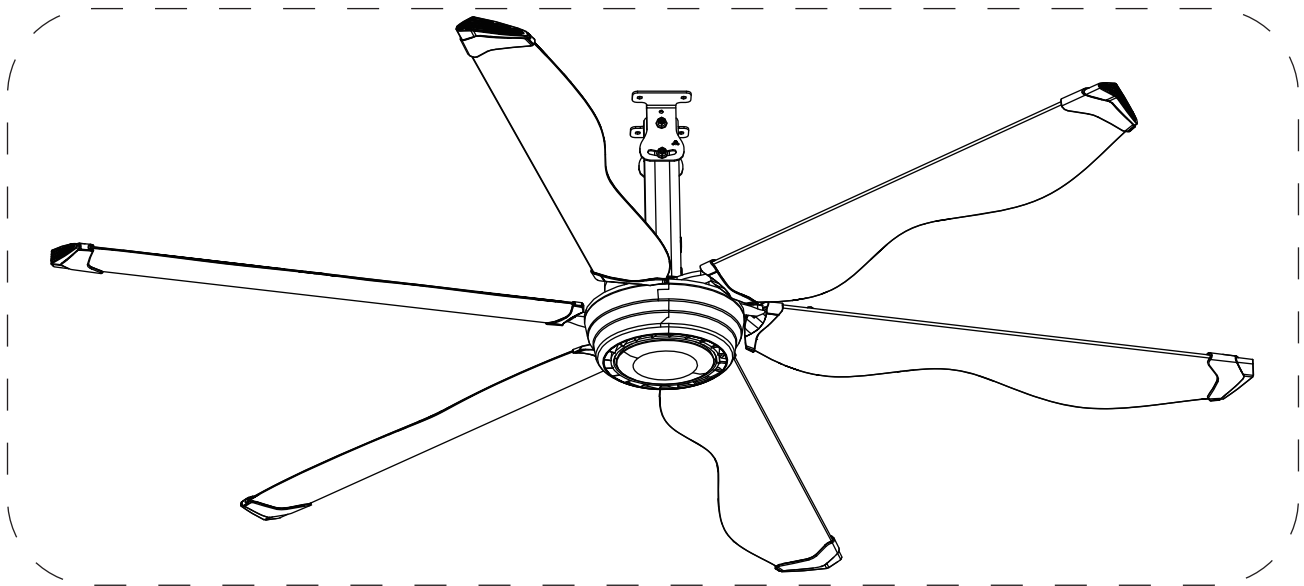


1. Production series introduction

Aircool™ Series

Aircool™ Series is brand new series fan developed by Kale company based on PMSM(permanent magnet synchronous motor) technology. The product combines a series of cutting-edge technologies such as aerodynamics, transmission dynamics, pulse width modulation control technology, mechanical mechanics, simulation technology, communication control, industrial design, etc. and is manufactured by advanced domestic and overseas precision processing equipments.

It can promote the circulation of air flow in the space with extremely high efficiency, greatly improve the environmental comfort, and is perfect for public and commercial places, such as bars, restaurants, gyms and hotel halls and other occasions.



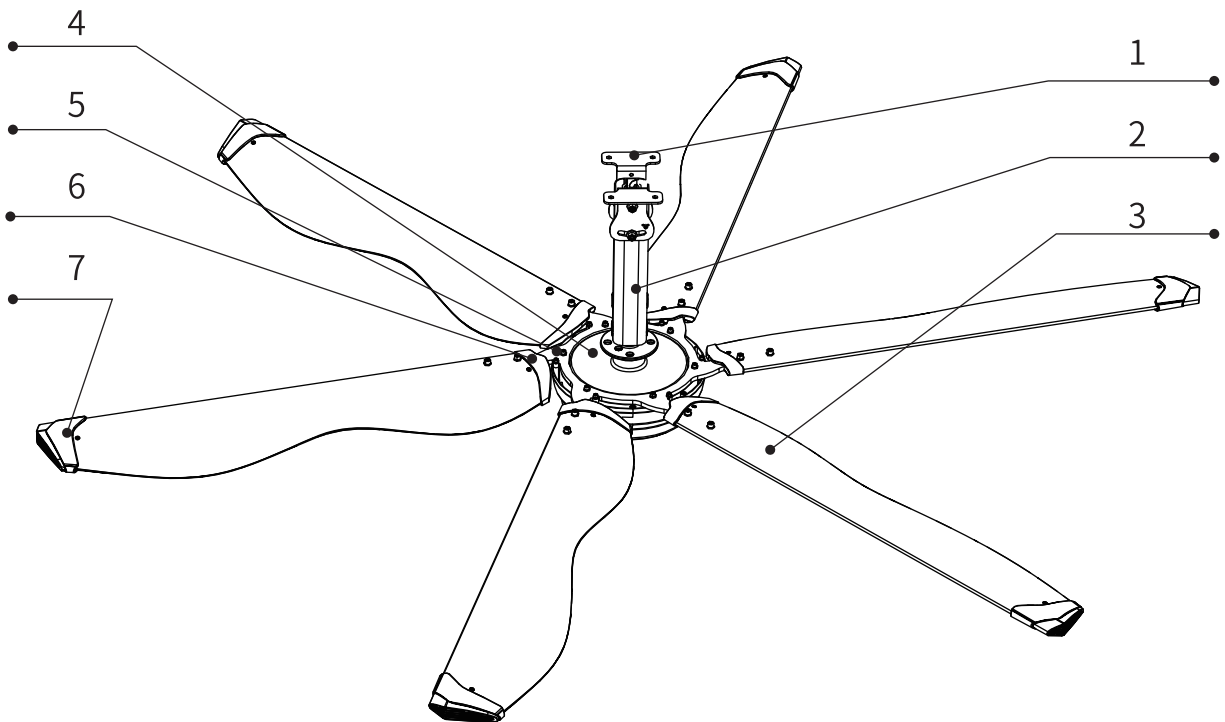
1.1 Product specification table

Model	SHVLS-D5BAA20	SHVLS-D5BAA25	SHVLS-D5BAA30
Diameter	2m(6.5ft)	2.5m(8ft)	3.0m(10ft)
Max. Rotating Speed	150RPM	130RPM	110RPM
Rated Power	0.13kW	0.15kW	0.2kW
Max. Air Volume	3900m ³ /min	4200m ³ /min	5150m ³ /min
Full Load Current	0.5A	0.7A	1A

Note:

- 1, Weight: the weight does'nt contain control box, top connection parts etc.
- 2, Size: the above-mentioned product size is standard, other size can be customized.
- 3, Input power: 220V/1PH±10%.
- 4, Motor: PMSM(Permanent-magnet synchronous motor).

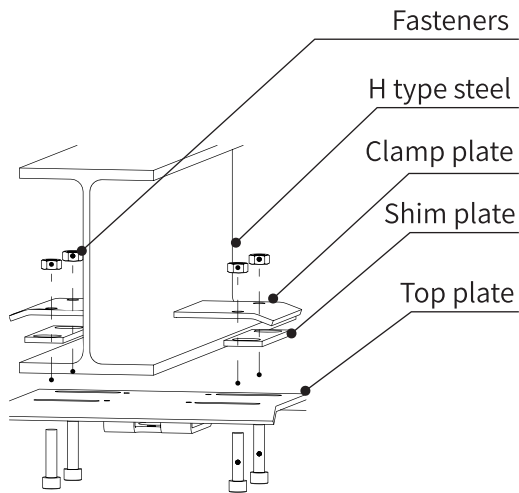
2. Product drawing



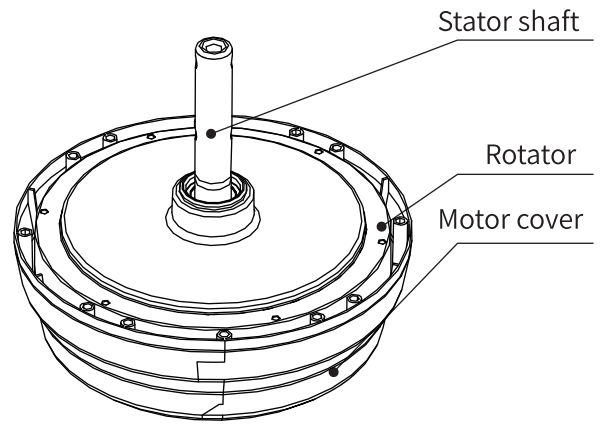
- | | | | |
|---|-------------------------------|---|------------------------------|
| 1 | L shape plate (Top connector) | 5 | Integral fan blade connector |
| 2 | Extension tube | 6 | Fan blade plug |
| 3 | Fan blade | 7 | Fan blade winglet |
| 4 | Driving device | | |

2.1 Standard components introduction

Steel structure fastening



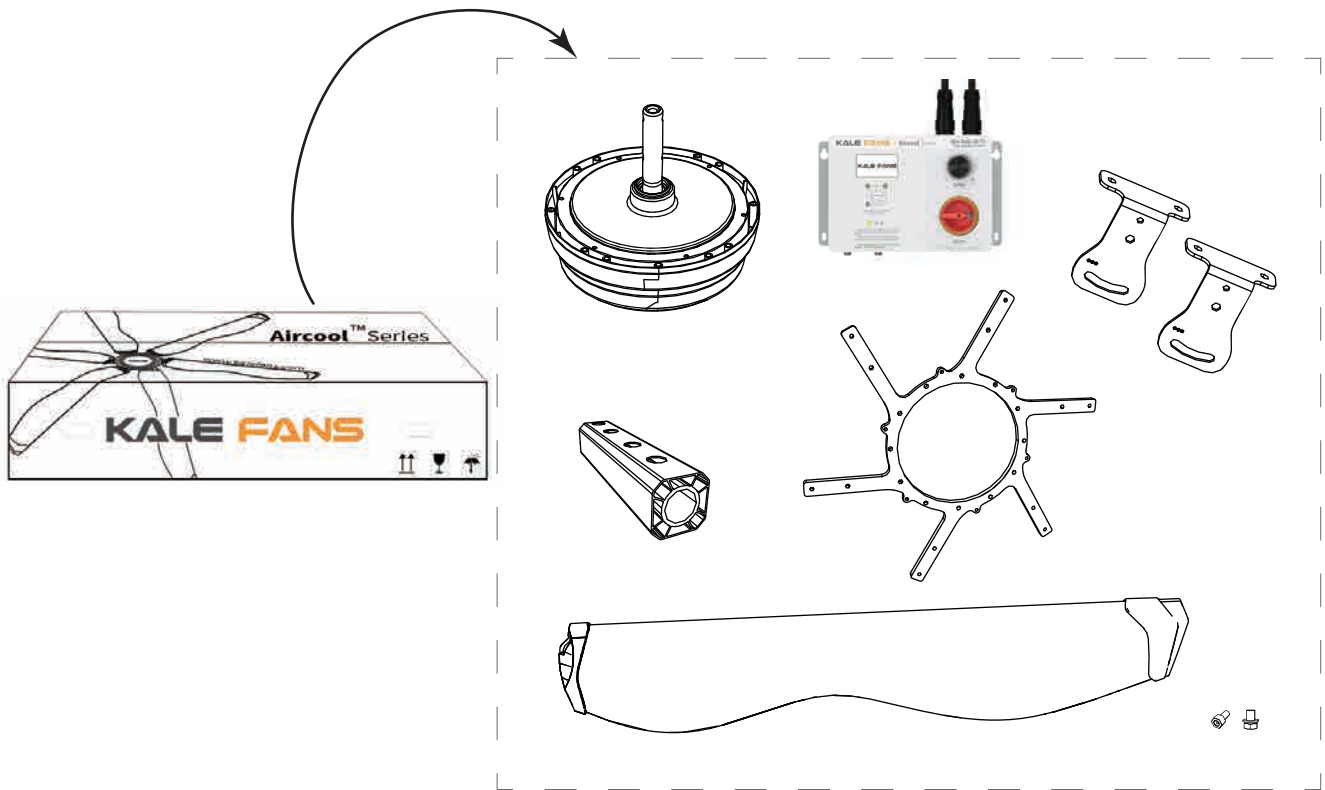
Main body structure



Control system structure



2.2 Packing List











2.2.1 Packing specification

Package No.	Package size (L*W*Hmm)	Volume	Gross Weight	Remark
CASE No.	DIMENSION	(m ³)	(kg)	
1	1400mm*600mm*310mm	0.16	70	Main Carton

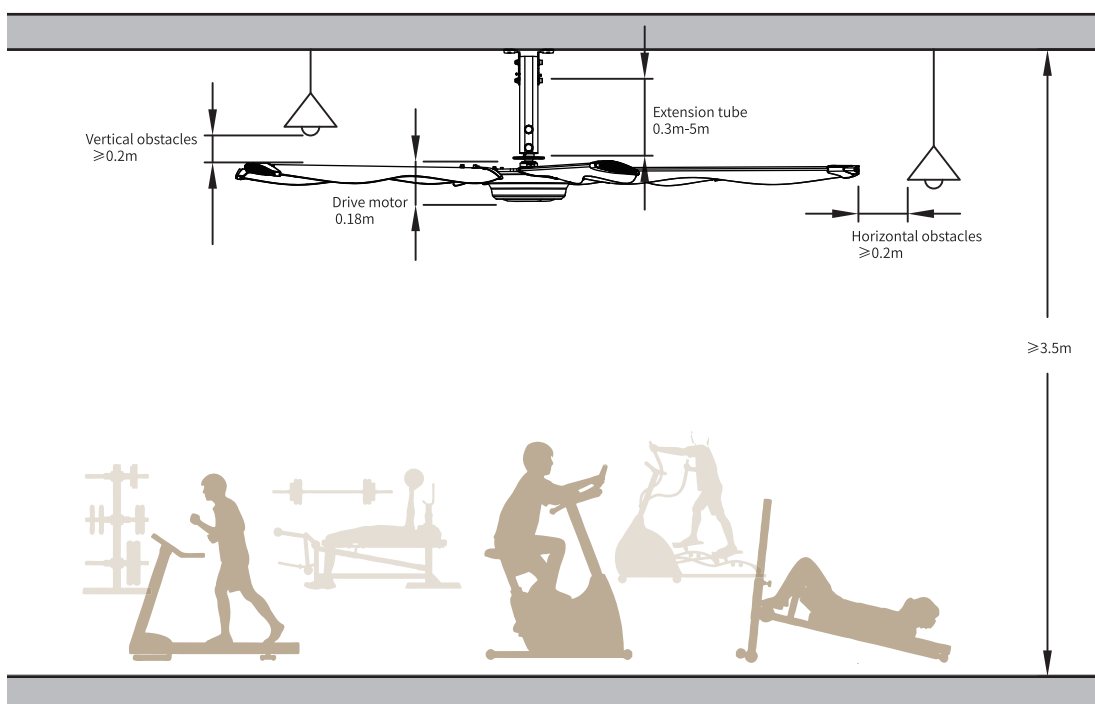
Packing Detail			
No.	Item	No.	Item
1	PMSM Motor	7	Fan hub
2	Fan blade connector	8	Motor bottom cover
3	Coil of wire	9	Blade components
4	Fan controller	10	Extension tube
5	L shape plate		
6	Screw and fastener package		

2.3 Universal installation tools

			
Spanner	Ratchet spanner	Allen wrench	Multimeter
			
Diastimeter	Gradiener	Wire-cutter	Screw glue

3. Installation conditions and types

3.1 Roof installation requirement



4. Fan installation procedures

① Preparation



Notice: product should be unloaded gently , product' s position should not influence the field production and channel.

② Confirmation



Notice: Carefully confirm the following information

1, Installation point 2, installation height 3, whether there are obstacles (such as crane, light, Cable, fire protection, cameras) 4, control cabinet position 5, the input power and the power cord layout, 6, power line layout, 7, traction steel wire position.

③ Inspection



Check the security measures (such as seat belts, helmets, etc.), climbing equipment, tools, products and accessories.

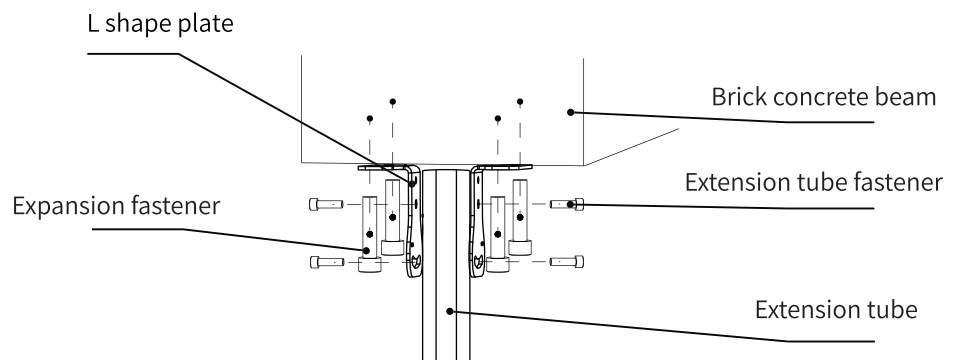
④ Top plate



Notice: The top plate shall be determined according to the installation position, the two sides of the top plate shall be equidistant, the top plate and the installation beam shall be cross vertical, the top plate shall be close to the I-beam, and the clamp plate shall be completely combined with the I-beam. Other fixed installation methods reach the same standard.

Notice: the extension tube is 90 degrees measured with a gradienter.

⑤ Extension tube

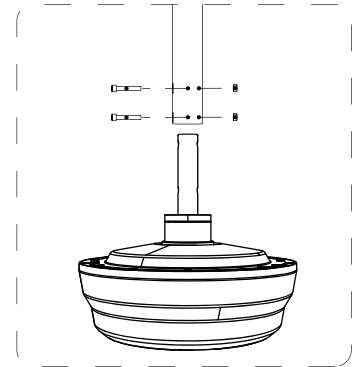


⑥ Power cable



Notice: keep the surface of the cable good and 20cm out of the tube is ok after threading.

7 Main body



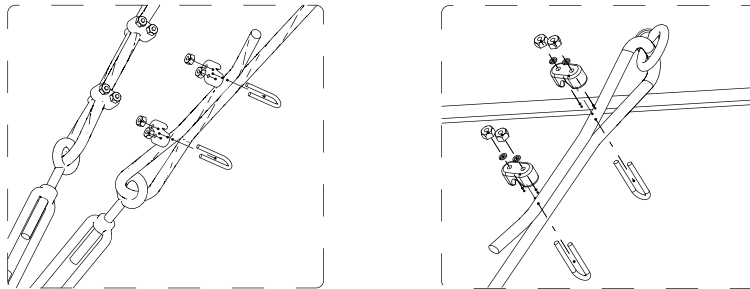
Notice: keep the upper and under plane horizontal, then tighten up the relevant bolts.

8 Wiring



Notice: Don't cut the copper wire when stripping off, first connect ground wire (yellow-green one or yellow one if no yellow-green), connect one-to-one according to the color and then wrapped with wiring cap in case of exposing copper wire.

9 Steel wire



When the extension tube is more than 5 m, it is necessary to install a wire lock to increase the stability of the fuselage.

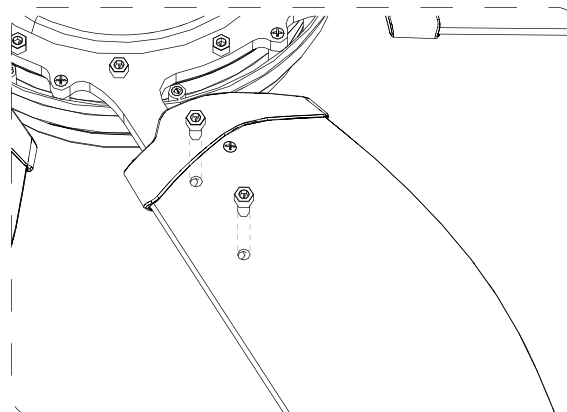
Notice: Four steel wires should be isometric, symmetrical, ensure all points bear stress evenly, the steel wire clamps must be tightened up and glued, same with the turnbuckles.

10 Power cable



Notice: Wiring should be tight, firm and nice-looking.

11 Fan blades

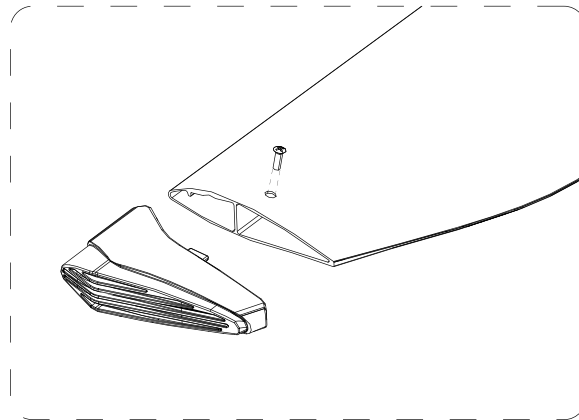


Notice: Install the fan blade in diagonal sequence. Keep the blade surface good and install diagonally, two people work together will be the best so that can ensure the tightening effect.

12 Winglet installation



Notice: Fasten the winglet.



13 Control system



Notice: the height from floor to the bottom of the control box should be around 1.2 meter and fasten the 4 points.

14 Wiring

Notice: distinguish the input and output, also make sure the ground wire is in place.

S2 voltage class host: the input terminal is 3P line, and the output terminal is 4P line. When wiring, please pay attention to the connection terminal corresponding to the serial number on the Unit.
T3 voltage class host: the input and output are 4P lines. Please pay attention to the correspondence between the terminal and the serial number on the Unit.

S2 model:

M19母针端



G: Ground wire
L, N: Power wire

M19母针端



4: Ground wire
1,2,3: Motor wire

T3 Model:

M19母针端



4: Gound wire
1,2,3: Power wire

M19母针端



4: Gound wire
1,2,3: Motor wire

Note: 1, 2, 3 and 4 are marked at the terminal. The power and motor terminal are marked at the controller terminal port, and the wiring can be done according to the mark.



15 Debugging



Notice: all the parameters had well set before delivery in factory.

16 Commissioning



Notice: Running for 15 minutes, check it whether there is an abnormal sound and steel wire jitter as well as the current within the rated range.

17 Acceptance



Notice: provide relevant specification, certificate of approval to customers and inform the precautions, the customer sign the acceptance sheet at last.

18 Cleaning



Notice: clean the area after finishing the installation work, customer's equipment and subjects should be put in order, bring back all the installation tools and accessories.

19 Finish

5. Description of common parameters of control system



■ LCD display status confirmation

After the controller is powered on, when the switch points to ON, the machine is powered on, and the LCD displays: given rotating speed, operating current, input voltage, operating status, whether "output rotating speed" is locked, failure interface and other specific interface information as follows:

<p>Operating interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Fan Speed 50 RPM</td> <td style="text-align: center;">RUN </td> </tr> <tr> <td style="text-align: center;">1.5 v</td> <td></td> </tr> </table> </div> <p>Top left: Setting rotating speed Lower left: Voltage Right: Operating</p>	Fan Speed 50 RPM	RUN 	1.5 v		<p>Standby interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Fan Speed 50 RPM</td> <td style="text-align: center;">STANDBY </td> </tr> <tr> <td style="text-align: center;">1.5 v</td> <td></td> </tr> </table> </div> <p>Top left: Setting rotating speed Lower left: Voltage Right: Standby</p>	Fan Speed 50 RPM	STANDBY 	1.5 v		<p>Accelerating interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Fan Speed 50 RPM</td> <td style="text-align: center;">ACCEL </td> </tr> <tr> <td style="text-align: center;">1.5 v</td> <td></td> </tr> </table> </div> <p>Top left: Setting rotating speed Lower left: Voltage Right: Accelerating</p>	Fan Speed 50 RPM	ACCEL 	1.5 v	
Fan Speed 50 RPM	RUN 													
1.5 v														
Fan Speed 50 RPM	STANDBY 													
1.5 v														
Fan Speed 50 RPM	ACCEL 													
1.5 v														
<p>Setting interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Set</td></tr> <tr><td style="text-align: center;">S00 return</td></tr> <tr><td style="text-align: center;">S01 Speed lock</td></tr> <tr style="background-color: #333; color: white;"><td style="text-align: center;">S02 Motor learning</td></tr> </table> </div> <p>Line1: Setting Line2: S00 Return Line3: S01 Rotating speed unlocked Line4: S02 Motor Self-learning</p>	Set	S00 return	S01 Speed lock	S02 Motor learning	<p>Failure interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Error code E.0LF [1909]</td> <td style="text-align: center;">ER </td> </tr> <tr> <td style="text-align: center;">contact us</td> <td></td> </tr> </table> </div> <p>Top left: Failure Code Lower left: Please contact factory Right: ER Logo</p>	Error code E.0LF [1909]	ER 	contact us		<p>Decelerating interface</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Fan Speed 50 RPM</td> <td style="text-align: center;">DECEL </td> </tr> <tr> <td style="text-align: center;">1.5 v</td> <td></td> </tr> </table> </div> <p>Top left: Setting rotating speed Lower left: Voltage Right: Decelerating</p>	Fan Speed 50 RPM	DECEL 	1.5 v	
Set														
S00 return														
S01 Speed lock														
S02 Motor learning														
Error code E.0LF [1909]	ER 													
contact us														
Fan Speed 50 RPM	DECEL 													
1.5 v														

■ User setting interface description

User setting interface description

In the standby state, long press (more than 2s) knob to enter the " Setting interface", and the setting interface functions are as follows:

Function code	Description	Explanation
S00	Return	Function can be used to return to the main interface/if it doesn't return by this function, and it will automatically return to the main interface after 10s.
S01	Rotating speed unlocked/ rotating speed locked	After locked: the adjusting knob will not change the given rotating speed to prevent accidental touch, and select this function again to unlock the rotating speed.
S02	Motor Self-learning	The motor operation control effect is better after self-learning.
S03	Operation direction switch	If the motor runs in the wrong direction, the motor direction can be switched by this function.



6. Safe operation instructions



Operation Instructions

1. Please read the precautions very carefully before you start use.
2. Please confirm the wirings have been connected correctly, then turn the main knob to "ON". Now it's powered on.
3. Press twice "start speed switch" to use "start speed switch" to control the rotation speed.
4. Press twice "rotation button" to stop the motor. Then turn the main knob to "OFF" the rotation completely stop.
5. You can also achieve the operation guide by scanning the QR code.

Function Description:

1. LED display: The user does not have any operation on the product within 1 minute, the LCD screen turns from bright to dark, and the brightness is restored after operation.
2. Main switch: When the switch points to OFF , it powered off; when the switch points to ON , it powered on.
3. Rotation speed button: multi-function knob. Please check the above table to know the details.

Function	Adjust Rotation speed	Start, Stop button	Malfunction Reset
Definition	Clockwise rotate the "Rotation speed" button to increase speed. And anticlockwise to slow down the speed.	Press once "Rotation speed" button to start and stop.	When malfunction appears, press once "Rotation speed" button to reset it. If the reset doesn't work you should contact KALE following the guide shown on screen.
Notice: Short press of "Rotation speed switch": the duration is less than 2s; Long press of "Rotation speed switch": more than 2s;			

⚠ Attention

Warning: Before operation please read the manual very carefully. Remove obstacles in the operating area to ensure that the fan runs with safe distance. Before operate any maintenance please make sure you already turned off the power supply. The operation must be done by professionals to avoid being injured.

How to start:

1. Make sure that there are no obstacles and potential hazards in the fan operating space.
2. Make sure that the input power is correct and meet the product requirements.
3. Make sure that the speed knob points to the minimum position.
4. Start the equipment and turn the switch from "stop" to "run".
5. After the fan runs, adjust the rotation speed knob to achieve the best effect.

How to stop:

1. Stop the equipment and shut down the controller strictly according to the operating instructions;
2. Please do not cut the power off during the running.

7. Safety precautions

Do not bend the fan blades when installing, adjusting, and cleaning the fan, otherwise it will damage the equipment or affect the use of the equipment. Before turn on the power please make sure that the input voltage of the fan is consistent with the power supply voltage.

Do not operate maintenance when the power is on.

Please correctly connect the input and output power cables and ground cables according to the markings on the control box.

After confirming that the wiring is correct, the product is energized for trial operation. After the trial operation is correct, it can run normally for a long time.

If the fan fails and cannot be reset, please contact the manufacturer.

Do not operate the damaged equipment, otherwise it will bring unexpected and serious consequences.

It is strictly prohibited to run the fan when the safety space is insufficient.

It is strictly forbidden to work inside the fan operating space. Please confirm whether there are obstacles before turning on the fan.

It is recommended that before the machine is powered off, please press the "knob key" to stop the machine, and turn off the power after the device has completely stopped rotating.

If the machine has not been used for more than 2 months, please pre-charge the product when it is used next time: Turn on the power and waiting more than 15mins to start the rotation.

Warning!

The installation and circuit wiring work must be operated by professionally qualified person. Please use the device parts specified by our company. Do not cut off the power supply while the fan is running, otherwise the fan will be damaged. The power should be cut off after the fan completely stopped. When the fan is running, do not turn the knob directly to the reset position. Otherwise it will cause mechanical failure.

8. Failure recovery

Common reasons for the fan not working properly:

1. The external power supply of the control box is invalid.
2. If you turn on the main switch but the fan still does not run please contact KALE Environmental Technology (Shanghai) Co., Ltd. to communicate with our professional engineers.

Non-professionals are strictly prohibited from opening the controller box! If maintenance or adjustment is required, the operation must be performed by professionals trained by KALE Environmental Technology (Shanghai) Co., Ltd. or under the guidance of our company's engineers. If you find any damage or abnormal noise, please stop the operation as soon as possible, cut off the power, and contact KALE after-sales service department. Note: Equipment damage caused by abnormal use is not contained by the product warranty of KALE FANS. Our company shall not be liable for personal injury and equipment damage caused by your failure to comply with the contents of this manual.

8.1 Error code:

■ Failure, warning

(Notice) When the product has a fault code, please press the knob button to reset the fault; if the fault cannot be reset, please contact KALE.

ER Code	Description
E. oC1/E.oC2/E.oC3	Acceleration/deceleration/constant speed/over current
E. oU1/E.oU2/E.oU3	Acceleration/deceleration/constant speed/overvoltage
E. Lu	Undervoltage during operation
E. oL1	Motor overload
E. oL2	Controller overload
E. iLF	Input phase loss
E. oLFxx	U/V/W Phase output phase loss
E. oH2	IGBT Module over temperature
E. TExx	Self-learning output current exceeds limit
E. SPD	Rapid failure

(Notice) The number xx after the above fault indication indicates a fault occurred in a certain phase of a three-phase circuit under different operating conditions.

Common fault display and countermeasures:

When a fault occurs, the controller cannot operate. The following table explains the cause of the fault and corresponding measures.
Note: All faults must be reset to eliminate them.

Code	Desc.	Reason	Solution
E. oCxx	Mid-acceleration/mid-deceleration/mid-speed/over-current fault	Overload	Reducing load or replacing impulse load of large capacity controller requires reducing load change frequency or replacing larger capacity controller
		Short circuit to the output side of the controller	Check main circuit, eliminate short circuit
		Motor damaged	Measure the resistance between the lines of the motor and replace the motor immediately if conduction
		Too short acceleration/deceleration time	Increase F01.22 [acceleration time 1] increase F01.23 [deceleration time 1] replace bulk control
		Overvoltage suppression of rising frequency may result in accelerated overcurrent fault	Decrease overvoltage gain F10.13[overvoltage gain]
		Overflow suppression of frequency reduction resulting in deceleration over current fault	Increase overcurrent suppression gain F10.02[overcurrent suppression gain]
		Controller output cable exceeds allowable maximum	Shorten output cable or add sinusoidal filter
		Mis-operation caused by interference	Check the wiring of control circuit, main circuit and ground, remove interference source
Notice: this fault is detected when the output current of the controller exceeds the overcurrent point.			
Code	Desc.	Reason	Solution
E. oUxx	Mid-acceleration/moderate/mid-speed/stop/over-voltage fault	High voltage	Reduce the supply voltage to a specified rang
		Controller output or motor short circuit	Check main circuit wiring, eliminate short circuit
		Too short acceleration/deceleration time	Determine whether the acceleration stops. The fault detection increases F01.22[acceleration time 1] increases F01.23[deceleration time 1]
		Overvoltage suppression of frequency rise may result in accelerated overvoltage fault	Increase overvoltage suppression gain F10.13[overvoltage suppression gain]
		Over-current suppression of frequency-lowering overvoltage fault	Decreasing overcurrent suppression gain F10.02[overcurrent suppression gain] and reducing load
		Surge voltage mixed with input voltage	Add reactor to input side
		Improper setting of speed tracking parameters	Change of Speed Tracking Parameters (F07.25~F07.28)
		Notice: this fault is detected when the bus voltage exceeds the overvoltage point. Three-phase input overvoltage point is 820 V, single-phase input overvoltage point is 400 V.	

Code	Desc.	Reason	Solution
E. Lu	Under pressure in operation	Power outages or instantaneous power outages	Check power and reset
		Input Power Lack Phase	Confirmation of Main Circuit Wiring
		Excessive input voltage fluctuations	Improve the power supply to meet the rated voltage of the controller if the main circuit power supply is no problem, check the main circuit side of the electromagnetic contactor whether there is a problem
Notice: this fault is detected when the bus voltage is lower than the under voltage protection point (F10.19) when the controller is running			
Code	Desc.	Reason	Solution
E. oL1	Motor overload	Overload	Reduce the load and increase the curve coefficient of overload protection
		Acceleration and deceleration time set too small	Increase F01.22,F01.23 (Acceleration and deceleration time)
		Torque lift set too large	Decrease F04.01[torque increase]
		V/F curve setting is not appropriate+	To determine the relationship between voltage and frequency of V/F curve setting, modify F04.00[V/F curve setting] Modify the custom V/F curve related parameters (F04.10~F04.19)
		The characteristics of electronic thermal relay are inconsistent with the characteristics of motor load.	Use of external thermal relays
		Abnormal output current due to input missing phase	Check the main loop to remove input phase
Code	Desc.	Reason	Solution
E. oL2	Controller Overload	Overload	Reduce load Increase the curve coefficient of overload protection of motor
		Acceleration and deceleration time too short	Increase F01.22、 F01.23[acceleration and deceleration time] Decrease F04.01[torque increase]
		Torque lift set too large	Decrease F04.01[torque increa
		V/F curve setting is not appropria	To determine the relationship between voltage and frequency of V/F curve setting, modify F04.00[V/F curve setting] Modify the custom V/F curve related parameters (F04.10~F04.19)
		Abnormal output current due to input missing phase	Check the main loop to remove input phase

Code	Desc.	Reason	Solution
E. iLF	Input missing phase	Loosening of main circuit terminal of controller	Tighten the screw and restart
		Excessive input voltage fluctuations	Improve the power supply to meet the rated voltage of the controller if the main circuit power supply is no problem, check the main circuit side of the electromagnetic contactor whether there is a problem
		Three-phase voltage imbalance	Confirm if there is a problem with the input voltage and improve the power imbalance
Code	Desc.	Reason	Solution
E. oLFxx	Output Missing Phase	Controller output side U/V/W/ phase break	Check that the motor U/V/W/ phase connection is normal check that the controller output terminal screw is loose
		Motor damage	Measure the resistance between the motor wires, and replace the motor immediately if it is connected
		Low motor power	Reset controller or motor power
Code	Desc.	Reason	Solution
E. oH2	IGBT module overheating	Excessive ambient temperature	Reduce the ambient temperature of the controller
		Overload	Reduce load Decreased F01.40[Carrier Set]
		Fan fault	Make sure that the fan is running normally. When the fan is abnormal, replace the fan and start up again
Code	Desc.	Reason	Solution
E. TExx	Self-learning failures	The output current of the controller exceeds the upper and lower limits	Check if the motor connection is correct, re-learn after reset, still report failure to seek factory support
Notice: where "xx" is self-learning fault sub code.			
Code	Desc.	Reason	Solution
E. SPD	Rapid failure	控制器应用故障Controller application	Seek technical support from manufacturers
		Improper setting of relevant parameters for rapid detection	Rapid Detection Threshold and F10.45[Rapid Detection Time]
Notice: the percentage of output motor speed relative to F01.10 [maximum frequency] is greater than F10.44 [rapid detection threshold], and the fault is reported after continuous F10.45[of rapid detection time. By F10.43 [the rapid protection action], the fault detection and the motor operation mode can be set when the fault is detected.			

9. User Service

After-sales service is a very important link to the stability of equipment operation. Because of this, KALE Environmental Technology (Shanghai) Co., Ltd. always takes it as its responsibility to provide users with high-quality products and perfect after-sales service. At present, KALE Environment has set up sales and after-sales service centers in all provinces, cities and regions across the country to ensure that customers are provided with thoughtful, fast, high-quality and all-round after-sales service in the first time, so that users can buy and use with ease.

Product technical support

Combined with the installation, commissioning and operation process of fan equipment, the user's management and maintenance personnel will be trained for free on the basic knowledge, use, and maintenance techniques of the equipment in a planned way, and the relevant qualifications and certificates of the equipment will be provided to ensure the long-term stable operation of the equipment .

If you need relevant support, you can use the following channels:

1. Log in to our company's official website www.kalefans.net, browse and download the latest product technical instructions;
2. Call our company at +86-18016245385 for support;
3. Call the corresponding sales and service personnel for support.

Our company adheres to the principle of customer first and provides you with the best quality service.

10. Product working condition

Environment	Condition
Installation Space	Interior
Environment Temperature	-15°C~55°C To improve reliability, use the product where the temperature does not change sharply.
Humidity	Less than 95% RH
Environment	Non-corrosive, flammable gases, Metal powder, oil, water and other foreign bodies will not enter the controller inside the place. Less salty.
Environment	Altitude Less than 1000m

11. Repair and maintenance

Our product design is maintenance-free, but in order to ensure the fan's long life and normal operation, the fan should also be maintained, especially for applications in harsh environments. For any maintenance on the fan or inverter controller, please make sure that the fan stops running and cut off the power supply of the controller to protect personnel.

Time interval	-Recommended maintenance work content
Trial run	-Check the fan for abnormal running sound or vibration
Every 2500 hours of work	-Frequency conversion controller dust removal -Fan blade dust removal
Every 5000 hours of work	-Check mechanical fasteners to ensure that there is no looseness -Check the wire cable to make sure there is no damage

If the fan produces severe noise or vibration during abnormal operation, it indicates that a mechanical part is damaged. At this time, it should be shut down immediately and a thorough inspection should be done.

Product warranty

Product warranty period: 12 months. For failures that occur during the warranty period, please do not try to solve it by yourself. Our company can send professional and technical personnel to provide free technical support. But the following are paid services:

- * Failure caused by incorrect use of your company.
- * Occasions where a malfunction occurs due to your company's privately modifying the company's products.
- * Occasions where failures are caused by natural disasters and fires.
- * When the warranty period is exceeded.
- * Other occasions where failures are caused by reasons that are not our company's responsibility.

The above-mentioned services are limited to mainland China, and the Shanghai company does not accept fault diagnosis and handling abroad. If customers want to provide foreign after-sales service, they need to sign a paid foreign service contract. This product is produced under strict quality management, and each set of products has passed strict testing procedures before leaving the factory.

When used in occasions where a major accident or loss will occur due to a product failure, please configure relevant safety measures.