Foreword

First of all, thank you for buying JZ series digital vibration Feed controller ※!

This manual provides relevant descriptions on selection, installation and commissioning, parameter setting, fault diagnosis and troubleshooting, and daily maintenance of the controller. In order to ensure the correct installation and operation of this controller, please read this user manual carefully before installation, and keep it properly.

This user manual applies to the following controller models:
■ Digital variable voltage and vibratory feeder controller, JZ20-S (5A output current)
■ Digital variable voltage and vibratory feeder controller, JZ20-S (10A output current)

Note: ※ This manual is referred to as the controller

Special attention should be paid to the following:
1. Under no circumstances can you unplug the cable or try to touch the terminal of the controller in the power-on state to prevent electric shock and accidents.
2. Please do not connect the 220V controller to 380V AC, which will cause serious damage to the controller! (If you need the controller to work at 380V voltage, please choose 380V series products.)
3. Please avoid using relays and other devices to control the output of the controller by cutting off the power supply, which will seriously reduce the service life of the controller. (Please refer to the subsequent chapters of this manual, which provide the operation method of the controller)
4. The controller is designed to be used in a cool and dry environment, and shall not be placed outdoors, or placed in the place that may be soaked in water or with sun exposure and other fields, and it shall not work in the temperature and humidity range that exceeds the requirements of the control electrical characteristics.
5. Under no circumstances, it shall not work beyond the design limit.
6. Please operate the controller in strict accordance with this manual. The company shall not bear any civil or criminal liability for any equipment or personal injury caused by non-operation in accordance with this manual.
7. Please do not open the controller housing, in case of electric shock. If the controller is faulty, please call us and we will help troubleshoot the problem or arrange a repair as soon as possible.

Record of Version Change

Version	Date	Modification point	Remarks
V1.0	October 2021	New	

Working and storage environment

I. Inspection before use

Each controller has undergone strict quality testing before leaving the factory, and has done enhanced anti-collision packaging treatment. After the customer unboxes the controller, please immediately carry out the following checks:

1. Check the equipment appearance is damaged in the transportation process;

2. Check whether the controller model is exactly the same as the order registration information.

II. Working environment

In order to make the controller have a better use effect and longer service life, please pay attention to the following matters when installing: ★ Good ventilation and heat dissipation environment

★ Keep away from water droplets, steam, dust, especially oily dust.

★ No corrosive, flammable gas, liquid.

★ Free from floating dust and metal particles.

★ Strong without vibration.

★ Away from electromagnetic noise interference.

III. Electrical characteristics and specifications (taking JZ20-S as an example)

Exceeding the electrical characteristics will cause serious damage and must be eliminated!

Electrical characteristics

Item	Value			Unit	Introduction
	Minimum	Typical	Maximum		
Input voltage	155	220	260	V(AC)	Single-phase 50/60Hz
Working ambient temperature	- 10	20	40	℃	The derating use at 40-50 ° C
Working ambient humidity	10	60	90	%RH	Non-condensate

Specifications (test conditions: input voltage 220V AC)

Item	Scope		Unit	Introduction
	Minimum	**Maximum**		
Output voltage	0	260	V (Volt)	
Minimum adjustable voltage	1	-	V (Volt)	
Vibration frequency	50/ 100 60/ 120		HZ	
Output waveform	Sine			Or partial sine
Output current	-	5.0	A	JZ20-S Low power
Output power	-	1100	VA	JZ20-S Low power
Ranges of delay time	0	20	S	
Minimum adjustable delay time	0.1	-	S	
Startup time	0	10	S	
Auxiliary supply voltage	10.5	13.5	V (Volt)	12V DC low voltage power supply
Auxiliary supply current	0	200	mA	12V DC low voltage power supply
No-load power consumption		1.5	W	
Display mode	-	4	Bit	LED digital tube
Control mode	1.0~5.0		V (Volt)	Line-controlled voltage
	TTL reference level			Switching signal
	4-key + LED			Soft contact of panel keyboard

Contents

Chapter I Controller composition

1.1 Keyboard and Indicators
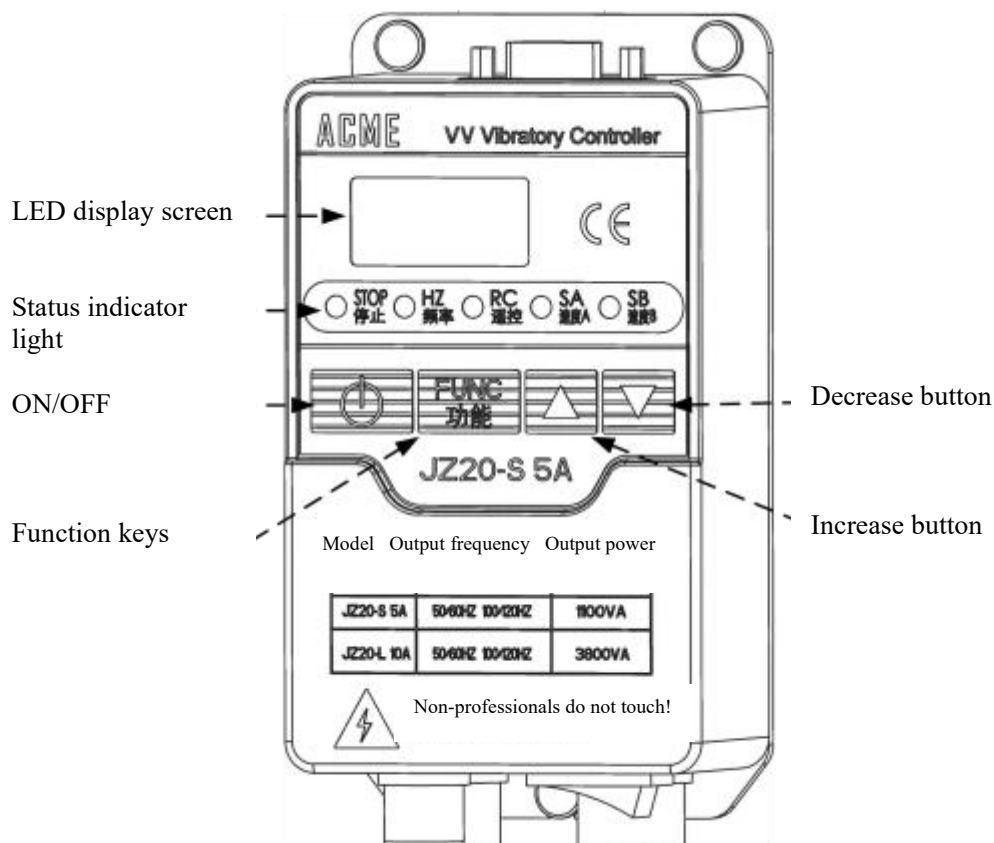
Status indicator light:
Stop indicator light: This light lights up when the controller has no output voltage. When the controller outputs voltage, the indicator turns off.
Frequency indicator light: It currently displays frequency set value, and this light on.
Remote control indicator: This light is lit when the external wired controller (analog) signal is active. At this time, the voltage key adjustment is invalid.
Speed A indicator: When the speed A signal in the control terminal is effective, this light is lit.
Speed B indicator: When the speed B signal in the control terminal is effective, this light is lit.

1.2 Description of external components

Controller bottom component view:

Fuse

Output
aviation
plug

Power switch

Power input
aviation plug

DB15 terminal
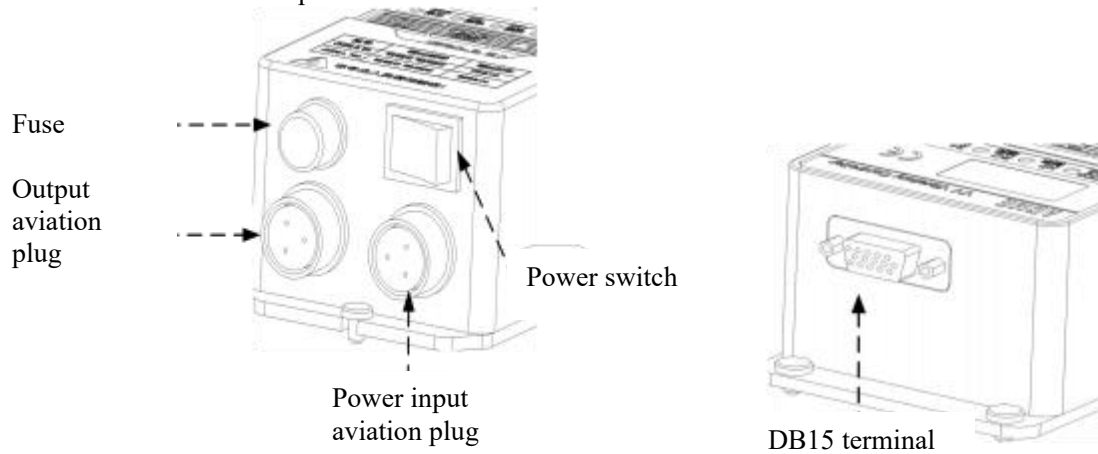
JZ20-S (5A)

Chapter II Quick installation and trial operation

In order to facilitate new customers to operate the controller quickly, we summarize the controller installation operation as follows:

Step 1: Open the outer package of the controller, and check the appearance and nameplate on the side of the controller to check whether it is the required model.

Step 2: Take out the output cable from the kit, connect the terminal of the output cable to the electromagnetic coil of the vibration disc, insert the aviation plug of the output cable to the controller, and lock the nut.

Output line
Input line

Ground wire (yellow -green two-color line)
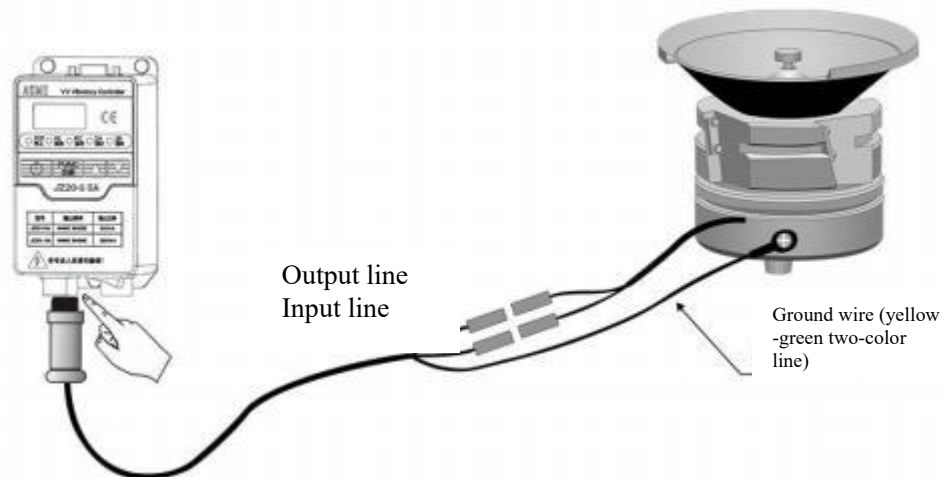
Note: ※ Please confirm that the electromagnetic coil is connected to the two output pins, and the housing needs to be reliably grounded, otherwise it will cause the housing to be charged, and serious safety accidents may occur!

Step 3:
Insert the aviation plug of the input power cable into the controller first and lock the nut.

Aviation plug first
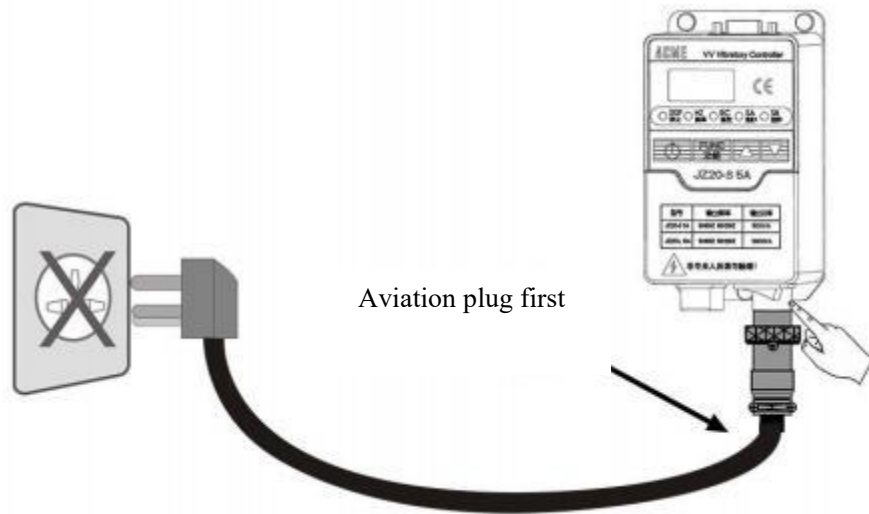
Step 4:
Plug the three-prong plug of the power cable into the power supply outlet.
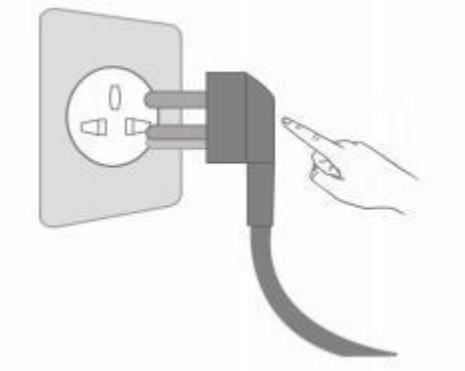
Step 5:
Turn on the controller power switch.
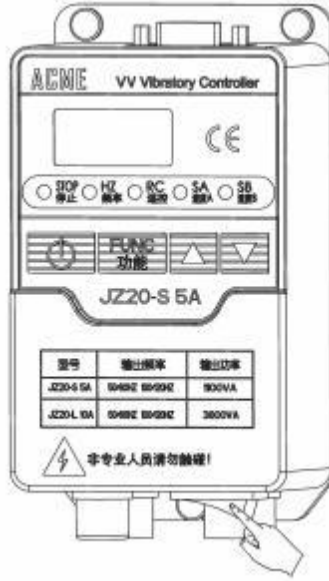
Step 6:
Adjust the set output voltage between 60V and 100V

Model   Output frequency   Output power

Non-professionals do not touch!
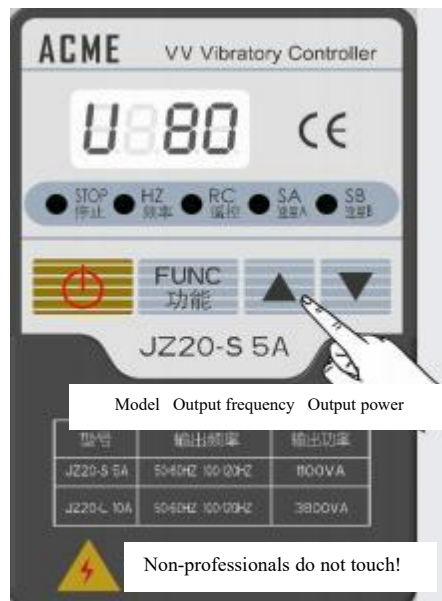
Step 7:

Press the "Function" key to enter the frequency selection parameter and use the "▲" or "▼" key to switch the output frequency to 50HZ or 100HZ.

Model   Output frequency   Output power

| JZ20-S 5A | 50-60HZ 100-120HZ | 1100VA |
| JZ20-L 10A | 50-60HZ 100-120HZ | 3800VA |

Non-professionals do not touch!
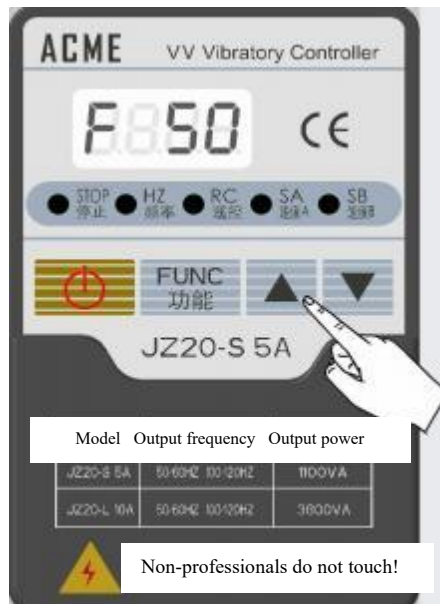
Step 8:

After selecting the frequency, use "▲" or "▼ "to adjust the voltage to the desired output value.

Model   Output frequency   Output power

| JZ20-S 5A | 50-60HZ 100-120HZ | 1100VA |
| JZ20-L 10A | 50-60HZ 100-120HZ | 3800VA |

Non-professionals do not touch!
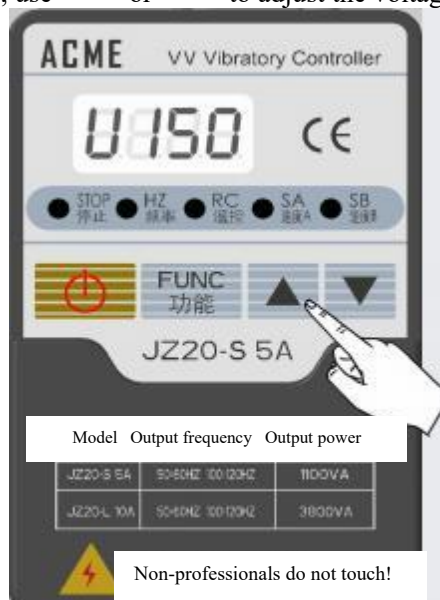
After completing the above steps, the controller is capable of preliminary work, if you need other functions, please refer to the other parts of the manual.

Chapter III Definition of external connection

The controller can support a variety of external signals or sensors as an instruction source to control the operation of the machine. There is also a DO output that can be used to drive external relays, switches, etc. in conjunction with the vibration disk controller. This chapter mainly introduces the wiring methods of intelligent photoelectric sensor, stop control for input port full/empty of photoelectric switch sensor, remote speed control and other input signals, and DO output signals.

3.1 Wiring methods of intelligent photoelectric sensors

The controller combined with the photoelectric counter-radiation sensor can realize the full/empty material function, and the controller automatically removes the background light beam.
The influence of sensor sensitivity makes the sensor work reliably without manual sensitivity adjustment.
Connect the photoelectric sensor according to the legend
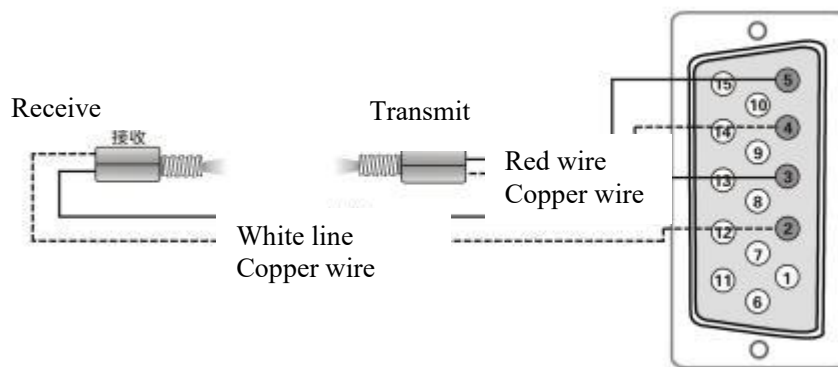
5-pin - intelligent photoelectric generator signal output, 4-pin - intelligent photoelectric signal ground;
3-pin - intelligent photoelectric generator signal output, 2-pin - intelligent photoelectric signal ground;

Note: Under the factory default settings, the logic of the sensor is the material empty logic.

3.2 Wiring method of switch sensor input port

The control supports all kinds of switch sensors, such as proximity switch sensors, photoelectric sensors, optical fiber sensors, etc., and the controller uses these signals to achieve automatic start and stop functions.

3.2.1 Wiring method of three-wire NPN proximity switch sensor

Connect sensors according to legend
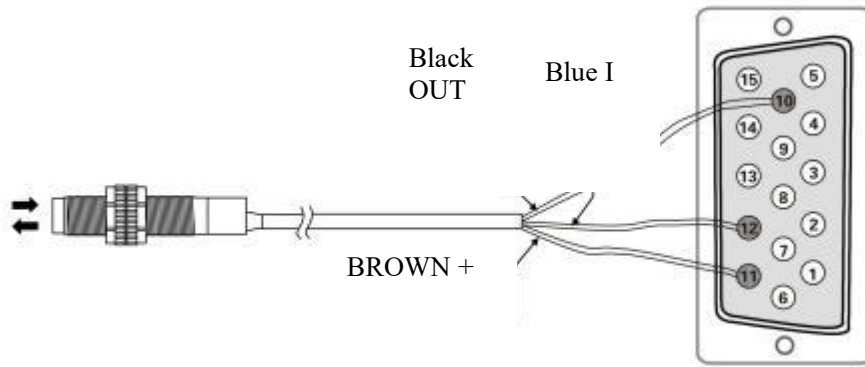
Black
OUT

Blue I

BROWN +

**10-pin - photoelectric switch input (low level effective), 12-pin -12V power /COM
11 pin -12V power output.**

3.2.2 Wiring method of the reflector NPN sensor
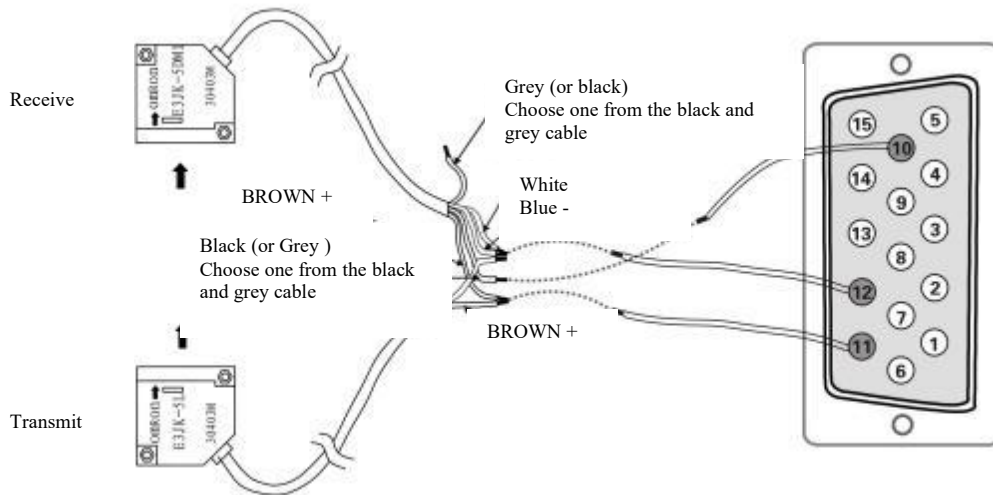
Receive

BROWN +

Black (or Grey)
Choose one from the black
and grey cable

Transmit

Grey (or black)
Choose one from the black and
grey cable

White
Blue -

BROWN +

**10-pin - photoelectric switch input (low level effective), 12-pin -12V power /COM
11 pin -12V power output.**

3.2.3 Wiring method of a photoelectric counter-radiation sensor

Receive
Blue I
Black OUT
Blue -
BROWN +
BROWN +
Transmit

10-pin - photoelectric switch input (low level effective), 12-pin -12V power /COM
11 pin -12V power output.

3.2.4 Wiring method of optical fiber counter-radiation sensor

Receive
Transmit
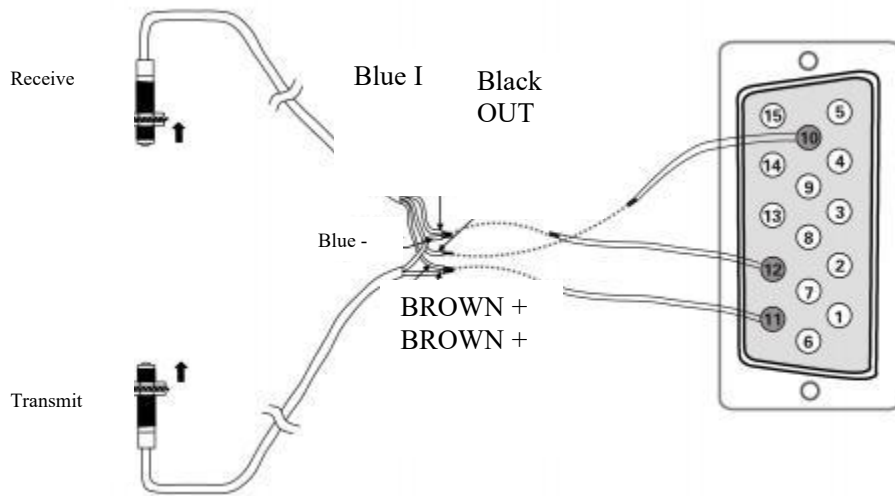Optical fiber sensor
White (or black) Choose one from the black and white cable
Black (or white) Choose one from the black and white cable
Blue
BROWN
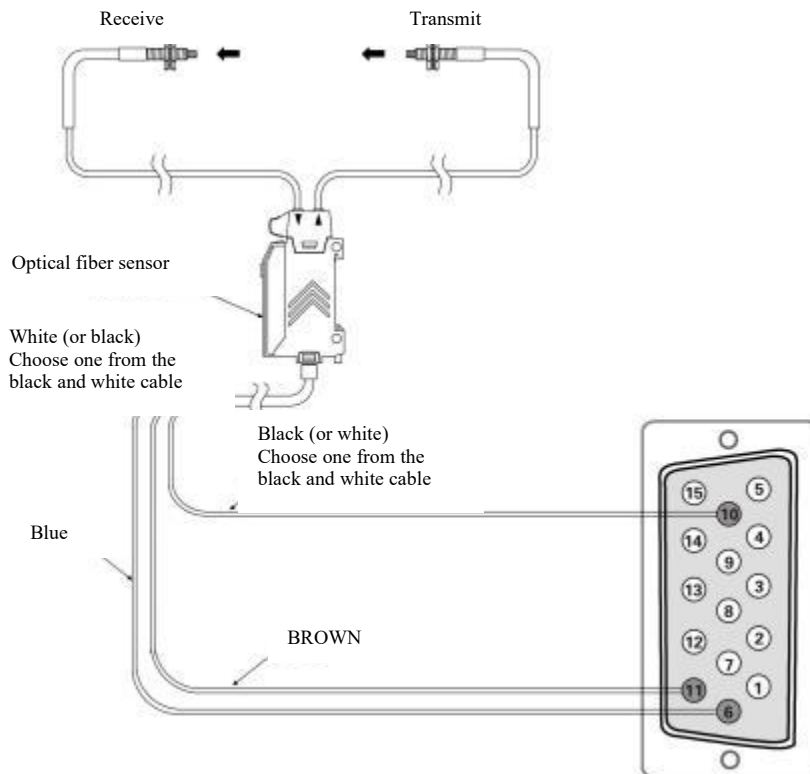
10-pin - photoelectric switch input (low level effective), 6-pin controller ground
11 pin -12V power output.

3.3 Wiring method of PLC to control the start and stop of vibration feeder

Connect the PLC signal line according to the legend

The photoelectric signal input
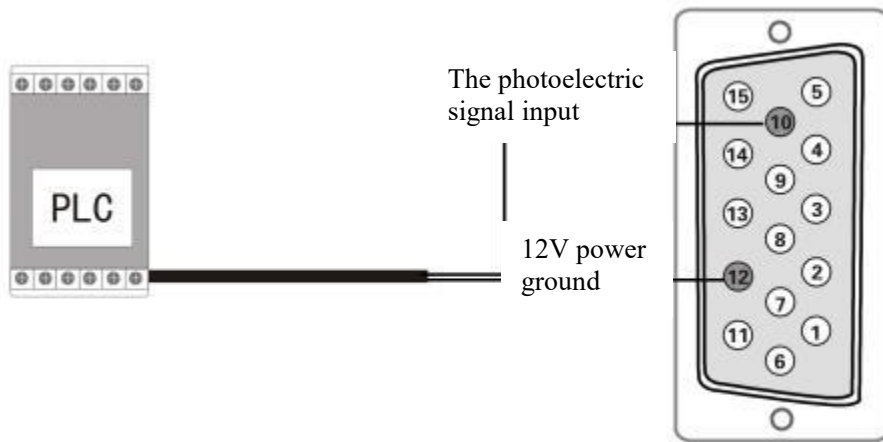
12V power ground

10-pin - photoelectric switch input (low level effective), 12-pin -12V power /COM-, and external PLC common ground please connect COM-.

3.4 Wiring method for starting and stopping the second photoelectric sensor

The controller supports the connection of two photoelectric sensors. The second sensor connection method is as follows:

The second photoelectric switch input

12V ground
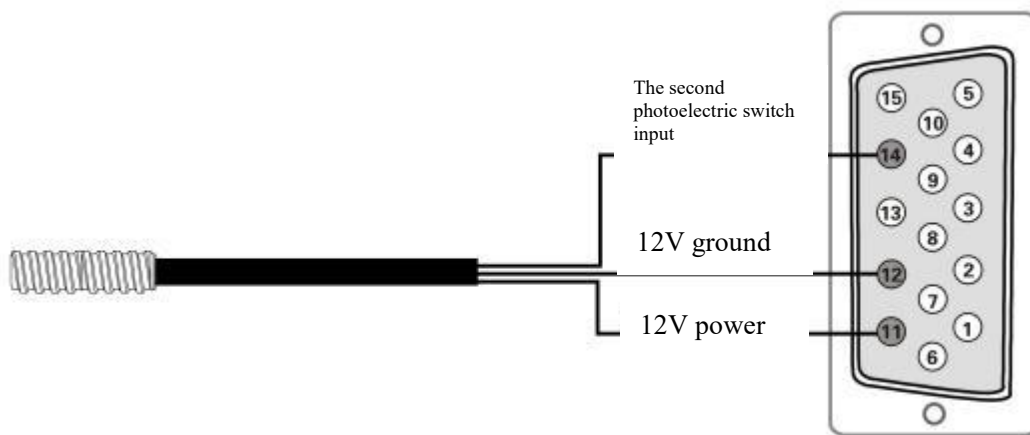
12V power

14-pin - the second photoelectric switch input (low level effective), 12-pin -12V power /COM
11 pin -12V power output.

3.5 The DO Connection

The controller can output low-voltage signals to synchronize other devices to work together, such as solenoid valves, PLCS, etc.
PLC wiring mode:

Control
output DO
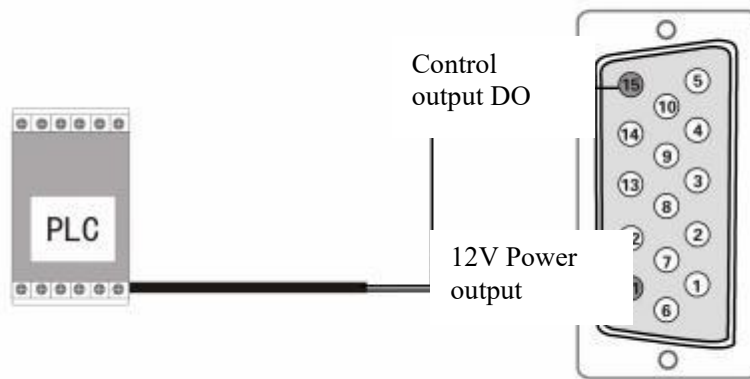
12V Power
output

15 pin - Control output DO, 11 pin -12V power output

Wiring method of control over solenoid valve:

Control
output

Solenoid valve
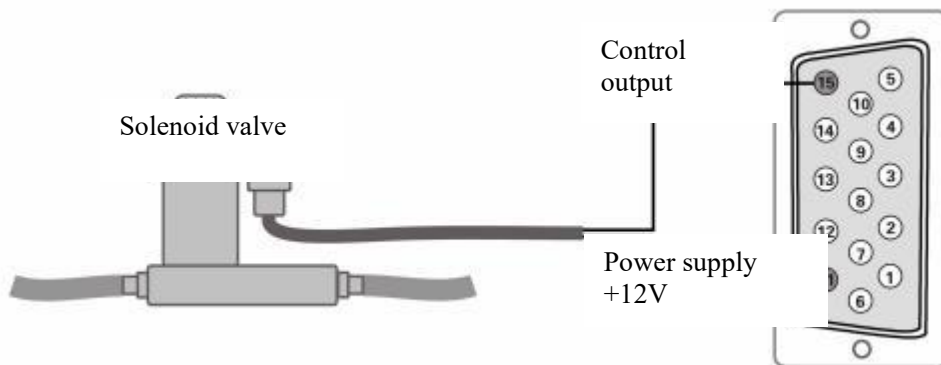
Power supply
+12V

◆ **The controller can directly drive the solenoid valve with a rated voltage 12V, and power less than 4W.**
◆ **If the solenoid valve power is too large, it is necessary to consider the use of external power supply.**

Wiring mode of control relay:

Control output

Power supply +12V
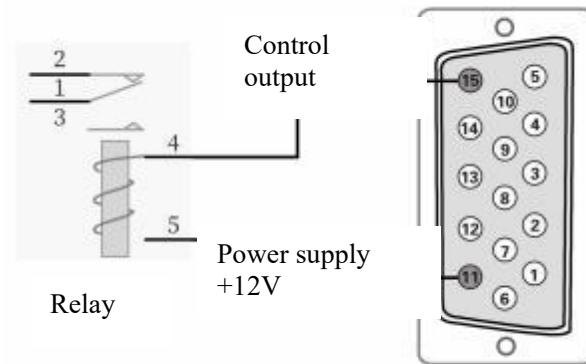
Relay

◆ **The controller can directly drive the relay with a rated voltage 12V, and power less than 4W.**

3.6 Wiring method for remote speed control

The controller supports remote speed control, allowing the user to control the output voltage through an external potentiometer or 1-5V analog, so that the user can perform remote speed control through PLC and other devices. When the input voltage of the remote speed control exceeds 0.5V, the output voltage control takes effect. At this time, the controller panel wire control indicator light is lit, and it is invalid to adjust the voltage by pressing the button. The control panel will display the set voltage given by the remote control.

Wiring method of remote speed control potentiometer:

Wire power supply (ground)
Input by wire control
+5V power supply

Suggestions: Please use a linear potentiometer with 1K resistance
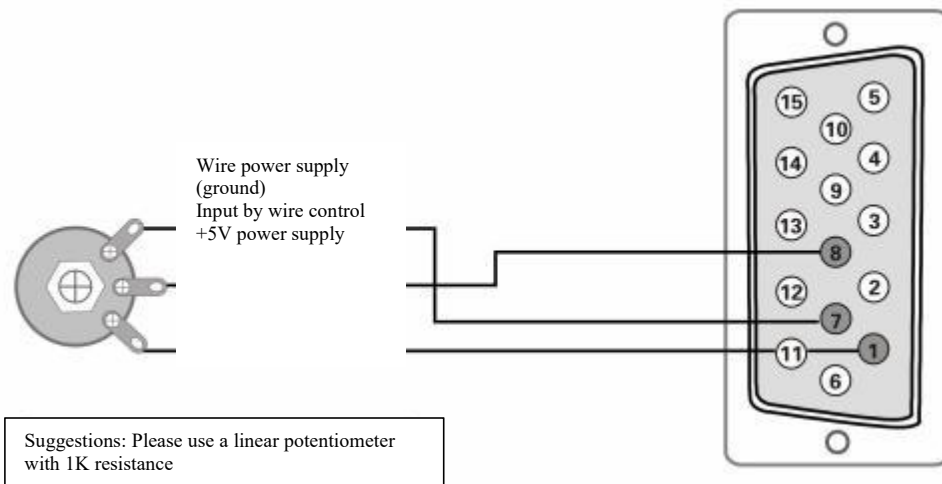
Wiring method of remote control PLC:

Analog output
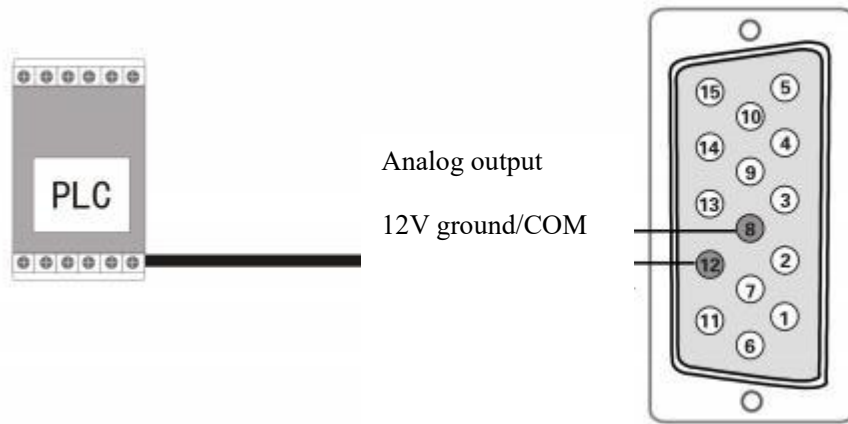
12V ground/COM

8 pin-Analog output   12pin-12v ground/com

For common ground with external PLC, please connect COM-.

3.7 Wiring method of speed gear switch

The speed gear selection function is the function of selecting the preset speed directly through the external signal. Through the selection switch external devices such as PLC, sensor or other signal sources, the user can easily select the multi-speed of the controller to achieve efficient feeding. Speed gear selection There are two gear switches A, B, which can achieve three speed selection according to the combination.

Speed switch A   Speed switch B
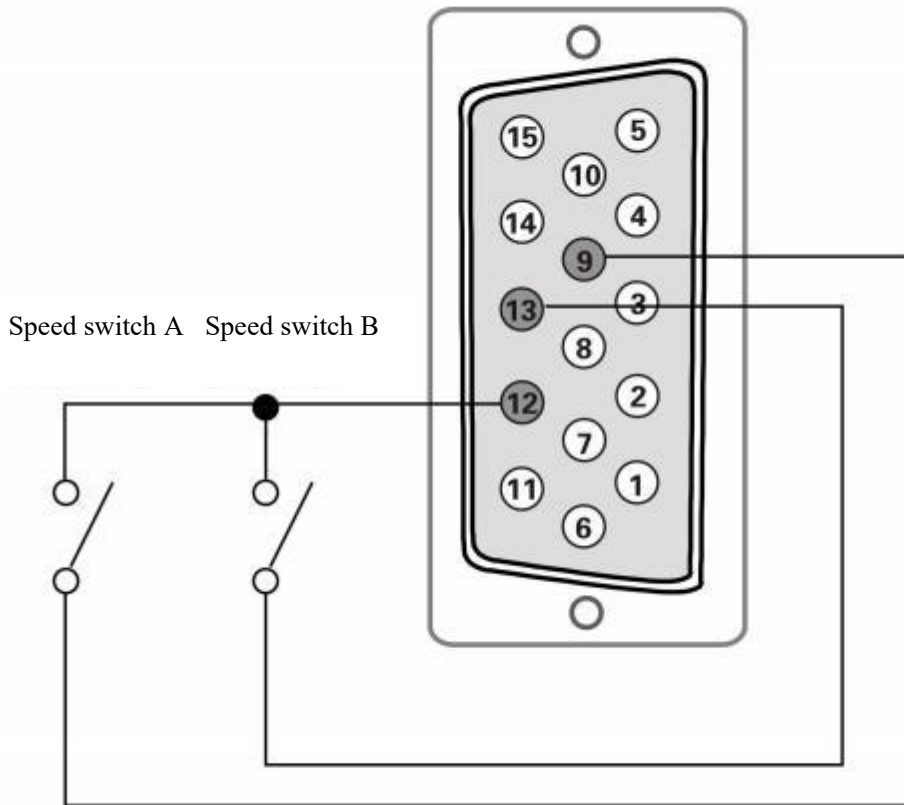
9-pin - Speed A gear, 13-pin - speed B gear, 12-pin -12V power /COM-, with external PLC and other common ground, please connect COM-.

The two speed gear switches are connected to 9 pin and 13 pin of DB15 respectively, and the low level is effective. When the switch A's signal is effective, the speed light A of the panel LED is lit, and when the switch B's signal is effective, the speed light B of the panel LED is lit. When two switches AB are effective at the same time, both speed light A and B are lit.

Through the selection of control signals, the controller will enter the corresponding speed gear. When the controller displays the voltage parameter state, the voltage value of speed A and B can be modified, and the controller automatically completes the saving. When the A and B switches are effective, the output immediately switches to the voltage value corresponding to the speed A and B set last time.

Chapter IV Parameter adjustment and explanation

According to different adjustment methods, the parameters of the controller are divided into basic parameters and advanced parameters.

Error status

The function key is held down for 1 second

Basic parameters menu

Page turning   Settings
The function key is held down for 1 second

Advanced parameter menu

Page turning   Settings
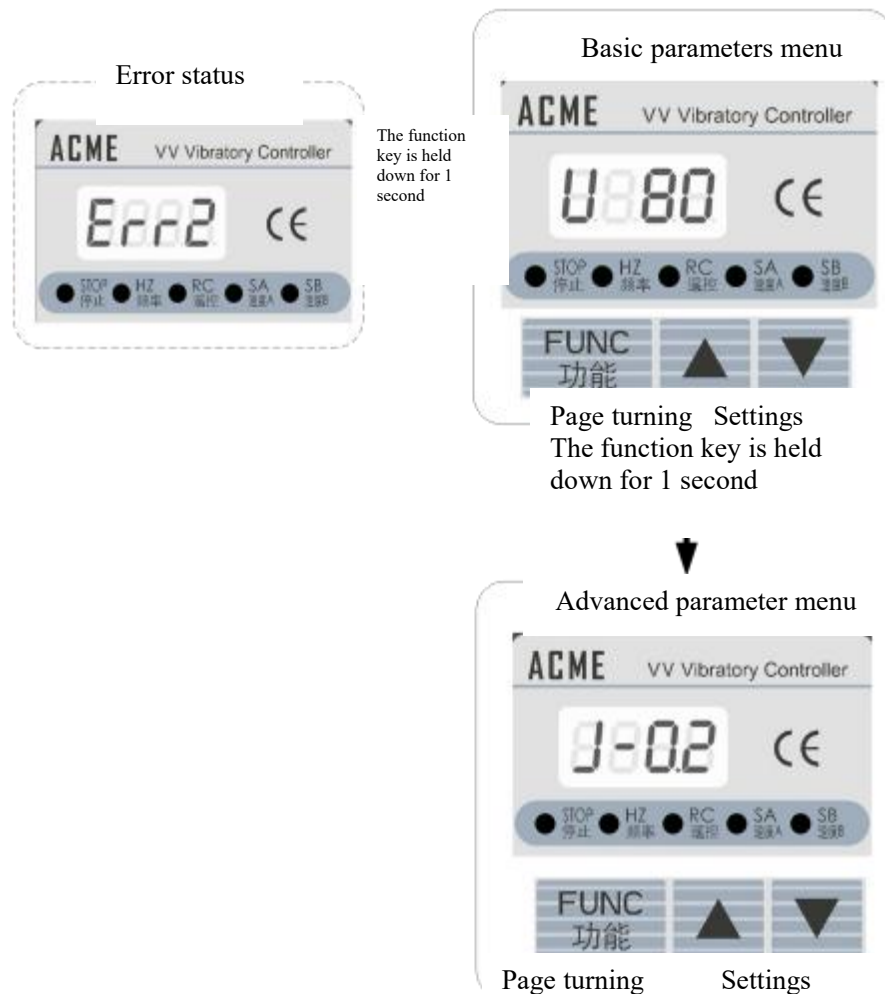
Figure 3.1 Schematic diagram of menu switching mode

Switching relationship between basic menu and advanced menu:

◆ Under the basic menu, hold down the "Function" key for 1 second to enter the Advanced parameter menu. On the advanced parameters menu, you can press the "Function" key once to switch 15 parameters, including the input port shutdown delay of the power switch sensor. You can press "▲" and "▼" to adjust the parameter values.

◆ When the advanced menu is displayed, long press the "Function" key for 1 second, and the panel will return to the basic menu display.

Switching relationship between error display and basic menu:

◆ In the case of error, the LED flashes the alarm code, if you need to set the controller at this time, you can long press the "Function" key to enter the basic menu display, and then operate as above.

4.1 Basic parameters menu

◆ When the basic menu is displayed, short press the "Function" key to switch between the basic parameters.

◆ Use the " ▲ " and " ▼ " key to adjust the parameter value.

4.1.1 Output voltage

This parameter sets the output voltage of the controller, in V. The output voltage of the controller cannot exceed the input voltage. When the set voltage exceeds the input AC voltage, the output voltage will be output at the input voltage value.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Output voltage	U	0	260	150

4.1.2 Output frequency

This parameter is used to select the controller's output power frequency (half wave) or twice the power frequency (full wave). When the power frequency is 50HZ, the frequency F is adjusted to 50, the output frequency is 50HZ (half wave), and the output frequency is 100HZ when it is adjusted to 100
(full wave).

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Output frequency	F	50-half wave 100-full wave	100	100

Note: ※ Through the advanced menu, the controller can be set to support 60HZ power input. ┌E After the frequency F is set, the output frequency can be 60HZ (half-wave) or 120HZ (full-wave).

4.1.3 Startup delay of intelligent photoelectric sensor

When sensors or other external components such as PLC are used to start and stop the controller, in most cases, the operation needs to be delayed for a period of time after giving the signal or resuming the signal. This kind of application can be achieved by setting the startup delay and shutdown delay time.

Startup delay: The delay time experienced from the application of a control signal to bring the controller into operation to the output voltage of the controller's main loop is called the startup delay.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Startup delay of intelligent photoelectric sensor	⌐	0.0	20.0	0.2

4.1.4 Shutdown delay of intelligent photoelectric sensor

Shutdown delay: The delay time experienced from the application of a control signal to bring the controller into a stop status to the stopped output voltage of the controller's main loop is called the shutdown delay.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Shutdown delay of intelligent photoelectric sensor	∟	0.0	20.0	0.2

4.1.5 Soft start time

When the controller is started from the stopped state (including power-on startup), the output voltage can be smoothly raised to the set value to prevent shock to the vibrating device and controller.
The unit is second and can be adjusted for a minimum of 0.1 second.
Soft start time: The time it takes to raise the output voltage from 0V to the maximum voltage. The time taken by the controller to raise from 0V to the set voltage is calculated by the following formula:
$\frac{Voltage\ of\ output}{Maximum\ voltage} \times$ Soft start time.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Soft start time	⌐	0.0	20.0	0.5

4.1.6 Alarm records

After the controller alarms, the alarm code will flash on the panel, long press the "Function" key interface to enter the common parameter menu, then long press the "Function" key to enter the basic parameter menu, short press "Function" to review the alarm record. The highest priority alarm code currently occurring is recorded here.

If the controller is not faulty, Er.0 is displayed.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Error records	Er.	0	-	0

Note: ※ This parameter is a display value and cannot be modified.

4.2 Advanced parameter menu

◆ When the basic parameter menu is displayed, press and hold "Function" key for 1 second to enter the advanced parameter adjustment menu.
◆ When the advanced parameters menu is displayed, short press the "Function" key to switch between the advanced parameters.
◆ Use the "▲" and "▼" key to adjust the parameter value.
◆ Hold down the "Function" key again for 1 second to exit the advanced parameter menu state.

4.2.1 Startup delay of photoelectric switch sensor at the input port

In the default state, the startup delay and shutdown delay time of the input port of the photoelectric switch sensor and the intelligent photoelectric sensor are always the same. The user can also set the startup delay time and shutdown delay time for the photoelectric switch sensor separately. At this time, the input of the photoelectric switch sensor and the intelligent photoelectric sensor have independent startup delay time and shutdown delay time.

Photoelectric switch sensor input port startup delay (⌐): The delay time experienced from the application of a control signal to bring the controller into operation to the output voltage of the controller is called the startup delay.
The unit is second and can be adjusted for a minimum of 0.1 second.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Startup delay of photoelectric switch sensor at the input port	⌐-	0.0	20.0	0.2

4.2.2 Shutdown delay of photoelectric switch sensor at the input port

Photoelectric switch sensor input port shutdown delay (L⁻): The delay time experienced from the application of a control signal to bring the controller into a stop status to the stopped output voltage of the controller is called the shutdown delay.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Shutdown delay of photoelectric switch sensor at the input port	⌞–	0.0	20.0	0.2

Note: When the startup delay and shutdown delay time of the switch sensor input port are set to 0, the independent delay time of the switch sensor input port will be closed. When the independent startup delay and shutdown delay of switching value input port are off, the startup delay and shutdown delay time is the same as the startup delay and shutdown delay time of the intelligent photoelectric sensor.

When the independent startup delay and shutdown delay of switching value input port are on, the on and off time will be determined by the startup delay and shutdown delay respectively.

### 4.2.3 Startup delay of the second photoelectric sensor switch at the input port

In the default state, the startup delay and shutdown delay time of the three sensors is always the same. The user can also set the startup delay time and shutdown delay time for the second switch sensor separately, and the second photoelectric switch sensor has an independent startup delay and shutdown delay time.

The second photoelectric switch sensor input port startup delay (⌐⌐): The delay time experienced from the application of a control signal to bring the controller into operation to the output voltage of the controller is called the startup delay.
 The unit is second and can be adjusted for a minimum of 0.1 second.
Second(s).

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Startup delay of the second photoelectric switch sensor at the input port	⌐⌐	0.0	20.0	0.2

4.2.4 Shutdown delay of the second photoelectric sensor switch at the input port

Shutdown delay of the second photoelectric sensor switch at the input port (⌞⌐): The delay time experienced from the application of a control signal to bring the controller into a stop status to the stopped output voltage of the controller is called the shutdown delay.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Shutdown delay of the second photoelectric switch sensor at the input port	⌞⌐	0.0	20.0	0.2

Note: When the startup delay and shutdown delay time of the switch sensor input port are set to 0, the independent delay time of the switch sensor input port will be closed. When the independent startup delay and shutdown delay of switching value input port are off, the startup delay and shutdown delay time is the same as the startup delay and Shutdown delay time of the intelligent photoelectric sensor.

When the independent startup delay and shutdown delay of switching value input port are on, the on and off time will be determined by the startup delay and shutdown delay respectively.

4.2.5 Maximum output voltage

The controller can set the maximum output voltage, which is used to complete the limit of the maximum output voltage.

This parameter can prevent users from operating the output voltage in a wrong way and damaging the vibration equipment. This parameter is also limited when the speed is controlled by analog.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Maximum output voltage:	h	0	260	260

4.2.6 The logic of photoelectric switch sensor at the input port

Under normal circumstances, when the input port of the photoelectric switch sensor does not access the signal, under the action of the internal pull-up resistance, it is equivalent to the port input high level. In the factory default setting, the controller is in the running state, and the photoelectric switch sensor input port is connected to the low level. In the factory default setting, the controller is in the stopped state. However, for some applications, reverse logic is required, that is, when the photoelectric switch sensor input port does not add any signal, the controller is in a stopped state, and the function can be achieved by this parameter.

◆ The logic (⌐|) is set to normally open. When the input port of the photoelectric switch sensor is connected to the high level, the controller is in the running state, the low level is closed, and the controller is in the stopped state.

◆ The logic (⌐|) is set to normally closed. When the input port of the switch sensor is connected to the high level, the controller is in the stopped state, and when the input port is connected to the low level, the controller is in the running state.
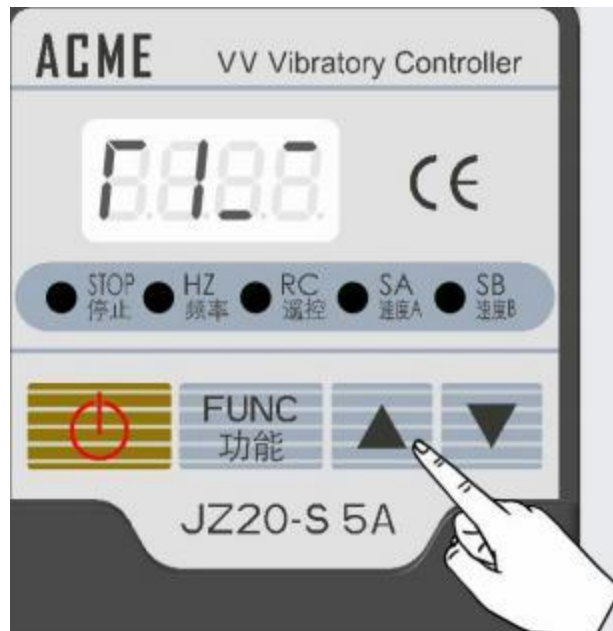Setting steps:
Step 1: In the basic menu state, press the "Function" key for 1 second to enter the advanced menu setting state.

Step 2: Hold short and press the "Function" ⌐| key to switch to the display.
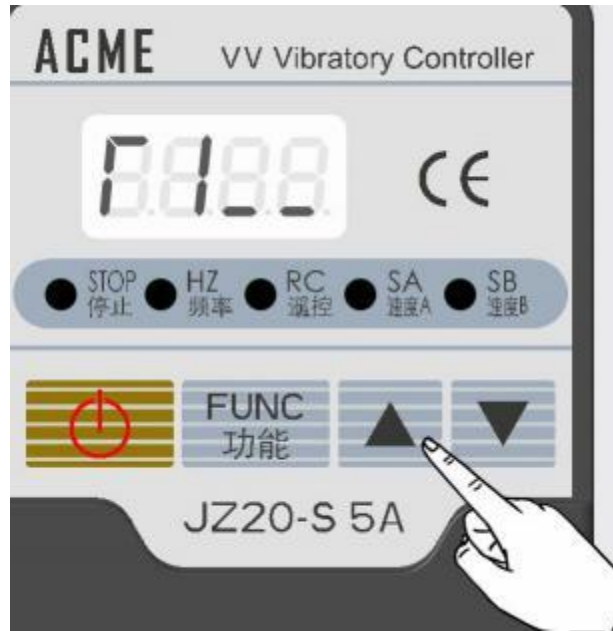
Step 3:can be normally closed or normally open by using the "▲" and" ▼ "keys.

Parameter name	Mark and symbol	Minimum value (normally open)	Maximum value (normally closed)	Default value
The logic of photoelectric switch sensor	Γι	●●	‾	●●

Note: Normally open logic in this manual: ●● , Normally closed logic: ‾

4.2.7 The logic of intelligent photoelectric sensor

Under normal circumstances, when the photoelectric counter-radiation sensor does not receive an optical signal, the controller is in the "running" state under the factory default settings (normally open logic). However, for some applications, reverse logic is required, that is, when the optical signal is not received, the controller is in the "stop" state, which can be achieved by this parameter.

◆ The logic (⌐⊇) is set to normally open. When no optical signal is received, the controller is in the running state, and when optical signal is received, the controller is under the stop state.

◆ The logic (⌐⊇) is set to normally closed. When no optical signal is received, the controller is in the stop state, and when optical signal is received, the controller is under the running state.

Parameter name	Mark and symbol	Minimum value (normally open)	Maximum value (normally closed)	Default value
The logic of the switch sensor input port	⌐⊇	--	-‐	--

4.2.8 The logic of the second switch sensor at the input port

Under normal circumstances, when the input port of the second switch sensor does not access the signal, under the action of the internal pull-up resistance, it is equivalent to the port input high level. In the factory default setting, the controller is in the running state, and the switch sensor input port is connected to the low level. In the factory default setting, the controller is in the stopped state. However, for some applications, reverse logic is required, that is, when the switch sensor input port does not add any signal, the controller is in a stopped state, and the function can be achieved by this parameter.

◆ The logic (⌐϶) is set to normally open. When the input port of the switch sensor is connected to the high level, the controller is in the running state, the low level is closed, and the controller is in the stopped state.

◆ The logic (⌐϶) is set to normally closed. When the input port of the switch sensor is connected to the high level, the controller is in the running state, the low level is closed, and the controller is in the stopped state.

Parameter name	Mark and symbol	Minimum value (normally open)	Maximum value (normally closed)	Default value
The logic of the switch sensor input port	┌ ヨ	▬ ▬	▬ ‾	▬ ▬

4.2.9 The logic of the DO output port

Under normal circumstances, the DO output port logic is normally open under factory default settings, and the voltage between 1 pin and 2 pin of the DO output port is 12V when the driver is running. Reverse logic is required in applications, that is, when the driver is running, the output port voltage is low. This function can be achieved by setting this parameter.

◆ DO output port logic (┌Ч) is set to normally open. When the controller runs, DO output port output 12V, and when the controller stops, and DO output port output 0V.

◆ DO output port logic (┌Ч) is set to normally closed. When the controller runs, DO output port output low level, and when the controller stops, and DO output port output 12V.

Parameter name	Mark and symbol	Minimum value (normally open)	Maximum value (normally closed)	Default value
The logic of the DO output port	┌Ч	▬ ▬	▬ ‾	▬ ▬

4.2.10 The logic of operation control

Under normal circumstances, the operating state of the controller depends on the external signal, the logical relationship between the state of the intelligent photoelectric sensor, the input port of the switch sensor and the panel switch and the internal parameter setting. In some cases, it is necessary to shield the control of the controller by external signals. This function can be implemented with this parameter.

◆ The operation control logic (┌5) is set to normally open, and the operation control of the controller is associated with external input signals.
That is, the input port of intelligent photoelectric sensor and switch sensor can affect the running state of the controller.

◆ The operation control logic (┌5) is set to normally closed, and the operation control of the controller is not associated with external input signals.
That is, the input port of intelligent photoelectric sensor and switch sensor cannot affect the running state of the controller. In the normally closed state, the operating state of the controller depends only on the power switch and the on-off key control on the panel.

Parameter name	Mark and symbol	Minimum value (normally open)	Maximum value (normally closed)	Default value
Run control logic	$\mathsf{\Gamma5}$	--	--	--

4.2.11 The logic relationship of control signal

The controller can set the logical relationship when the intelligent photoelectric sensor and the switch sensor input function at the same time, and the logical relationship directly affects the running state of the control.
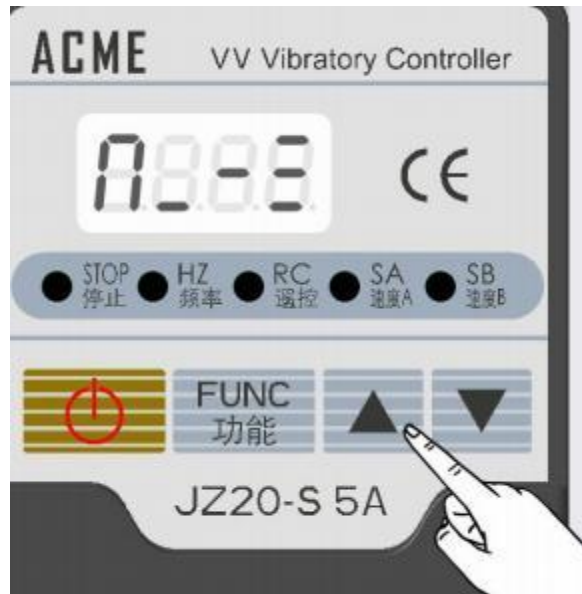
◆ The logical relationship "and" : The controller runs only when the input signal of the intelligent photoelectric sensor and the switch sensor requires the controller to run at the same time.

◆ The logical relationship "or" : Only when the intelligent photoelectric sensor and the switch sensor input signal have a requirement for the controller to operate, the controller runs.

◆ The logical relationship "Xor" : Only when the input signal requirements of the intelligent photoelectric sensor and the switch sensor are different, the controller will operate.

The setup steps are as follows:

Step 1: In the basic menu state, press the "Function" key for 1 second to enter the advanced menu setting state.

Step 2: Hold short and press the "Function" key to switch to: ⊓

**Step 3:** The logical operation mode can be set by using the "▲" and "▼" key.
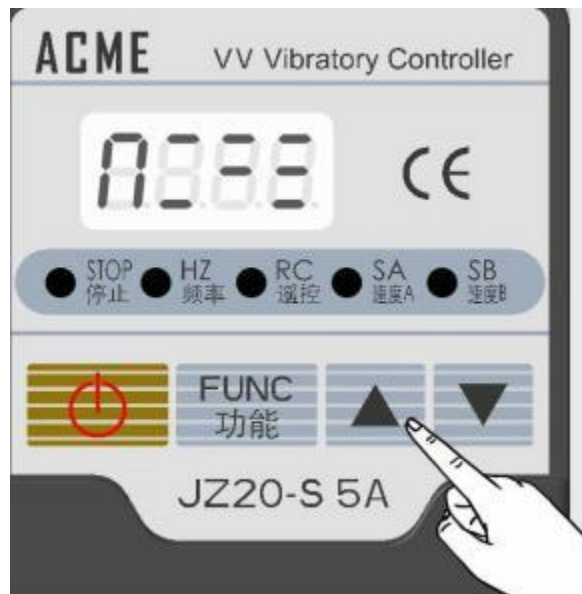
Figure a logic "Or"
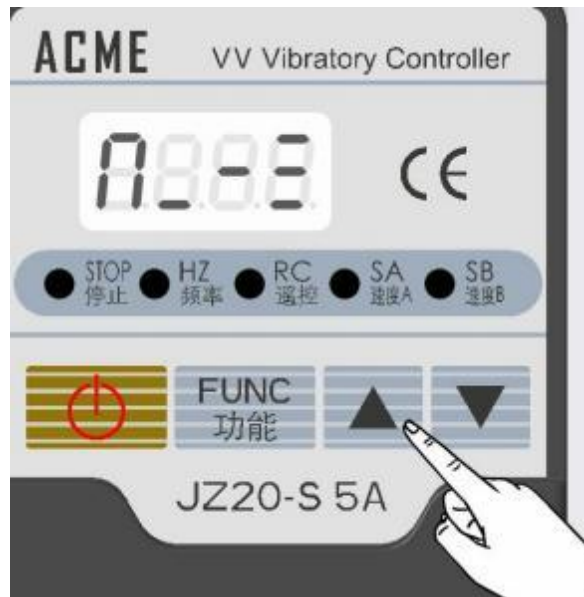
Figure b logic "And"
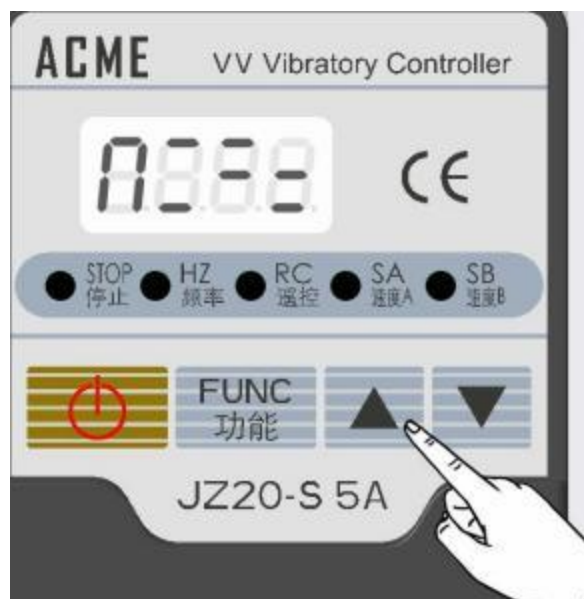
Figure c The logic " Xor"

Parameter name	Mark and symbol	Value	Default value
Control signal logic relationship	∏	The logic "Or" The logic "And" The logic "Xor"	The logic "And"

4.2.12 Power frequency selection

The frequency of the domestic AC power grid is generally 50HZ, and the alternating current used in some countries such as the United States is 60HZ. To ensure that the controller can work properly when connected to 60HZ AC power, the controller provides the power frequency selection function.

◆ ： ⁻⁵ The current power frequency is 50HZ, please select this option.

◆ ： ⁻⁶ The current power frequency is 60HZ, please select this option.

Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Power frequency selection	ΓE	-6	-5	-5

Note: Half wave is 50HZ, full wave is 100HZ; Half wave is 60HZ, full wave is 120HZ;

4.2.13 Intelligent photoelectric correlation sensitivity

This parameter can adjust the sensitivity of the signal received by the intelligent photoelectric, the smaller the value, the higher the sensitivity. The longer the distance between the sending and receiving ends, the signal can still be detected, and the ability to resist light interference will become worse. The larger the value, the stronger the resistance to external light interference, and the smaller the sending and receiving spacing supported.

| Parameter name	Mark and symbol	Minimum value	Maximum value	Default value
Waveform index	5	0	999	100

4.2.14 Restore factory settings

The controller has many functions, and a large number of control parameters can be set by the user. For beginners, the controller may not be restored to the normal working state after several parameter modifications. This function can facilitate the user to quickly set the controller parameters to the factory default values.

Step 1: In the basic menu state, press the "Function" key for 1 second to enter the advanced menu setting state.
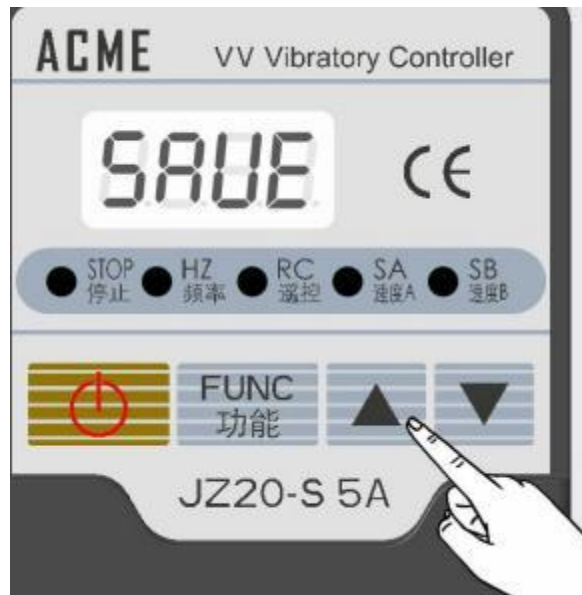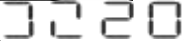

Step 2: Hold short and press the "P.000" key to switch to the display state, then press the "on/off" key to cause the controller to stop output.
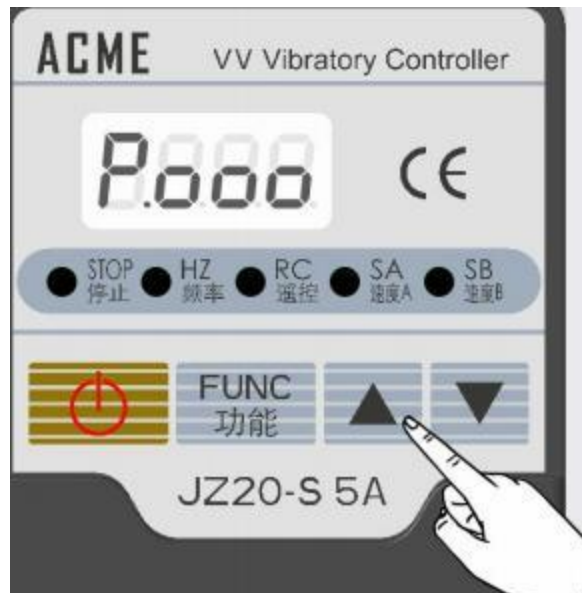
Step 3: Press until the controller is displayed, indicating that the controller is resetting parameters.

▲SAUE

Step :4 The controller restarts, displays the initialization screen ⅃⊏⊇◻, and automatically switches to the common parameter menu. The factory restoration process is complete.

4.2.15 Panel switch

The panel switch of the controller can be used for output control of the controller. Press the panel switch to switch the controller from the running state to the stopped state, then press the panel switch again for a short time to switch the controller from the stopped state to the running state. Due to the higher control priority of the external intelligent photoelectric sensor and the switch sensor input port, the panel switch cannot make the controller switch to the running state after the external signal gives the stop command.
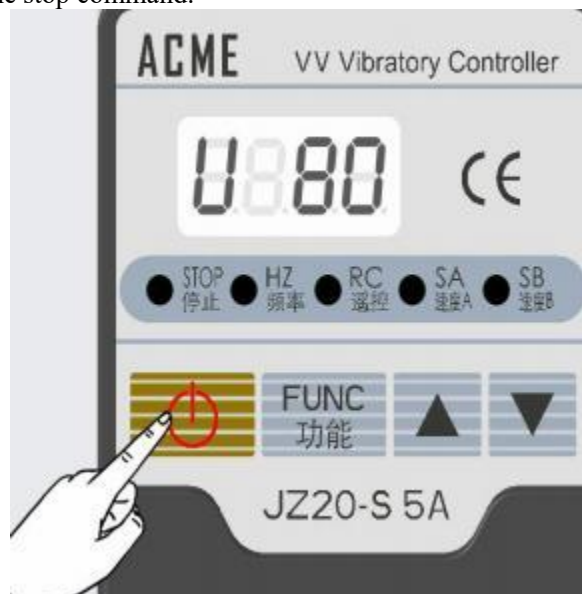
Chapter V Security protection function

5.1 Over current protection function

The controller can stop output when the output current exceeds the protection current due to the wrong operations of users, and displays Err.2 to protect the controller and user devices.

5.2 Overheating protection function

When the control operating temperature is detected to exceed 70 ° C, the controller stops output and displays Err.3 until the controller restarts.

**5.3 Under voltage and over voltage protection**

When the input voltage of the controller is too high, the controller will alarm over voltage, stop output, and display Err.4; when the input voltage is too low, the controller will give an under voltage alarm, stop output, and display Err.5.

5.4 Error information and troubleshooting table

|		
1	**Turn on the switch, no display**	(1) Check whether the socket of the power source is electrified. (2) Whether the power plug is reliably connected to the socket
2	**There's a display, but there's no movement, no sound**	(1) Check whether the output cables between the controller and the vibration disk are correctly and reliably connected. (2) Check whether the controller parameters are adjusted too small. (3) Check whether the "Stop" indicator of the controller is on or in the "Stop" state. If you determine that the controller is stopped, check that the switches and input signals and logic are set correctly.
3	**The control signal doesn't work**	(1) Please check whether the control signal is correctly connected (2) Please check whether the control signal ground wire is correctly connected to the controller (3) Please check whether the control signal logical relationship settings are consistent with expectations
4	**It displays, the vibrator is not moving, but you can hear it**	(1) Please adjust the relevant parameters step by step according to the method described in this manual
5	**Unstable cycle**	(1) Please check the vibration coupling problem between multiple vibrating bodies (2) Please adjust the working rating of the coupled vibration equipment to make the frequency difference greater
6	**Err2**	(1) Output short circuit, check the cable and vibration disk coil is short circuit (2) The parameter setting is inappropriate, resulting in excessive current
7	**Err3**	(1) If the controller is overheated, install the controller in a working environment with good ventilation and heat dissipation (2) Consider whether the controller selection is too small
8	**Err4**	(1) If the voltage is too high, check whether the input voltage of the controller is too high (2) If the input voltage is normal, please return to the factory for maintenance
9	**Err5**	(1) If the voltage is too low, check whether the input voltage of the controller is too low (2) If the input voltage is normal, please return to the factory for maintenance

Appendix A Dimensions

JZ20-S Vibration Feeder Controller Dimensions: (mm)
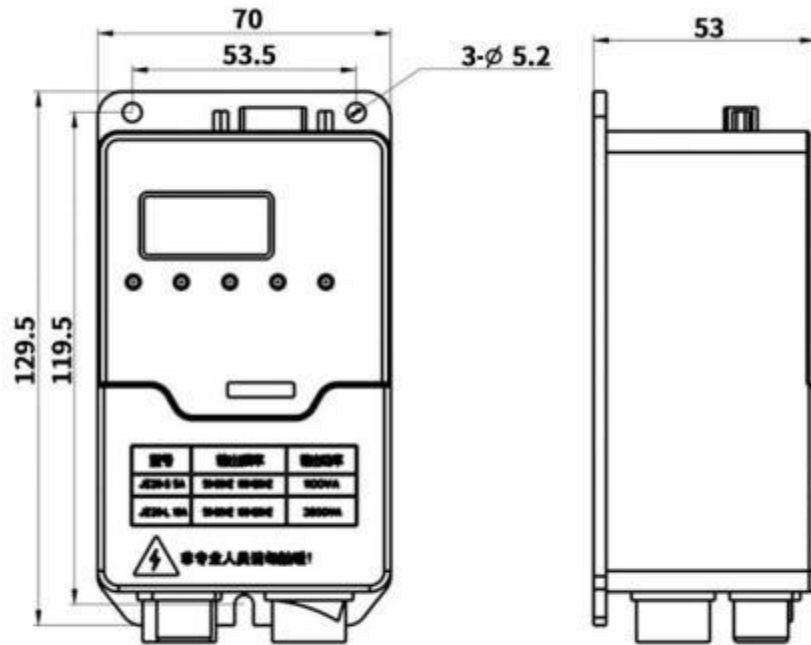
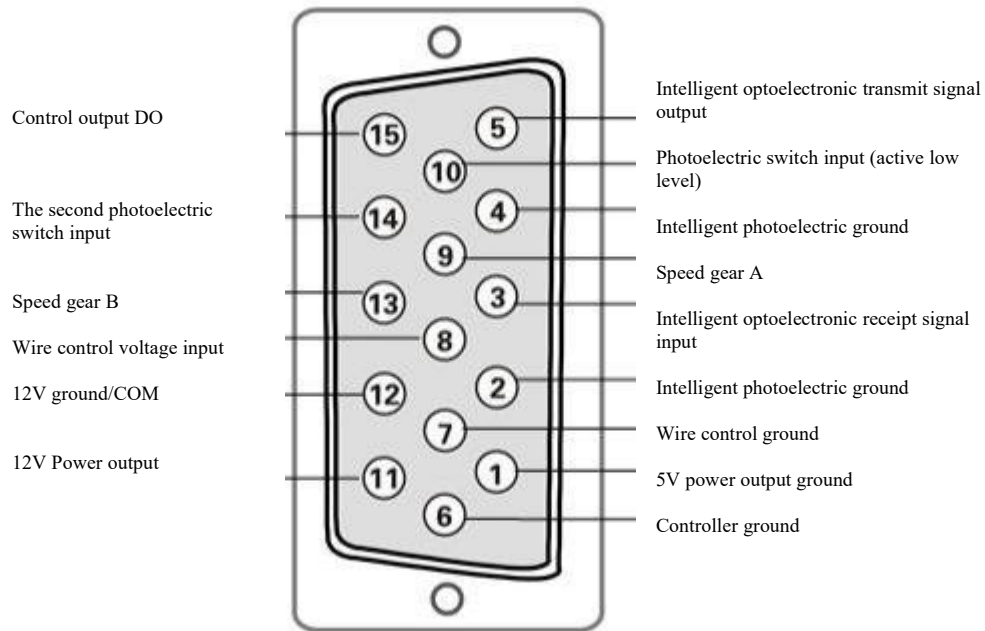## Appendix B Port definition

Output port definition
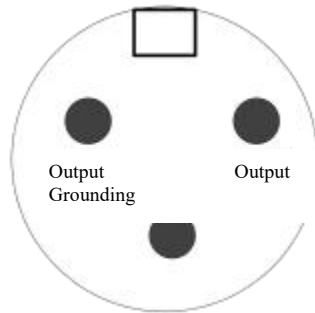
Please note:
1. Please confirm that the electromagnet coil is connected to the two output pins, and the mechanical housing of the vibration body needs to be reliably grounded, otherwise it will lead to that the housing will be charged, and serious safety accidents may occur！！

2. For aviation plug welding, be sure to use heat shrink sleeve or insulation tape wrapped in the joint part, and then inserted into the gold sleeve of the aviation plug, so as not to cause leakage or short circuit accidents.

Signal port definition
DB15 Port definition

Pin	Definition
15	Control output DO
14	The second photoelectric switch input
13	Speed gear B
8	Wire control voltage input
12	12V ground/COM
11	12V Power output
5	Intelligent optoelectronic transmit signal output
10	Photoelectric switch input (active low level)
4	Intelligent photoelectric ground
9	Speed gear A
3	Intelligent optoelectronic receipt signal input
2	Intelligent photoelectric ground
7	Wire control ground
1	5V power output ground
6	Controller ground

Both photoelectric switches are of low efficiency.

Appendix C Parameter identification table

Display symbols for use control and their meaning reference table

Display	Meaning
U.8.8.8.	Output voltage
F.8.8.8.	Output frequency
J.8.8.8.	Startup delay of intelligent photoelectric sensor
L.8.8.8.	Shutdown delay of intelligent photoelectric sensor
E.8.8.8.	Soft start time
J-.8.8.	Startup delay of switch sensor at the input port
L-.8.8.	Shutdown delay of switch sensor at the input port
J_.8.8.8.	Startup delay of the second photoelectric switch sensor at the input port
L_.8.8.8.	Shutdown delay of the second switch sensor at the input port
F1.8.8.	The logic of the switch sensor input port
F2.8.8.	Intelligent photoelectric sensing logic
F3.8.8.	The logic of the second switch sensor input port

r.4	The logic of the DO output port
r5	Run control logic
n	Control signal logic relationship
rE	Power frequency selection
h	Maximum output voltage:
r	Waveform index
S	Intelligent photobeam sensitivity
P.ooo	Restore factory settings