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### 1. SAFETY REGULATION AND NOTES

Please read these operating instructions carefully before starting to work with the device .Observe the following warnings to prevent malfunctions or physical damage to both property and people .

These operating instruction are to be regarded as part of this device ,If the devices sold or transferred, the operating instructions must accompany it .

These operating instructions may be duplicated and forwarded for information about potential dangers and their prevention..

#### 1.1 Levels of hazard warnings

These operating instruction use the following hazard levels to indicate potentially hazardous situations and important safety regulations .



#### DANGER

Indicates an imminently hazardous situation which ,if not avoided ,will result in death or serious injury. Compliance with the measures is mandatory . .

#### WARNING

Indicates an imminently hazardous situation which ,if not avoided ,will result in death or serious injury. Exercise extreme caution while working.

#### CAUTION

Indicates an imminently hazardous situation which ,if not avoided ,may result in minor or moderate injury or damage of property .

#### NOTE

A potentially harmful situation can occur and ,if not avoided, can lead to property damage .

#### 1.2 Staff qualification

Only specialized electrical personnel may install

the device, perform the test run and work on the Electrical system. Only trained and authorized specialist personnel are permitted to transport, unpack, assemble, operate or maintain the device ,or to use it in any other manner .

### 1.3 Basic safety rules

Any safety hazards stemming from the device must be re-evaluated once it is installed in the end device .

Observe the following when working on the unit:  
Do not make any modifications, additions or conversions to the device without the approval of Xiangming Electromotor .

### 1.4 Electrical voltage

Check the electrical equipment of the device at regular intervals, refer to chapter 5.2 safety Test.

Replace loose connections and defective cables immediately .



#### DANGER

#### Electrical load on the device

Risk of electric shock

Stand on a rubber mat if you are working on an electrically charged device

### WARNING

**Terminals and connections have voltage even with a unit that is shut off**

Electric shock

Wait five minutes after disconnecting the voltage at all poles before opening the device .

### CAUTION

**In the event of failure ,there is electric voltage at the rotor and impeller .**

The rotor and impeller are base insulated

Do not touch the rotor and impeller once they are installed

### CAUTION

**The motor restarts automatically when operating voltage is applied,e.g after a power fauiure .**

Danger of injury

Keep out of the danger zone of the device .

When working on the device,switch off he mains supply voltage and secure the latter from being switched on again .

Wait until the device stops .

### 1.5 Safety and protective functions



#### DANGER

#### Missing safety device and non-functioning safety device

If there is no safety device, you should be seriously injured , for example by reaching into the running device with your hands.

Operate the device only with a fixed and isolating safety protection and a fixed guard grille, The guard must withstand the kinetic energy of a fan blade detaching at maximum speed .

The device is a built-in component ,You the owner/operator ,are responsible for providing adequate protection for the device .

Shut down the device immediately if you detect a missing or ineffective protective feature .

### 1.6 Mechanical movement



#### DANGER

#### Rotating device

Body parts that come into contact with the rotor and impeller can be injured

Secure the device against accidental contact

Before working on the system/ machine ,wait until all parts have come to a standstill .

### WARNING

#### Rotating device

Long hair ,loose items of clothing and jewellery could become entangled and pulled into the device. You could be injured.

Do not waer any loose clothing or jewellery while

working on rotating parts.

Protect long hair by wearing a cap .

### 1.7 Emission

#### WARNING

**Depending on the installation and operating conditions, a sound pressure level greater than 70Db(A) may arise.**

Danger of noise-induced hearing loss

Take appropriate technical safety measures

Protect operating personnel with appropriate safety equipment, e.g hearing protection .

Also observe the requirements of local agencies

### 1.8 Hot surface



#### CAUTION

### High temperature at the motor housing

Danger of burn injuries

Ensure that sufficient protection against accidental contact is provided .

### 1.9 Transport

#### NOTE

#### Transport of device

Transport the device in its original packaging only.

Secure the device so that it does not slip, e.g by using a clamping strap

### 1.10 Storage

Store the device ,partially or fully assembled, in a dry and weather proof manner in the original packing in a clean environment .

Protect the device from environmental impacts and dirt until the final installation

We recommend storing the device for a maximum up to one year to guarantee proper operation and longest possible service life.

Even devices explicitly suited for outdoor use are to be stored as described prior to being commissioned.

Maintain the storage temperature ,see chapter3.5 transport and storage conditions.

### 1.11 Disposal

When disposal of the device ,pls comply with all relevant requirements and regulations applicable in your country .

## 2.PROPER USE

The device is exclusively designed as a built-in device for moving air according to its technical data .

Any other or secondary use is deemed improper and Constitutes a misuse of the device.

Installations on the customers's side must meet the mechanical ,thermal and service life-related stresses that can occur .

#### Proper use also includes:

Use the device only for moving exhaust air from exhaust gas blowers for wood-based fuels .

Using the device in accordance with the permitted ambient temperature, see chapter 3.5 transport and storage conditions and chapter3.2 Nominal data.

Only using the device in stationary systems.

Commissioning the built-in component only after installation in the customer unit .

Operating the device with all protective features in place

Minding the operating instructions.

#### Improper use

Using the device in the following ways is particularly prohibited and may cause hazards.

Operating the device with an imbalance, e.g caused by dirt deposits or icing .

Moving highly corrosive air .e.g salt spray mist. Exceptions are device that are intended for salt spray mist and protected accordingly .

Operation with external vibrations.

Operation the device in an explosive atmosphere .

Operation in medical equipment with a life-sustaining or life saving function .

Contact with materials that could damage blower parts, e.g liquids during cleaning .

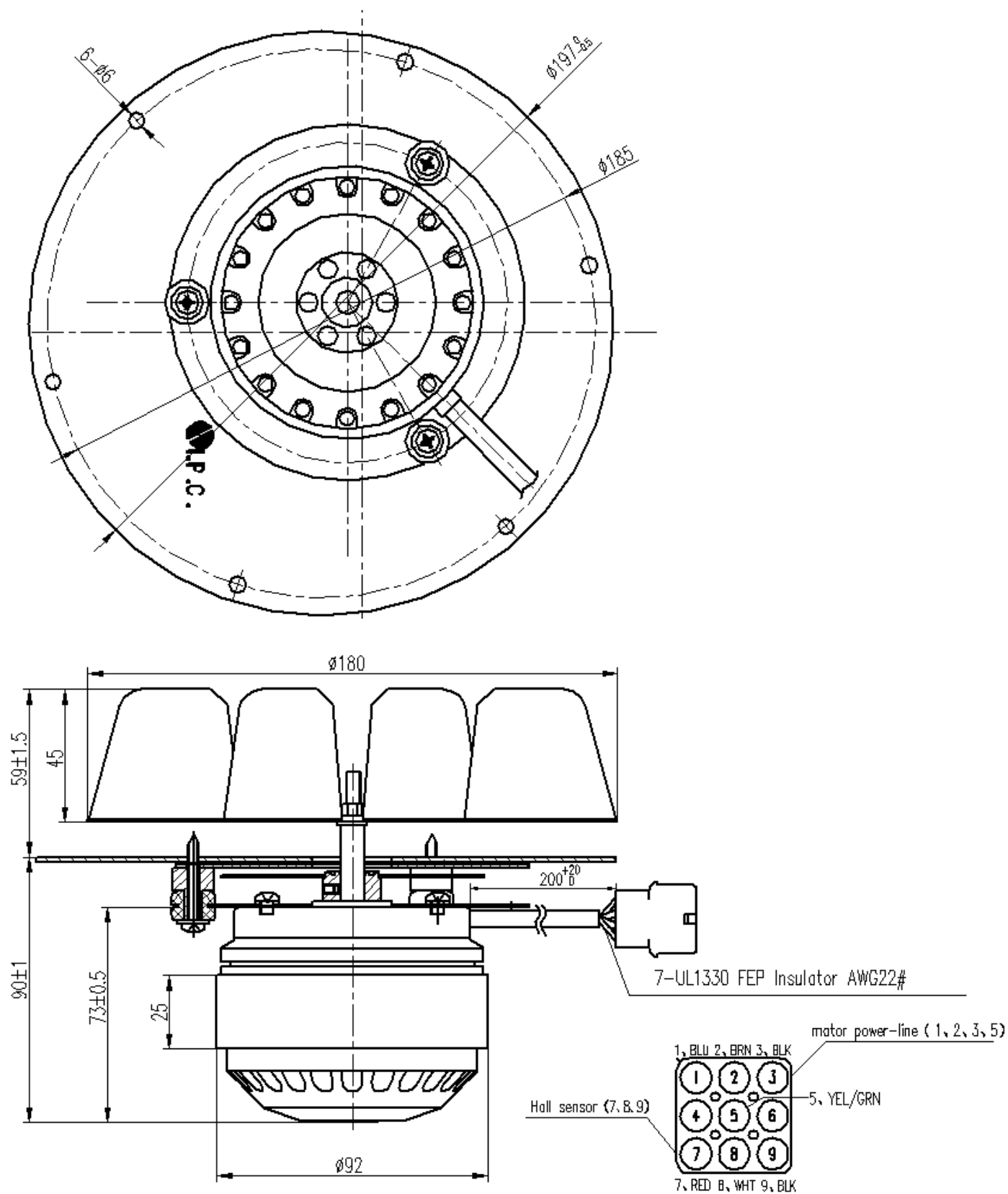
Operation with completely or partially disassembled or modified protective features .

Using the device as a safety component or for taking on safety related function .

In addition, all application options that are not listed under proper use .

## 3. TECHNICAL DATA

## 3.1 Product drawing



## 3.2 Nominal data

Motor	FLH180 SERIES
Phase	1~
Nominal voltage/VAC	230
Frequency/Hz	50
Valid for approval standard	CE
Speed/min	2200
Power input /W	110
Current draw/A	0.47
Motor/capacitor /uF	2
Capacitor voltage/VDB	450
Min. back pressure/Pa	0
Min. ambient Tem./	-25
Max. ambient Tem.	70
Starting current/A	0.66

## 3.3 Technical features

Mass	
Size	180mm
Surface of rotor	Uncoated
Material of impeller	Sheet steel, stainless
Number of blades	6
Motor suspension	Motor anti-vibration mounted on one side via mounting plate
Direction of rotation	Counter-clockwise, see on rotor
Type of protection	IP44;depending on installation and position
Insulation class	B
Humidity class	
mounting position	Any
Condensate discharge holes	None
Operation mode	S1
Motor bearing	Ball nearing
Touch current acc.IEC60990(measuring network fig.4, tn system)	<0.75mA

Motor protection	Thermal overload protector (TOP)wired internally
Cable exit	Variable
Protection class	I(if protective earth is connected by customer
Product conforming to standard	EN60335-1;CE



For cyclic speed loads, note that the rotating parts of the device are designed for maximum one million load cycles. If you have specific questions ,contact Xiangming electromotor for support.

## 3.4 Mounting data

For depth of screw ,see chapter 3.1product drawing  
Secure the mounting screws against accidentally coming loose(e.g. by using self-locking screws).  
You can obtain additional mounting data from the product drawing if necessary.

## 3.5Transport and storage conditions

Use the device in accordance with its protection type.

Max. permissible ambient motor temp.(transp./storage)	+80℃
Min. permissible ambient motor temp.(transp./storage)	-30℃

## 4.CONNECTION AND START-UP

### 4.1Connecting the mechanical system



#### CAUTION

#### Cutting and crushing hazard when removing the fan from the packaging

Carefully hold the impeller to remove the device from its packaging .Make sure to avoid and shock.

Wear safety shoes and cut-resistant safety gloves.

Check the device for transport damage. Damaged devices must no longer be installed.

Install the undamaged device according to your application .

### 4.2 Connecting the electrical system



#### DANGER

#### Electric voltage on the device

Electric shock

Always install a protective earth first .

Check the protective earth



#### DANGER

Incorrect insulation

Risk of fatal injury from electric shock

Use only cables that meet the specified installation requirements for voltage ,current ,insulation material,load etc.

Route cables such that they cannot be touched by any rotating parts.

#### CAUTION

#### Electrical voltage

The fan is a built-in component and features no electrically insulating switch .

When working on the fan you must switch off the installation /machine in which the fan is installed and secure it from being switched on again .

#### NOTE

Water penetration into leads or wires

Water enters at the cable end on the customer's side and can damage the device .

Make sure that the cable end is connected in a dry environment.



connect the device only to circuits that can be switched off using an all-pole disconnecting switch.

#### 4.2.1 Prerequisites

Check whether the data on the type plate agree with the connection data and the data of the operating capacitor .

Before connecting the device ,ensure that the supply voltage matched the operating voltage of the device

Only use cables designed for current according to the type plate .For determining the cross-section ,follow the basic principles in accordance with EN61800-5-1,the protective earth must have a cross-section equal to or greater than the outer conductor cross-section .

We recommend the use of 105°C cables, ensure that the minimum cable cross-section is at least AWG26/0.13MM<sup>2</sup>.

#### 4.2.2 Voltage control



With the open loop speed control using transformers or electronic voltage regulators(e.g phase angle control ),excessive current may occur.

In addition ,noise can occur with phase angle control depending on the mounting situation .

### 4.2.3.Frequency inverter



Fit sinusoidal filters that work on all poles(live-live and live -earth)between the frequency inverter and the motor for operation with frequency inverter .

Depending on the how the device is installed ,noise may occur

### 4.3 Connection of the cables

External leads are brought out of device

First connect the “PE”,(protective earth)connection

Connect the lines according to your application,  
When doing so, observe chapter 4.5 connection screen.

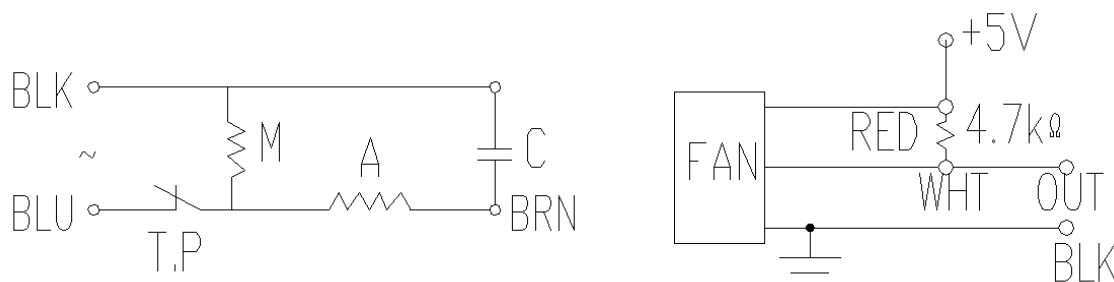
### 4.4 Connection of the Hall IC

External leads are brought out of device

Connect the lines according to your application.

When doing so , observe chapter 4.5 connection screen.

### 4.5Connection screen



### 4.6 Checking the connections

Make sure that the power is off (all phase )

Secure it from being switched on again

Check the correct fir of the connection lines .

### 4.7 Switch on device



**WARNING**

**Hot motor housing**

**Fire hazard**

Ensure that no combustible materials are located close to the fan.

Inspect the device for visible external damage and the proper function of the protective features before switching it on .

Check the air flow paths of the fan for foreign objects and remove any that are found.

Apply the nominal voltage to the voltage supply .

**4.8 Switching off the device**

Disconnect the device from the supply voltage at the main switch for the supply line .

When disconnecting ,be sure to disconnect the earth wire connection last .

**5.MAINTENANCE ,MALFUNCTIONS,POSSIBLE CAUSES AND REMEDIES**

Do not perform any repairs on your device, return the device to Xiangming electromotor for repair or replacement.

**Warning**

Terminal and connections have voltage even with a unit that is shut off

Electric shock

Wait five minutes after disconnecting the voltage at all poles before opening the device.

**CAUTION**

Electrical load on the capacitor after device is switched off

Electric shock, risk of injury

Discharge the capacitor before working on the device.

**CAUTION**

**The motor restarts automatically when operating voltage is applied, e.g. after a power failure**

**Danger of injury**

Keep out of the danger zone of the device

When working on the device, switch off the mains supply voltage and secure the latter from being switched on again .

Wait until the device stops .



If the device remains out of use for some time, e.g when in storage, we recommend switching the device on for at least two hours to allow any condensate to evaporate and to move the bearings .

Malfunction/err or	Possible cause	Possible remedy
Impeller running roughly	Imbalance in rotating parts	Clean the device, if imbalance is still evident after cleaning, replace the device. If you have attached any weight clips during cleaning ,make sure to remove them afterwards
Motor does not turn	Mechanical blockage	Switch off, de-energize ,and remove mechanical blockage
	Mains supply voltage faulty	Check mains supply voltage restore power supply
	Faulty connection	De-energize ,correct connection ,see connection diagram
	Thermal overload protector responded	Allow motor to cool off ,locate and rectify cause of error, if necessary cancel restart lock-out
	Unacceptable operating point	Check operating point

**5.1 Cleaning****NOTE Damage to the device during cleaning.**

Malfunction possible

Do not clean the device using a water jet or high-pressure washer

Do not use any cleaners containing acids,

Bases or solvents

Do not use any pointed or sharp –edged objects to clean .



## 5.2 safety test

What has to be tested?	How to test?	Frequency	Which measure ?
Check the protective casing against accidental contact for damage and to ensure that it is intact	Visual inspection	At least every 6 months	Repair or replacement of the device
Device for damage	Visual inspection	At least every 6 months	Replace device
Mounting the connection lines	Visual inspection	At least every 6 months	Fasten
Mounting of protective earth connection	Visual inspection	At least every 6 months	Fasten
Check the insulation of the wires for damage	Visual inspection	At least every 6 months	Replace wires
Weld seams for crack formation	Visual inspection	At least every 6 months	Replace device
Checking the ball bearings to ensure they are quite ,can move easily and are free of play	Manual check by turning the rotor in shut-off state	At least every 6 months	Replace device in case of noise, difficulty of movement or clearance of the bearings