ACME JZ® 精震

JZ80系列
数字调频振动送料控制器用户手册

JZ80 Series Variable Frequency Digital Contoller User's Manual

杭州同晖智能科技有限公司
TONGHUI INTELLIGENCE TECHNOLOGY CO.LTD

Foreword

First of all, thank you for purchasing the JZ series digital vibration feeder controller※!

This manual provides users with guidance and instructions on model selection, installation and commissioning, parameter setting, fault diagnosis and elimination, as well as daily maintenance of the controller. To ensure the correct installation and operation of the controller, please read this user manual carefully before installation and keep it properly.

This user manual applies to the following controllers:

■ Variable Frequency Digital Controller, JZ80-SSS (3-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-MSS (1-axis 3A, 2-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-MMS (2-axis 3A, 1-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-SS (2-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-MS (1-axis 3A, 1-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-MM (2-axis 3.0A output current)

■ Variable Frequency Digital Controller, JZ80-LS (1-axis 5.0A, 1-axis 1.5A output current)

■ Variable Frequency Digital Controller, JZ80-L (1-axis 6.0A output current)

■ Variable Frequency Digital Controller, JZ80-XL (1-axis 12.0A,output current)

Note: ※Hereinafter referred to as the controller in this manual

The following are special precautions:

Special Precautions Requiring Attention:

1. Never unplug wiring or touch any controller terminals while power is applied, to prevent electric shock and accidents.
2. Do NOT connect the controller to a 380V AC power supply. This will cause permanent damage! (For 380V operation, select the dedicated 380V series product.)
3. Avoid using relays or similar devices to control output by interrupting the controller's power supply, as this will significantly shorten its service life. (Refer to later sections of this manual for proper operation methods.)
4. The controller is designed for cool, dry environments. Do not operate it outdoors, in areas prone to water exposure, under direct sunlight, or beyond its specified temperature/humidity ranges.
5. Under no circumstances operate the controller beyond its design limits.
6. Strictly follow this manual during operation. Our company assumes no civil or criminal liability for equipment damage or personal injury resulting from non-compliance.
7. Do not open the controller casing (risk of electric shock). For malfunctions, contact our company for immediate troubleshooting support or return for repair.

Version Change Record

Version	Date	Changed Points	Remarks
V1.0	January 2024	Newly built	
V1.4	September 2024	Added application case section, added linkage options, added linkage switch delay time.	
V2.0	February 2025	Added dual-lane PLC control option, added DO pulse output function, supports pusher machine application.	

Working and Storage Environment

I. Pre-use Inspection

Each controller undergoes rigorous quality testing before leaving the factory and is packaged in reinforced anti-impact packaging. After unpacking the controller, please immediately conduct the following checks:

1.Check whether the controller's exterior has been damaged during transportation.

2.Verify that the controller model number matches the order registration details exactly.

II. Working Environment

To ensure optimal performance and extended service life of the controller, please observe the following during installation:

★ A well-ventilated environment for effective heat dissipation.

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

★ Free from corrosive or flammable gases and liquids.

★ Free from airborne dust and metal particles.

★ Stable and free from vibration.

★ Protected from electromagnetic noise interference.

III. Electrical Characteristics and Specifications (Taking JZ80 as an example)

Exceeding electrical specifications will cause serious damage and must be strictly prevented!

Electrical Characteristics

Items	Numerical value			Unit	Instructions;
	Minimum	Typical	Maximum		
input voltage	85	220	260	VAC	Single-phase 50/60Hz
Working environment temperature	-10	20	40	℃	Derating at 40-50℃
Working environment humidity	10	60	90	%RH	No condensation

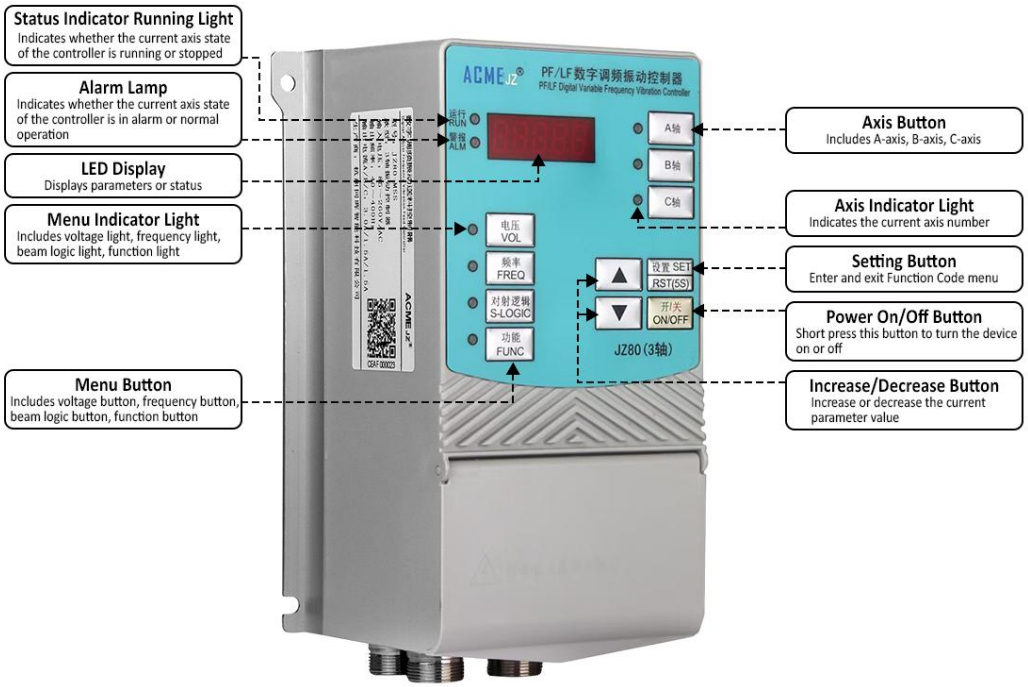
Specifications (Test condition: Input voltage 220VAC)

Items	Range		Unit	Instructions;
	Minimum	Maximum		
output voltage	0	260	V (Volts)	
Minimum adjustable voltage	1	-	V (Volts)	
Frequency range	40	400	Hz (Hertz)	
Minimum adjustable frequency	0.1	-	Hz (Hertz)	
output waveform	Sine			
Output current (A-axis)	0	1.5/3.0	A (Amperes)	JZ80-SX (X) is 1.5A JZ80-MX (X) is 3.0A
Output current (B-axis)	0	1.5	A (Amperes)	JZ80-XS is 1.5A JZ80-XM is 3.0A
Output current (C-axis)	0	1.5	A (Amperes)	
Total output power	-	1.3	KVA (volt-ampere)	
Delay time range	0	20	S (seconds)	
Minimum adjustable delay time	0.1	-	S (seconds)	
Startup time	0	10	S (seconds)	
Auxiliary power supply voltage	19.0	25.0	V (Volts)	24V power supply
Auxiliary power supply current	0.01	220	mA	24V power supply
No-load power consumption	1.5	3.0	W (Watts)	
Display mode	-	5-bit	LED	
Output port	-	30	V	OC open circuit (1st channel 200mA) OC open circuit (2nd channel 20mA)
Control mode	7x3 (axis) matrix buttonpad + LED		-	Panel control
	0-24		V (Volts)	3-channel switch NPN input 1-channel switch PNP input
	Intelligent through-beam photoelectric switch		-	2-channel control start/stop

CONTENTS

Chapter 1 Controller Components

1.1 Buttonboard and Indicators



Status Indicator

Run Light: Indicates the current axis state of the controller, whether it is running or stopped. Press the stop button, and the controller pauses with this light blinking.

Alarm Light: Indicates the current axis state of the controller, whether it is in alarm or normal operation.

Menu Indicator Light

Voltage Light **:** Currently displaying the voltage setting interface.

Frequency Light: Currently displaying the frequency setting interface.

Beam Logic Light: Currently displaying the logic setting interface.

Function Light **:** Currently displaying the function setting interface.

Axis Selection Button

The default current axis is A-axis. If you need to switch to another axis, press the corresponding button.

Menu Selection Button

Voltage **:** Press this button when setting the output voltage.

Frequency ： Press this button when setting the output frequency.

Beam Logic: Press this button when setting the beam logic.

Function: Short press this button to set common Function Codes, long press for 2 seconds to enter the advanced menu.

1.2 External Components Description

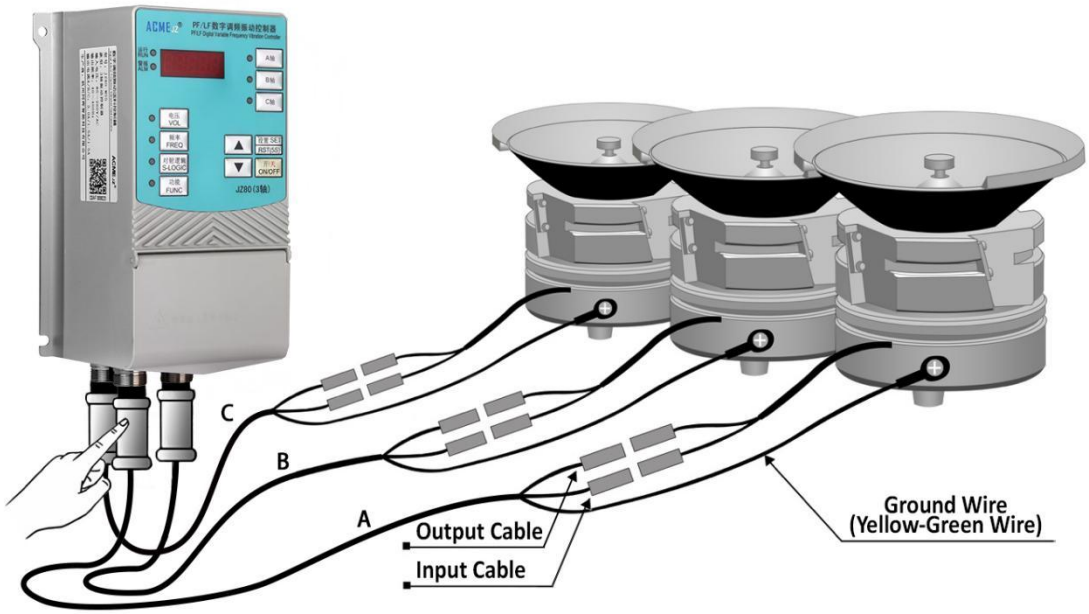
Bottom View of Controller Components:

Chapter 2 Quick Installation and Trial Run

To help new customers quickly operate the controller, we have summarized the installation and operation steps as follows:

Step 1: Open the outer packaging of the controller, inspect the appearance and the side nameplate to confirm if it is the required model.

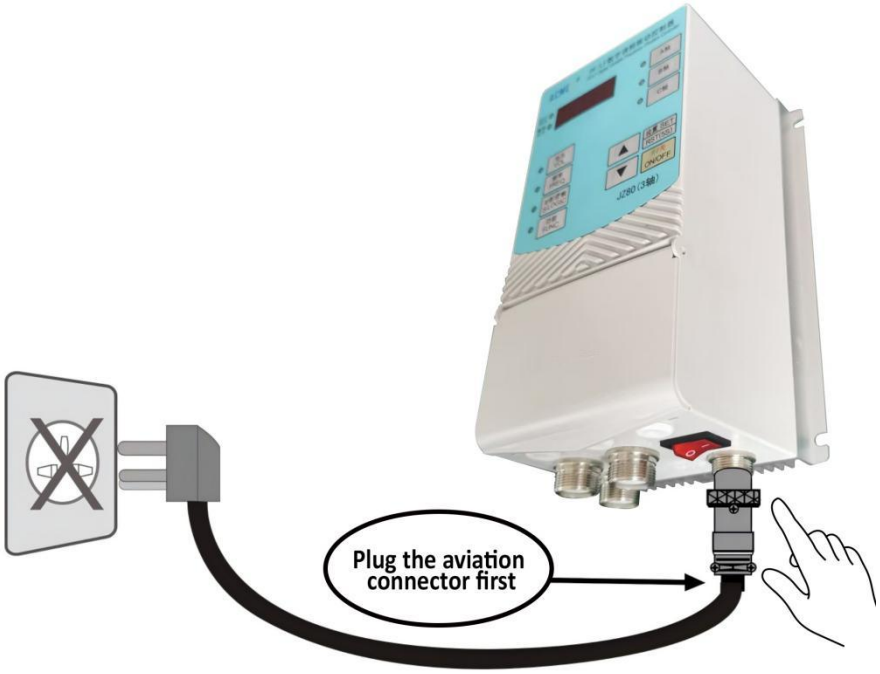
Step 2: Take the output cable from the accessory pack, connect the terminals of the 3 output cables to the electromagnetic coil of the vibratory feeder※, plug the aviation plug of the output cable into the controller, and tighten the nut as shown in the figure:



Note: ※Please ensure the electromagnetic coil is connected to the two output pins, and the casing must be reliably grounded, otherwise it may cause the casing to become live, potentially leading to serious safety accidents!

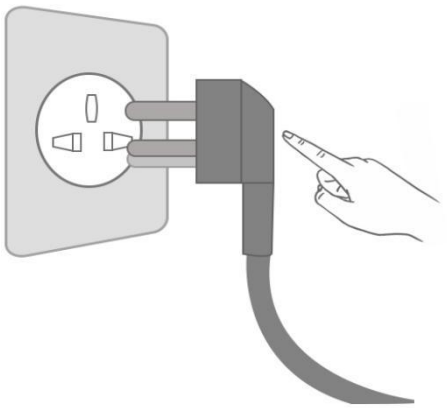
Step 3:

Plug the input power cable aviation connector into the controller first, and tighten the nut.



Step 4:

Plug the power cable three-prong plug into the power supply socket.

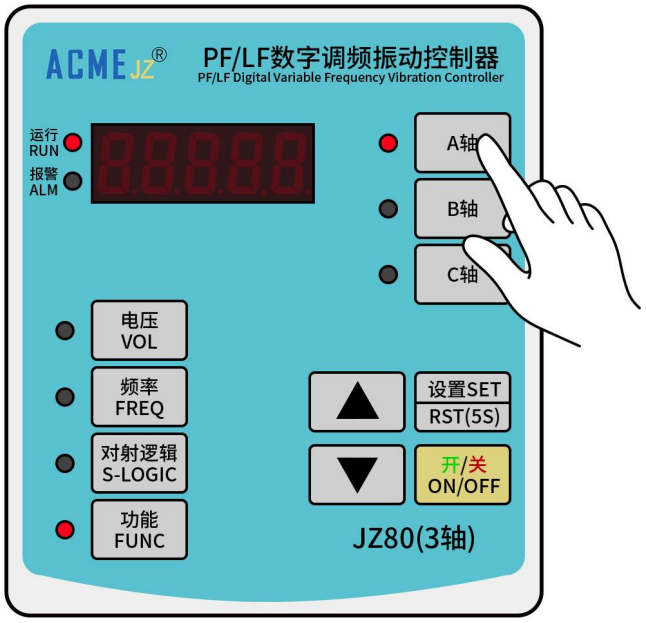


Step 5:

Turn on the controller power switch.

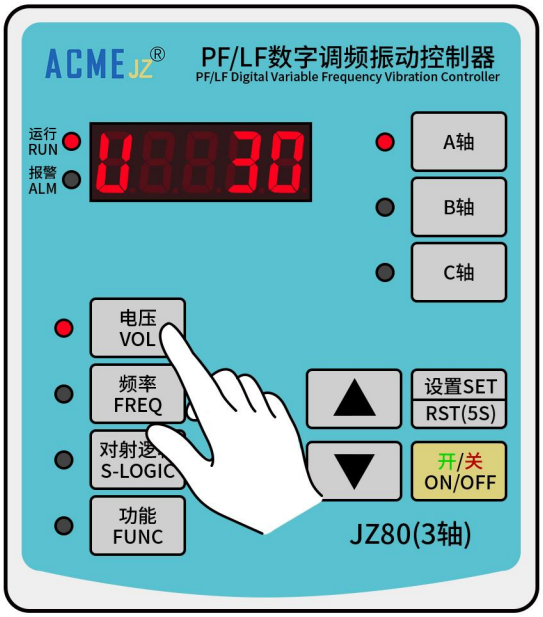
Step 6:

Press the axis selection button to select the A-axis.

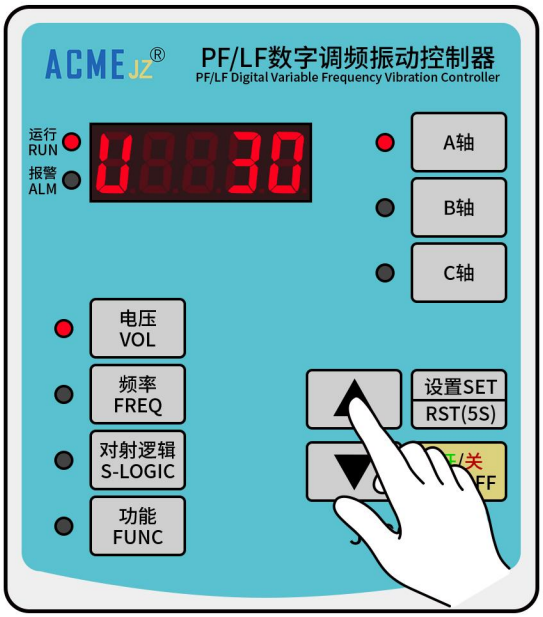


Step 7:

Press the voltage button to enter the voltage adjustment interface.

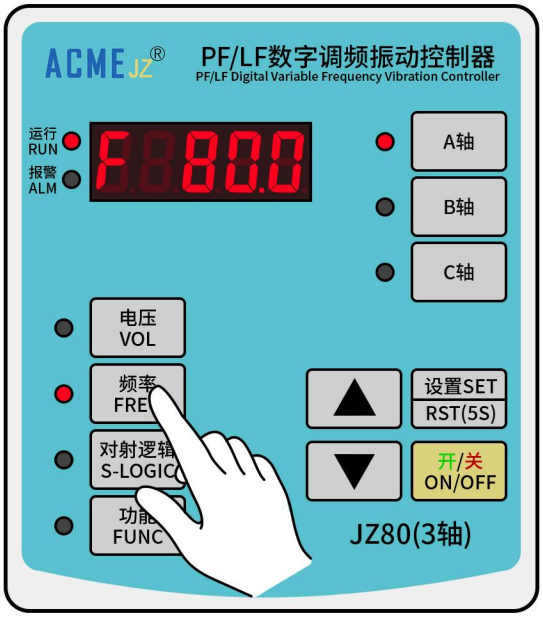


Use "▲" and "▼" to adjust the A-axis output voltage to between 30V~80V.

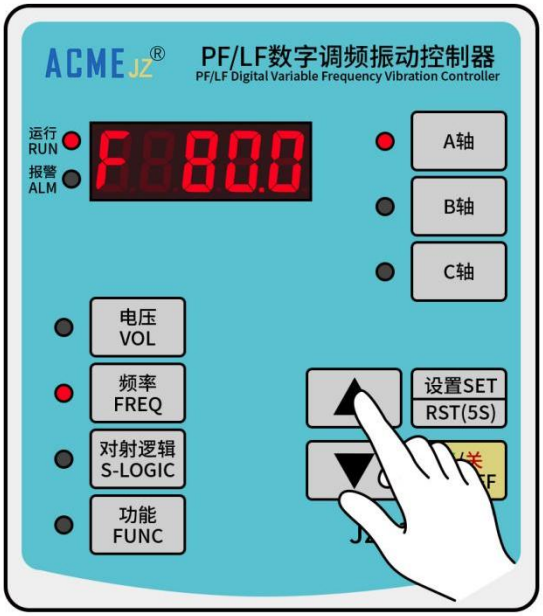


Step 8:

Press the frequency button to enter the frequency adjustment interface.



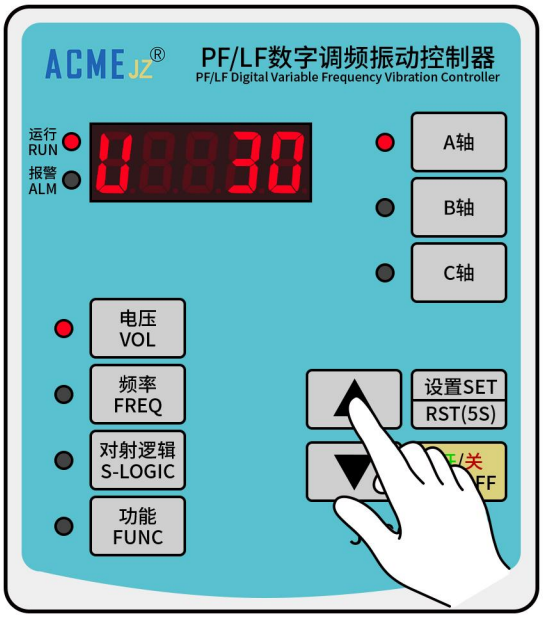
Use "▲" and "▼" to adjust the frequency, find the natural frequency of the vibrating body※, that is, the resonance point.



Note: ※ The peak vibration occurs at the system's natural frequency. Since every vibrating body possesses a unique natural frequency, adjust this parameter to operate within the optimal working frequency range.

Step 9:

Press the voltage button, use "▲" and "▼" to adjust the voltage, adjust the voltage to meet the external feeding needs.



Step 10:

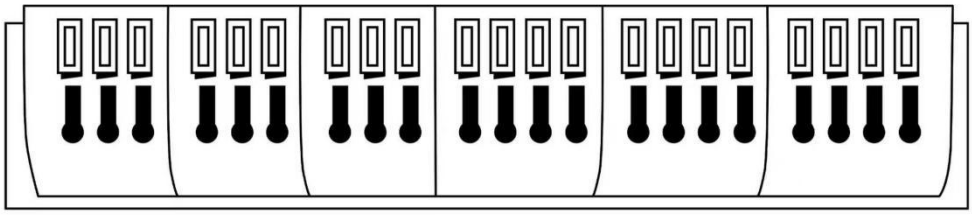
In the same way, select the B-axis and C-axis, complete the voltage and frequency settings, so that the three axes work smoothly.

After completing the above steps, the controller can work initially. If other functions are needed, please refer to other parts of the manual.

Chapter 3 External Wiring Definitions

3.1 Terminal Introduction

The JZ80 controller can support various external signals or sensors as command sources to control the operation of the machine. The following introduces the controller resources:



switch A (NPN)			switch B (NPN)			switch C (NPN)			Output (2 circuits)				Through-beam photoelectric A				Through-beam photoelectric B			
B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	E4	F1	F2	F3	F4	H1	H2	H3	H4
24V Power Supply	IN1 Input	GND Ground	24V Power Supply	IN2 Input	GND Ground	24V Power Supply	IN3 Input	GND Ground	IN4 Input PNP	24V Power Supply	OUT1 200mA	OUT2 50mA	TX1 Transmit	GND Ground	RX1 Receive	GND Ground	TX2 Transmit	GND Ground	RX2 Receive	GND Ground

(1) 3 NPN proximity switch terminals, switch A and switch B are fixedly configured to the A-axis and B-axis respectively, switch C is default configured to the C-axis, and can also be configured to other axes through parameter settings.

(2) 1 PNP proximity switch terminal, default configured to the A-axis, can also be changed.

(3) Supports two DO outputs default configured to the A-axis and B-axis, and can be configured to other axes or the same axis through parameters.

(4) Two through-beam photoelectric sensors, through-beam photoelectric sensor A is fixedly configured to the A-axis, through-beam photoelectric sensor B is default configured to the B-axis, and can be configured to other axes through parameters.

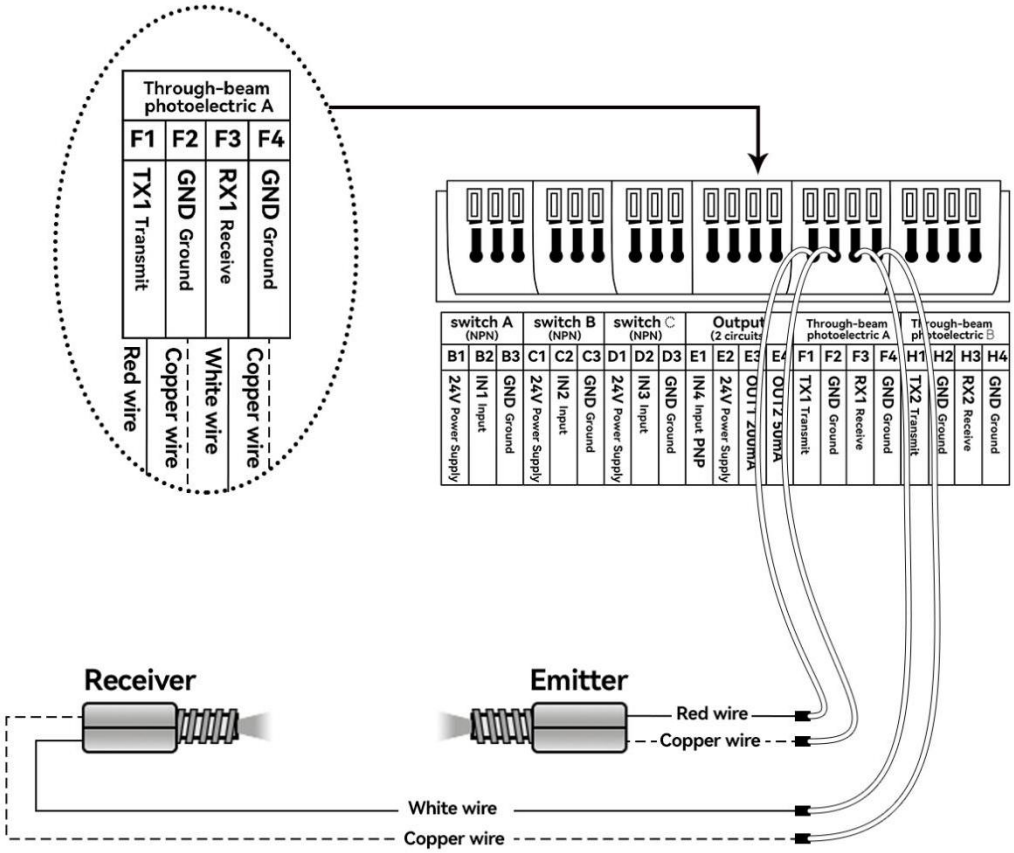
3.2 Intelligent Through-beam Photoelectric Sensor Wiring Method

The JZ80 controller supports two through-beam photoelectric sensor inputs, default assigned to the A-axis and B-axis, and the second through-beam photoelectric input can be assigned to the C-axis through parameter (Pr22). Using the through-beam photoelectric sensor can achieve full/empty material function, the controller

automatically eliminates the influence of background light on the sensor sensitivity, so that the sensor can work reliably without manual adjustment of sensitivity. Below is an example of the wiring for the first through-beam photoelectric sensor:

Step 1: Open the access door of the terminal compartment.

Step 2: Connect the photoelectric sensor according to the diagram



Note:Under default value settings, the sensor's logic orientation is set for material-empty detection.

By default, connecting the second through-beam photoelectric sensor to Port H allows direct start/stop control of the B-axis. To use the second through-beam photoelectric sensor for controlling the C-axis, set Pr26 of the B-axis to 3.

3.3 Proximity Switch Input Port Wiring Method

The controller supports various switching sensors—including proximity sensors, photoelectric sensors, fiber optic sensors, and PLC I/O outputs—to enable automatic start/stop functions under signal control.

The JZ80 controllers features:

Three NPN-type proximity sensor input ports

Default assignment: Dedicated to axes A, B, and C.

Customization: The third NPN port can be reassigned to Axis A or B via parameter modification.

One PNP-type proximity sensor input port

Default assignment: Dedicated to axis A.

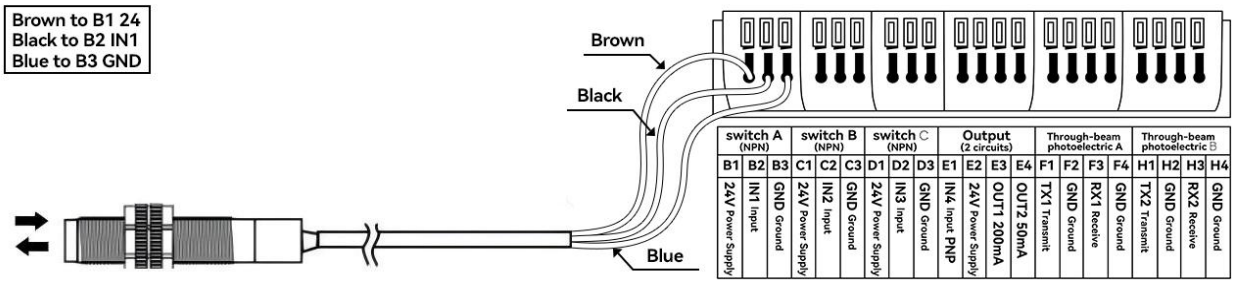
Customization: Can be reassigned to other axes via parameter modification.

3.3.1 Wiring Method for Three-Wire NPN-Type Proximity Switch Sensor

Below is an example of the wiring steps for the first port.

Step 1: Open the access door of the terminal compartment.

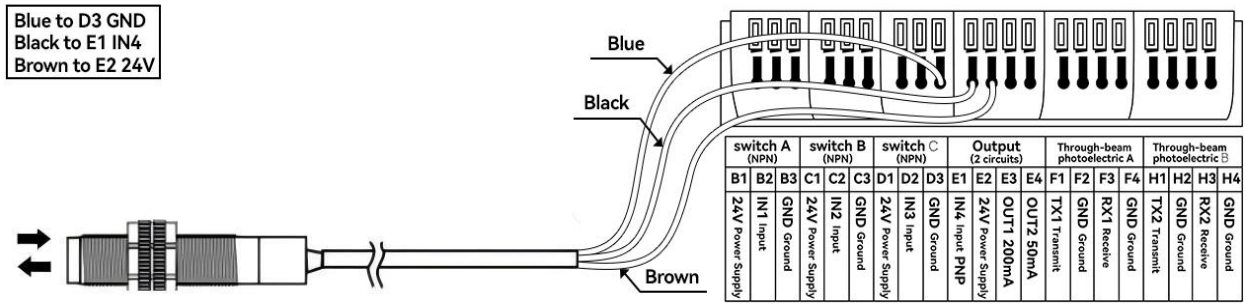
Step 2: Connect the sensor according to the diagram



3.3.2 Wiring Method for Three-Wire PNP-Type Proximity Switch Sensor

Step 1: Open the access door of the terminal compartment.

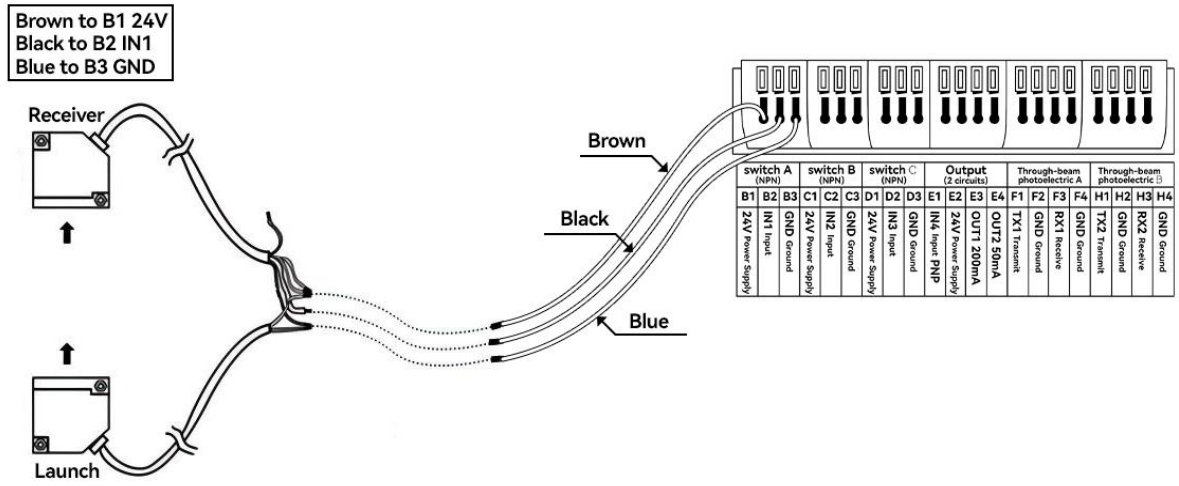
Step 2: Connect the sensor according to the diagram



This controller provides one PNP input, which can be configured to the A, B, or C axis via Pr31, or used to replace one of the proximity switches.

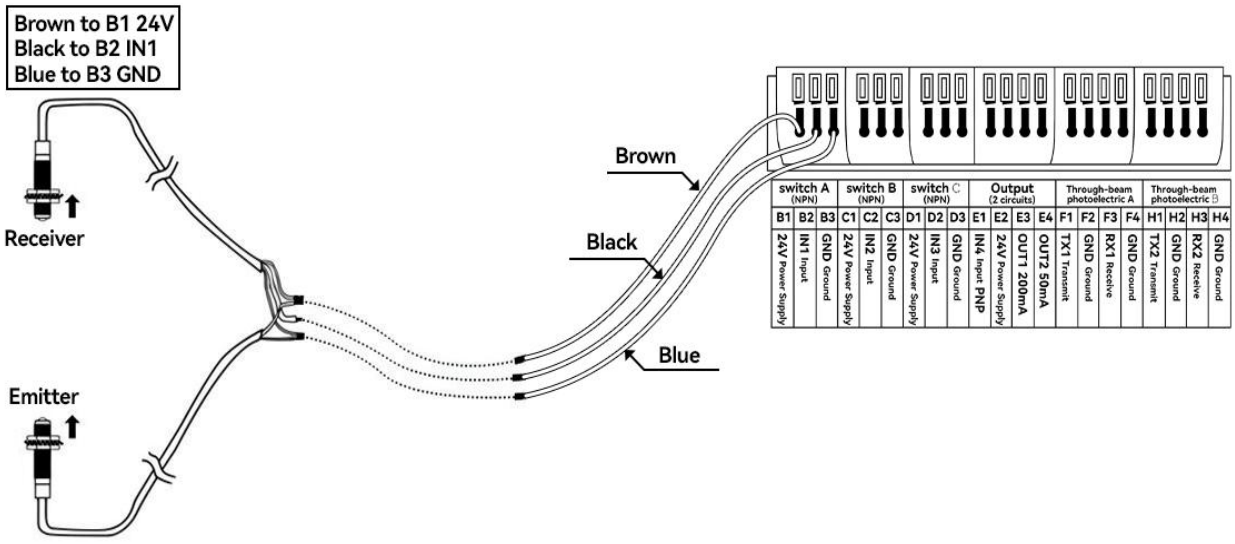
3.3.3 Wiring Method for Through-Beam NPN-Type Sensor

Using the first port as an example, the second and third ports are connected respectively.



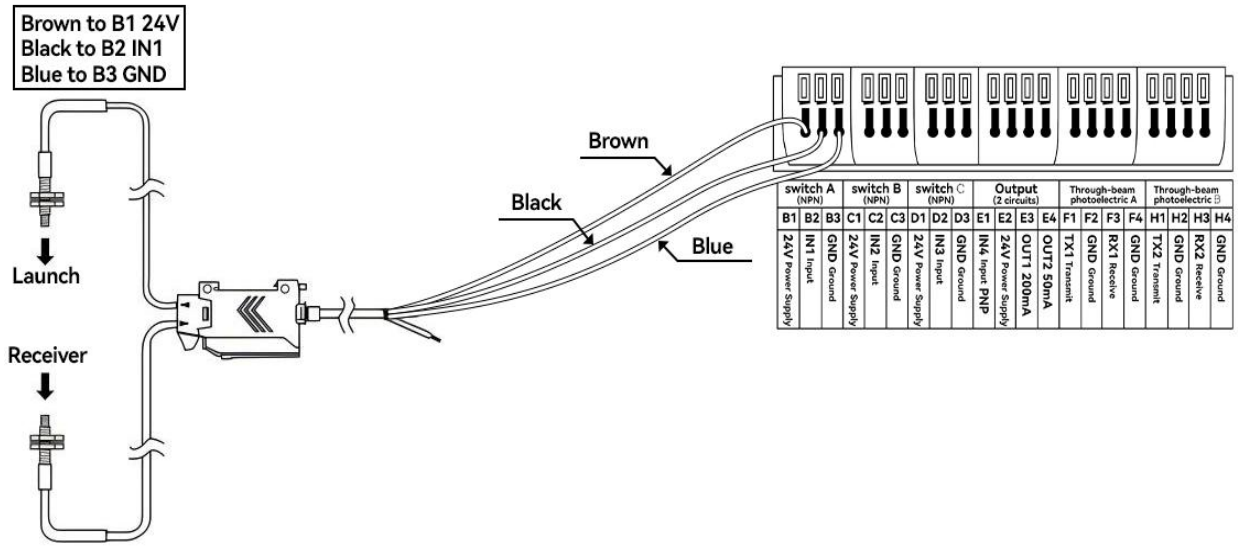
3.3.3 Wiring Method for Through-Beam Photoelectric Sensor

Using the first port as an example, the second and third ports are connected respectively.



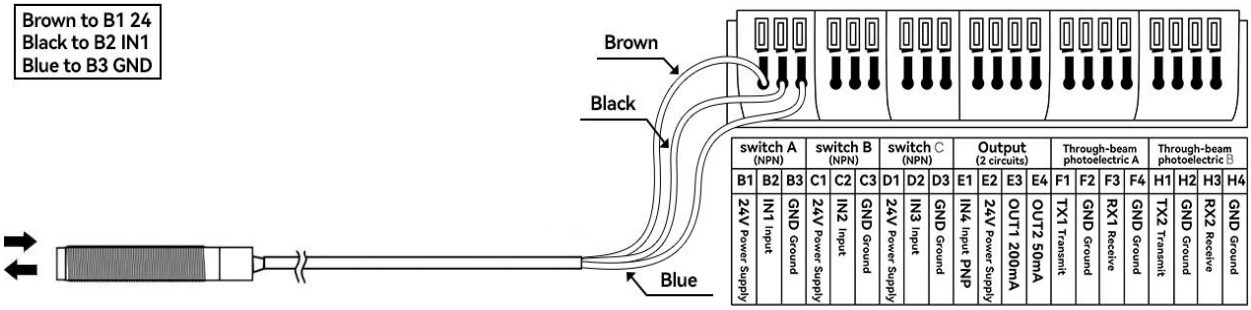
3.3.4 Wiring Method for Through-Beam Fiber Optic Sensor

Using the first port as an example, the second and third ports are connected respectively.



3.3.5 Reflective Fiber Sensor Wiring Method

Using the first port as an example, the second and third ports are connected respectively.



If you want to control the B-axis, connect the sensor to port C. To control the C-axis, connect the sensor to port D. The wiring sequence is the same as the first path to port B.

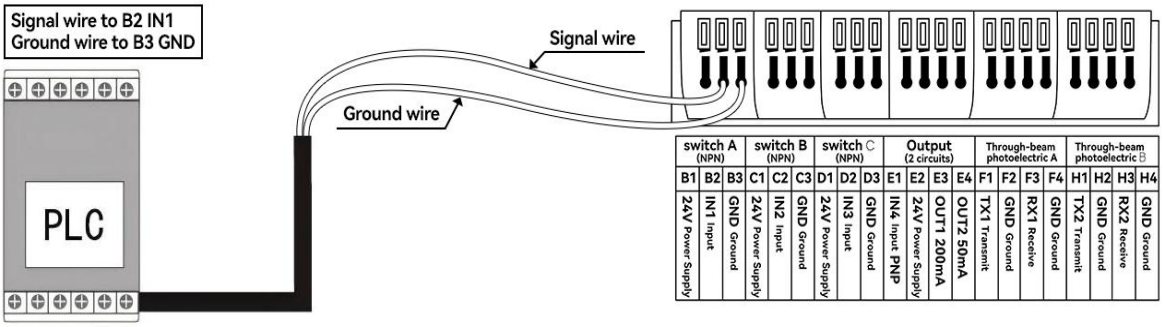
3.4 PLC Control Vibration Feeder Start/Stop Wiring Method

Taking PLC control of the A-axis as an example, PLC control of the B and C axes is connected to ports C and D respectively. The wiring method is the same as the figure below.

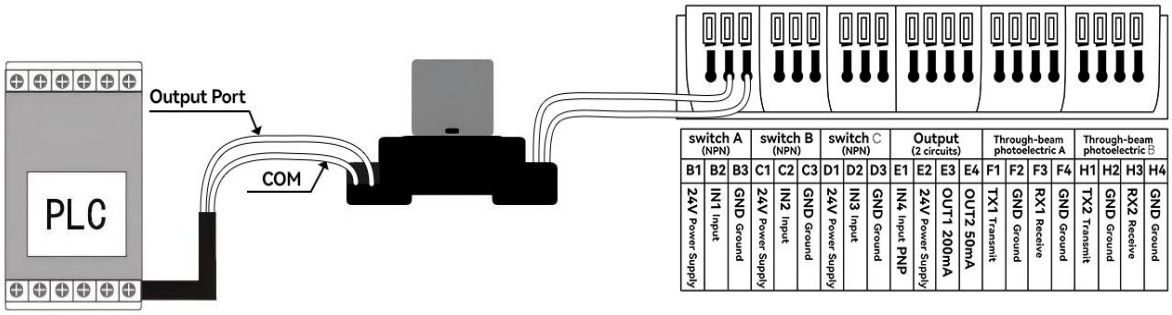
PLC Wiring Method:

Step 1: Open the access door of the terminal compartment.

Step 2: Connect the PLC signal wire according to the diagram



If the PLC is NPN output, it can directly control the controller. If the PLC is PNP output, it can control the controller through a relay. Of course, if the PLC is NPN output, a relay can also be used to control the controller, as shown below:

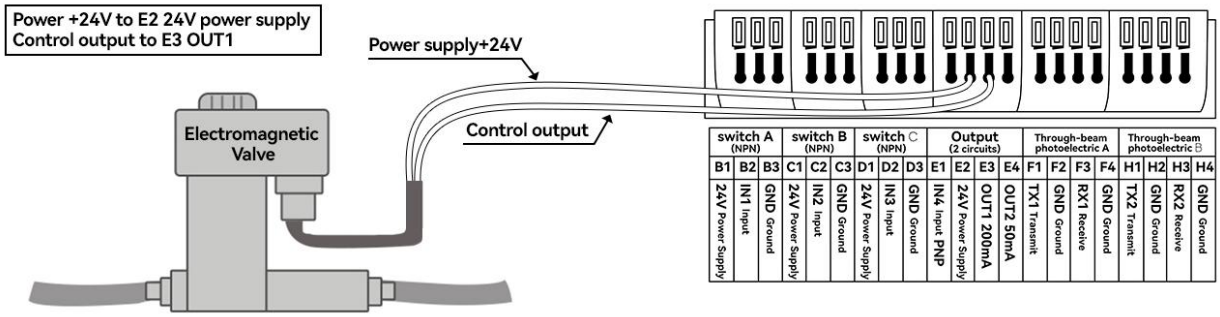


When terminals B2 and B3 are jumpered, the controller stops; when disconnected, the controller runs. To implement inverse logic, configure the logic direction parameter **Pr10** for the corresponding axis. For two-axis controllers, use **Pr28** to configure the logic direction of the third proximity sensor input port.

3.5 DO Wiring Method

The controller can output low-voltage signals to synchronize other devices for collaborative work, driving devices such as solenoid valves and PLC. The controller supports two DO outputs, which are default configured to the A-axis and B-axis respectively. The configuration can be changed by modifying parameters.

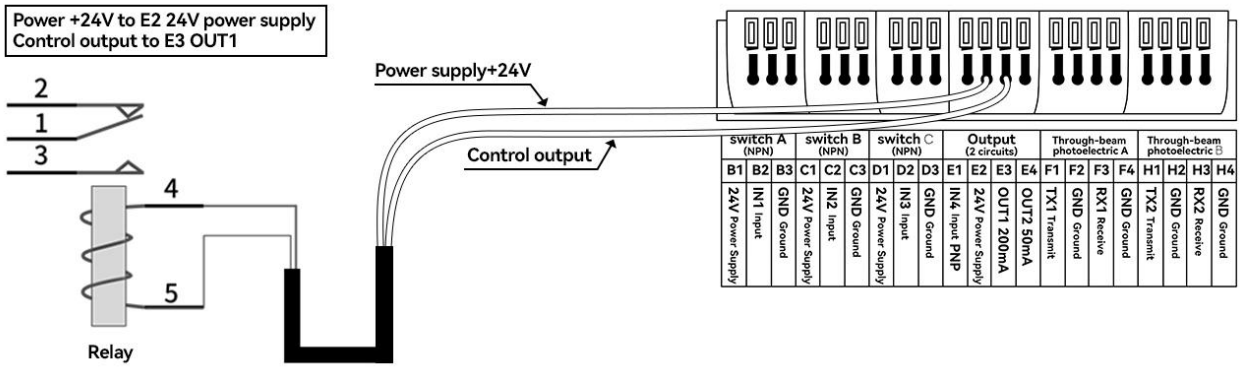
Taking the DO1 as an example,Wiring method for controlling solenoid valves:



◆The controller can directly drive solenoid valves with a rated voltage of 24V and power less than 4W.

◆If the solenoid valve power is too high, consider using an external power supply.

Wiring method for controlling relays:



◆The controller can directly drive relays with a rated voltage of 24V and power less than 4W.

To synchronize with B-axis operation, use terminals E2 and E4 as output signals (wiring as shown above). For synchronization with the C-axis, connect to E2/E4 and set Pr20=3. To invert output logic, configure Pr07 for each axis.

Chapter 4 Common Operations

4.1 Axis Selection

Pressing the A-axis selection button illuminates its corresponding indicator, switching the active axis to A. This enables configuration of:

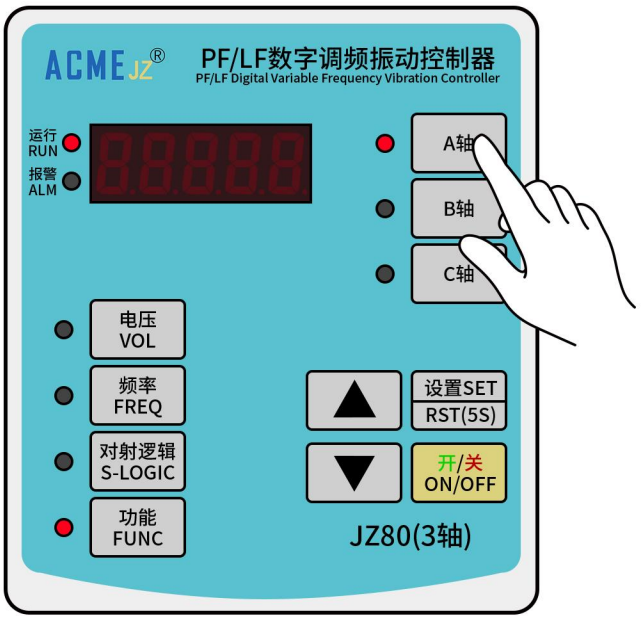
Voltage/frequency parameters

Through-beam logic

Proximity sensor settings

Related function settings

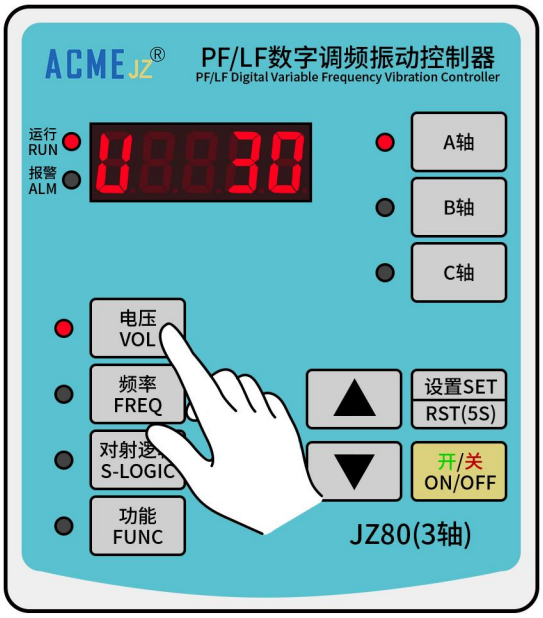
Operation for other axes follows the same logic (see figure)：



4.2 Voltage Adjustment

4.2.1 Output Voltage

Press the voltage button to enter the voltage adjustment interface.



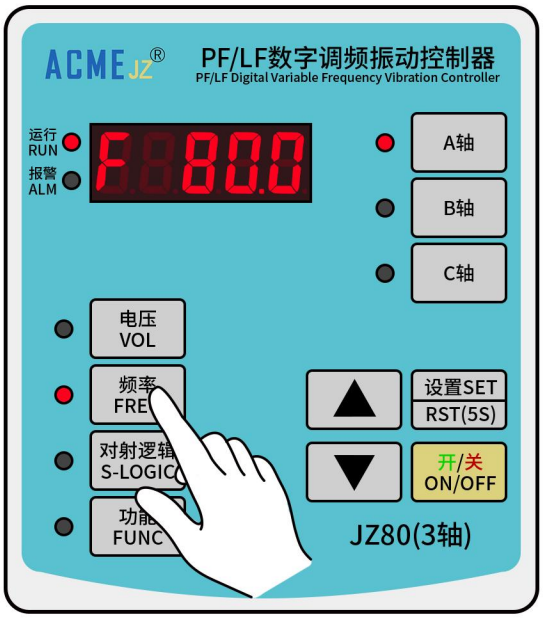
Use "▲" and "▼" to adjust the voltage.

The output voltage unit of the controller is V. Please find the resonant frequency of the vibration plate before modifying the default voltage value. Generally, a lower voltage setting results in smaller vibration amplitude, and a higher voltage setting results in larger vibration amplitude.

Function Code	Name	Symbol	Function Description	Factory Value
PI01	output voltage	U	0~260V, in 1V	100

4.3 Frequency Adjustment

Press the frequency button to enter the frequency adjustment interface



Use "▲" and "▼" to adjust the frequency.

The output frequency unit of the controller is HZ, and the minimum adjustable range is 0.1HZ. During the use of the controller, you can first set the output voltage to a smaller value or the default value, then adjust the output frequency, and find the mechanical resonance point of the vibration plate by listening to the sound of the vibration plate and the material operation, then exit the frequency interface and adjust other parameters.

Function Code	Name	Symbol	Function Description	Factory Value
PI02	Output frequency	F	10.0~400.0HZ, in 0.1HZ	80.0

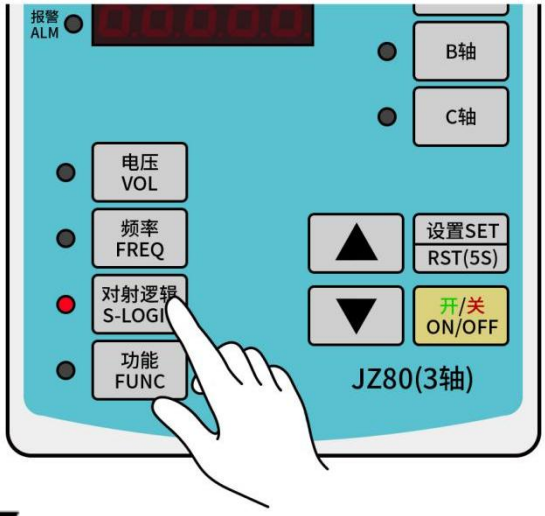
4.4 Intelligent Photoelectric Logic Adjustment

Under normal conditions, when the photoelectric sensor does not receive a light signal, the controller is in the "run" state under the default value setting (normally open logic direction). However, for some applications, inverse logic is required, that is, the controller needs to be in the "stop" state when no photoelectric signal is received, and this function can be achieved via this parameter.

◆When the logic direction is set to normally open, the controller is in the run state when no light signal is received, and the controller is in the stop state when a light signal is received.

◆When the logic direction is set to normally closed, the controller is in the stop state when no light signal is received, and the controller is in the run state when a light signal is received.

Press the photoelectric logic button to enter the photoelectric logic adjustment interface.



Use "▲" and "▼" to switch between positive logic and reverse logic.

By default, through-beam A is configured to the A-axis. In this case, press the photoelectric logic button on the A-axis to set the Pc01 value.

Function Code	Name	Symbol	Function Description	Factory Value
Pc01	Intelligent Photoelectric A Logic Direction	L	0: Normally Open Logic 1: Normally Closed Logic	0

By default, through-beam B is configured to the B-axis. When the current axis is the B-axis, press the photoelectric logic button to set the Pc02 value.

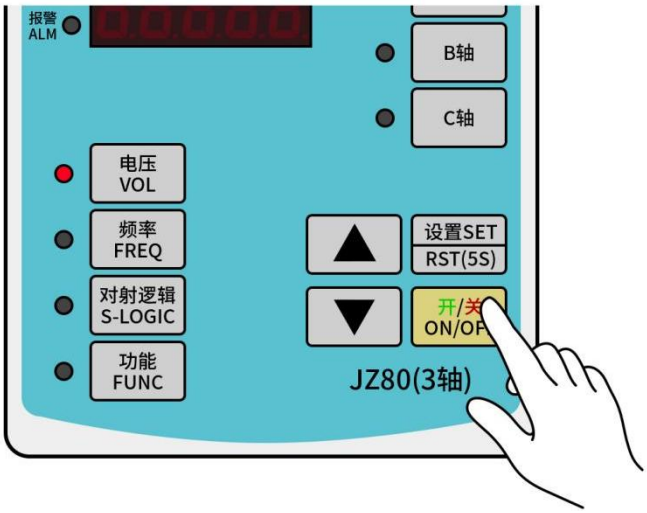
Function Code	Name	Symbol	Function Description	Factory Value
Pc02	Intelligent Photoelectric B Logic Direction	L	0: Normally Open Logic 1: Normally Closed Logic	0

Note: By default, when the current axis is set to C-axis, pressing the through-beam logic button has no effect. If the second through-beam sensor is configured for C-axis, adjust its logic parameters on the B-axis interface as needed.

4.5 Panel Switch Operation

The panel switch of the controller can be used for output control of the current axis. Briefly pressing the panel "ON/OFF" button switches the current axis from running to stopped state (indicated by a flashing operation light). Pressing the panel "ON/OFF" button again switches the axis back to running state (indicated by a steady

operation light). Note: External smart photoelectric sensors and switch sensor input ports have higher control priority. After an external stop signal is issued, the panel "ON/OFF" button will be unable to switch the controller back to running state.

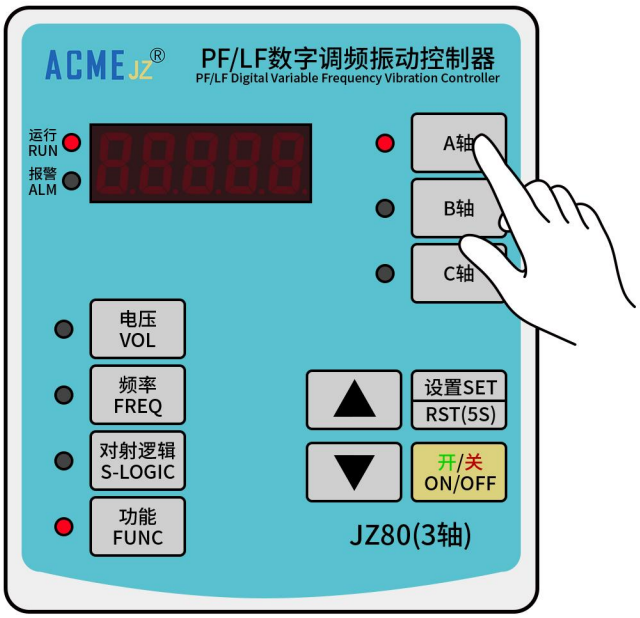


Short press

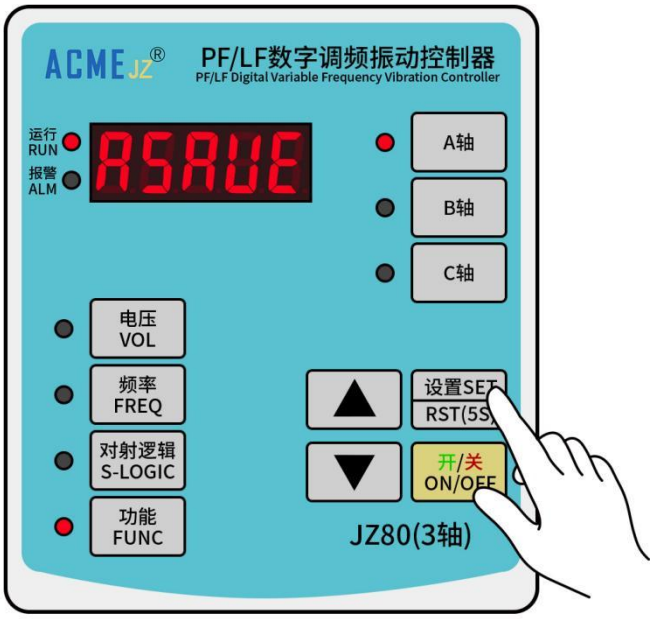
4.6 Axis Parameter Reset

The controller offers extensive parameter configuration flexibility. However, beginners may struggle to achieve proper operation despite repeated adjustments. In such cases, use the Restore Factory Settings function to reset the current axis parameters to default values. The following example demonstrates restoring Axis A to default values:

Step 1: Press the A-axis button to set the A-axis as the current axis.



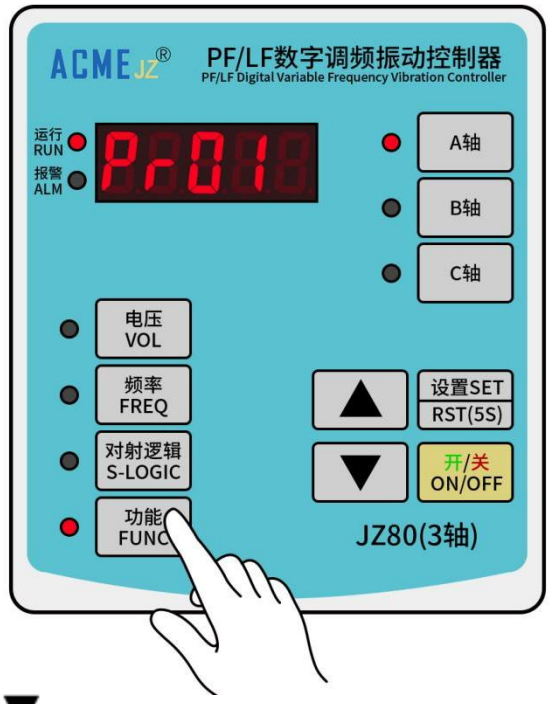
Step 2: Press and hold the "Set" button for more than 5 seconds, "ASAVE" will be displayed, release the set button, and the current axis will reset the parameters to default value.



Note: The common parameter group can be reset with the A-axis, and the parameters of other axes can be reset with the corresponding axis.

Chapter 5 Parameter Description

Press the "Function" button to enter the common function parameter menu.



Use "▲" and "▼" to switch Function Codes. The Function Code length is 9, and you can use "▼" to scroll backward to find the Function Code. Press "Voltage", "Frequency", "Beam Logic" and other buttons to switch to other menu settings.

5.1 Common Parameter Settings

To facilitate user operation, the controller places frequently used parameters at the front of the function code group, with a total of 9 parameters, 7 of which are currently available. These first 7 parameters represent the high-frequency settings.

5.1.1 Turn-On Delay Time

By default, the turn-on delay time refers to the axis's turn-on delay: when the smart photoelectric sensor or proximity switch signal indicates activation, the controller starts powering the base after the set delay time.

Function Code	Name	Function Description	Unit	Factory Value
Pr01	Turn-On Delay Time	0.0~40.0	0.1S	0.2

Note: The first proximity switch on delay time defaults to pr11as 0, if pr11 is not 0, pr01 is the first path intelligent beam photoelectric on delay time, supporting separate on delay settings for beam and proximity switches. The intelligent beam on delay function for B and C axes is similar.

5.1.2 Turn-Off Delay Time

By default, the turn-off delay time refers to the axis's turn-off delay: when the smart photoelectric sensor or proximity switch signal indicates deactivation, the controller stops powering the base after the set delay time, and the base stops vibrating.

Function Code	Name	Function Description	Unit	Factory Value
Pr02	Turn-Off Delay Time	0.0~40.0	0.1S	0.2

Note: The first proximity switch off delay time defaults to pr12 as 0, if pr12 is not 0, pr02 is the first path intelligent beam photoelectric off delay time, supporting separate off delay settings for beam and proximity switches. The intelligent through-beam delay function of the B and C axes is similar.

5.1.3 Maximum Output Voltage

The controller can set the maximum output voltage to limit the output voltage. This parameter prevents users from accidentally damaging vibration equipment by outputting excessive voltage.

Function Code	Name	Function Description	Unit	Factory Value
Pr03	Maximum output voltage	30~260	V	260

5.1.4 Control Signal Logic Relationship

The controller can set the logic relationship between the smart photoelectric sensor and switch sensor inputs when they act simultaneously. This logic relationship directly affects the controller's operation.

◆Pr04=1,Logical relationship "AND": The controller operates only when both the smart photoelectric sensor and the switch sensor input signals require the controller to run.

◆Pr04=0,Logical relationship "OR": The controller operates when either the smart photoelectric sensor or the switch sensor input signal requires the controller to run.

◆Pr04=2,Logical relationship "XOR": The controller operates only when the smart photoelectric sensor and the switch sensor input signals require different states.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr04	Control signal logical relationship	0: Logical "OR" 1: Logical "AND" 2: Logical "XOR"	0~6	1

		3: Two proximity switches and through-beam logic "OR" 4: Two proximity switches and through-beam logic "AND" 5: Two proximity switches and through-beam logic "XOR" 6: Two proximity switches OR, then AND with through-beam logic		

Note: Settings 3, 4, and 5 of parameter pr04 can only be enabled when two proximity switches are configured on an axis. Option 6 provides PLC control for dual-material channels.

5.1.5 Interlock Relationship Setting

JZ80 is a multi-axis integrated controller capable of coordinating start/stop operations across multiple axes via linkage relationship parameters under a single external signal, eliminating external wiring requirements. Note: Self-linkage renders this function ineffective.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr05	Interlock Relationship Setting	0: No interlock 1: Link A Axis 2: Link B Axis 3: Link C Axis 4: Link the other two axes, AND relationship 5: Link the other two axes, OR relationship	0~5	0

To facilitate control logic, the three-axis controller has a function to link two axes. For example, if the B axis needs to stop when either the A or C axis stops, and run when both axes are running, set B axis Pr05 to 4. If the B axis needs to run when either the A or C axis is running, and stop when both axes are stopped, set B axis Pr05 to 5.

Note: Do not set mutual linkage, such as A linking B and B simultaneously linking A, as this will cause the linkage to fail. Do not set loop linkage, such as A linking B, B linking C, and C linking A, as this will also cause the linkage to fail.

5.1.6 Through-beam Sensitivity

The controller supports 2 through-beams and allows separate sensitivity settings for each through-beam. This parameter can adjust the sensitivity of the intelligent photoelectric signal reception. The smaller the value, the higher the sensitivity, and the signal can still be detected even when the distance between the transmitter and receiver is far, but the ability to resist light interference is worse. The larger the value,

the stronger the ability to resist external light interference, but the supported distance between the transmitter and receiver becomes smaller.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr06	Through-beam sensitivity	Smaller data means higher sensitivity and poorer anti-interference ability.	0~1000	80

Setting the sensitivity of the photoelectric sensor to **0** allows the Rx pin of the sensor port to function as a proximity switch input (using the **24V and GND from other ports** for the proximity switch).

5.1.7 DO Logic Selection

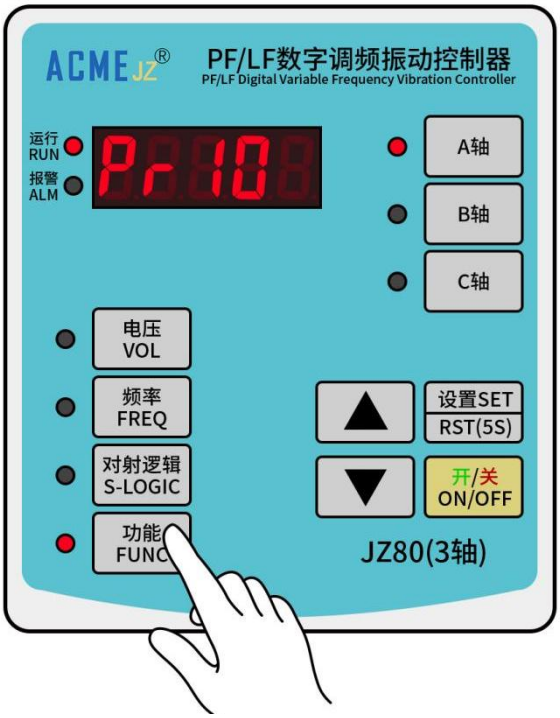
Under the default value settings, the DO port logic is normally open, and the voltage between pin 1 and pin 2 of the DO output port is 24V when the driver is running. Some applications require inverse logic, meaning the output port voltage is low when the driver is running. This function can be achieved by setting this parameter.

◆When the DO output port logic direction is set to normally open, the DO output port outputs 24V when the controller is running, and 0V when the controller is stopped.

◆When the DO output port logic direction is set to normally closed, the DO output port outputs a low level when the controller is running, and 24V when the controller is stopped.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr07	DO Logic Selection	0: Normally Open 1: Normally Closed	0~1	0

5.2 Advanced Parameter Settings



Under any axis, press and hold the "Function" button for 2 seconds to enter the advanced menu interface. The LED will display "Pr10". This menu only involves common parameters. Use "▲" and "▼" to switch Function Code numbers. The Function Code length is 45. Use "▼" to page backward to find the Function Code number. Press "Voltage", "Frequency", "Beam Logic", "Function" and other buttons to switch to other menu settings.

5.2.1 Proximity Switch Logic Direction

The first proximity switch is configured to the A-axis. Normally, when the proximity switch input port is not connected to any signal, it is equivalent to a high-level input due to the internal pull-up resistor. Under the default value settings, the controller is in the running state. When the switch sensor input port is connected to a low level, under the default value settings, the controller is in the stop state. However, for some applications, reverse logic is needed, meaning the controller should be in the

stop state when the switch sensor input port is not connected to any signal. This function can be achieved by setting this parameter.

◆When the logic direction is set to normally open, the controller is in the running state when the switch sensor input port is connected to a high level, and in the stop state when connected to a low level.

◆When the logic direction is set to normally closed, the controller is in the stop state when the switch sensor input port is connected to a high level, and in the running state when connected to a low level.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr10	Proximity switch logic direction	0: Normally Open Logic 1: Normally Closed Logic	0~1	0

5.2.2 Proximity Switch Open Delay

The proximity switch can be set with an open delay individually. By default, it is 0. In general applications, setting the axis open delay (Pr01) is sufficient. If it is necessary to separately set the open delay for the through-beam and proximity switches, this parameter will be used.

Function Code	Name	Parameter Range	Unit	Factory Value
Pr11	Proximity switch open delay	0.0~40.0	0.1S	0.0

5.2.3 Proximity Switch Close Delay

The proximity switch can be set with a close delay individually. By default, it is 0. In general applications, setting the axis close delay (Pr02) is sufficient. If it is necessary to separately set the close delay for the through-beam and proximity switches, this parameter will be used.

Function Code	Name	Parameter Range	Unit	Factory Value
Pr12	Proximity switch off delay	0.0~40.0	0.1S	0.0

5.2.4 Soft Start Time

When the controller starts from a stopped state (including power-on startups), the output voltage can smoothly ramp up to the set value to prevent the vibrating

equipment and controller from being subject to shock. This parameter (in seconds) is minimally adjustable in increments of 0.1 seconds.

Soft Start Time: The time required for the output voltage to increase from 0V to the maximum voltage. The time for the controller to ramp up from 0V to the set voltage is calculated by the following formula: output voltage / maximum voltage × soft start time.

Function Code	Name	Function Description	Unit	Factory Value
Pr13	Soft Start Time	0.0~20.0	0.1S	1.5

5.2.5 Run Control Selection

Generally, the controller's running state depends on external signals, such as the status of smart photoelectric sensors, switch sensor input ports, and panel switches, and the logical relationship with internal parameter settings. In some applications, it is necessary to remove the external signal's control over the controller. This function can be achieved through this parameter.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr14	Run Control Selection	0: External switch controls the controller, DO indicates whether the controller is running. 1: External switch does not control the controller, DO indicates the external switch signal. 2: Proximity switch port controls the controller, DO indicates the photoelectric signal. 3: Photoelectric port controls the controller, DO indicates the proximity switch signal. 4: The photoelectric and proximity switch 3 "AND" controls the controller start/stop, DO represents proximity switch 1 5:Dual-Material Channel Pneumatic Valve Function	0~5	0

This parameter enables external switches to directly control the DO output without interfering with the controller's start/stop functions.

Pr14=4 Application: For cylinder-driven lift controllers, this setting allows configuration of PWM duty cycle (high/low level) for cylinder actuation via parameters Pr40 and Pr41.

Pr14=5 Control Logic: Enables dual-DO linkage with the following conditional operations:

Single-channel material full:
When either proximity switch detects material full ,Corresponding pneumatic valve activates blowing.
Dual-channel material full:
When both proximity switches detect material full , Both pneumatic valves deactivate blowing,Vibration motor stops.

5.2.6 Acceleration Index

Acceleration Index: Indicates the percentage of the output voltage that can reach the input voltage. Users can control the effect of the acceleration function through this parameter.

Function Code	Name	Function Description	Unit	Factory Value
Pr15	Acceleration Index	100~150	1%	100

5.2.7 Communication Enable

When the master device communicates with the controller via RS485, the master device needs to control start and stop through the bus, which can be achieved by writing this parameter.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr16	Communication Enable	Bit0: Axis enable setting bit Bit1: Axis communication enable selection bit. Bit2: Axis communication force enable	0~7	0

If the controller does not need external sensors (photoelectric or proximity switches) and only uses communication to control the axis enable, then enable BIT2 and make the following settings:

Force communication enable axis then set the corresponding axis Pr16 to 5 (0x05)

Force communication disable axis then set the corresponding axis Pr16 to 4 (0x04)

If the controller requires external sensors, the controller's start/stop is controlled by both communication and external sensors, meaning the axis starts when both

communication enable and external sensors are effective. If either the communication enable or the external sensor is invalid, the axis stops.

Force communication enable axis then set the corresponding axis Pr16 to 3 (0x03)

Force communication disable axis then set the corresponding axis Pr16 to 2 (0x02)

5.2.8 Axis Status

When the master device communicates with the controller, it sometimes needs the current status of the axis, this Function Code is read-only.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr17	Axis Status	Units digit is 0: Initialization Units digit is 1: Disabled Units digit is 2:Pre Run Units digit is 3: Enabled Units digit is 4: Alarm Tens and hundreds digits are alarm codes	0~100	2

States 0 and 1 only appear when powered on, while states 2, 3, and 4 are the subsequent controller operating states. When the number of digits is 4 and the alarm is triggered, the ten digits are the alarm code. If no alarm is triggered, the alarm code will be 0.

5.2.9 Linkage Open Delay

In some cases, the linkage switch needs to be delayed, this parameter can be set. Default is 0.

Function Code	Name	Function Description	Unit	Factory Value
Pr18	Linkage open delay time	0.0~40.0	0.1S	0.0

5.2.10 Linkage Close Delay

In some cases, the linkage switch needs to be delayed, this parameter can be set. Default is 0.

Function Code	Name	Function Description	Unit	Factory Value
Pr19	Linkage close delay time	0.0~40.0	0.1S	0.0

5.2.11 DO Axis Selection

By default, DO1 is configured to the A-axis,DO2 is configured to the B-axis. If it needs to be configured to another axis, it can be modified through parameters.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr20	DO Axis Selection	1: A Axis Output 2: B Axis Output 3: C Axis Output	1~3	1

5.3.1 Port input status

The controller supports 3 NPN proximity switch ports, 1 PNP proximity switch port, and 2 through-beam ports. This function code displays whether external ports such as proximity switches are valid. Bit0 corresponds to the first channel, Bit1 corresponds to the second channel, Bit2 corresponds to the third channel. If Bit0 is 0, it means the first proximity switch light is on and an object is detected; if Bit4 is 0, it means the receiving end has through-beam light, conversely the receiving end is blocked. Other bits follow the same logic.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr25	Port input status	Bit0~Bit2 correspond to 3 proximity switches respectively Bit3: PNP proximity switch Bit4: Through-beam 1 status Bit5: Through-beam 2 status	0~63	0

5.3.2 Through-beam 2 Port Selection

The controller supports two through-beams, with the second through-beam defaulting to the B-axis. This parameter allows configuration to the C-axis.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr26	Through-beam 2	2: Configure to B-axis	2~3	2

	port selection	3: Configure to C-axis		

5.3.3 Third Proximity Switch Axis Selection

The third proximity switch is default configured to the B-axis, but can also be configured to the C-axis through this parameter.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr27	Third proximity switch axis selection	1: Configure to A-axis 2: Configure to B-axis 3: Configure to C-axis	1~3	3

Note: The default value of Pr27 for dual-axis controllers is 0.

5.3.4 Third Proximity Switch Logic Direction

◆When the logic direction is set to normally open, the controller is in the running state when the switch sensor input port is connected to a high level, and in the stop state when connected to a low level.

◆When the logic direction is set to normally closed, the controller is in the stop state when the switch sensor input port is connected to a high level, and in the running state when connected to a low level.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr28	Third proximity switch logic direction (Only dual-axis controllers are available)	0: Normally Open Logic 1: Normally Closed Logic	0~1	0

The Third proximity switch can be set with an open delay individually. By default, it is 0. If it is necessary to separately set the open delay for the through-beam and proximity switches, this parameter will be used.

Function Code	Name	Parameter Range	Unit	Factory Value
Pr29	Third proximity switch open delay (Only dual-axis controllers	0.0~40.0	0.1S	0.0

	are available)			

The Third proximity switch can separately set the on and off delays. By default, it is 0, and setting the axis switch delay is sufficient. If you need to separately set the on and off delays for the photoelectric and proximity switches, use this parameter to set the proximity switch off delay.

Function Code	Name	Parameter Range	Unit	Factory Value
Pr30	Third proximity switch close delay (Only dual-axis controllers are available)	0.0~40.0	0.1S	0.0

5.3.5 PNP Port Settings

The controller supports one PNP input, which is by default configured to proximity switch port 1. This parameter can configure it to other proximity switch ports.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr31	PNP Port Setting	0: Do not enable PNP port 1: AND with proximity switch port 1 2: AND with proximity switch port 2 3: AND with proximity switch port 3 4: Replace proximity switch port 1 5: Replace proximity switch port 2 6: Replace proximity switch port 3	0~6	1

When "AND" with proximity switch port 1, it means that both the proximity port and PNP port are valid, and the port signal is valid. If either the proximity switch or PNP port has an invalid signal, the port signal is invalid.

5.3.6 Communication DO Settings

The controller supports 2 DO channels, and the corresponding DO level can be set via communication.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr39	Port input status	Bit0: DO1 level Bit1: DO2 level	0~7	0

		Bit2: DO setting communication enable		

Bit2 is the setting switch. If Bit2 is set to 0, the DO depends on the controller status. If Bit2 is set to 1, the DO output status is determined by Bit0 and Bit1 of Pr40. In this case, if Bit0 is set to 1, DO1 is on. If Bit0 is set to 0, DO1 is off. If Bit1 is set to 1, DO2 is on. If Bit1 is set to 0, DO2 is off.

5.3.7 DO On/Off Time

When controlling the drive of the pusher machine, the cylinder needs to run and stop, and the DO outputs a PWM waveform. The high and low level times can be set by parameters.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr40	Pusher machine DO on time	Control the time for the pusher machine to open the cylinder (10ms)	0~60000	-

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr41	Pusher machine DO off time	Control the time for the pusher machine to close the cylinder (10ms)	0~60000	-

5.3.8 Temperature Display

The controller has temperature detection and can display the current temperature value of the controller.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr43	Controller temperature	Current Temperature of the Controller	0~100	-

5.3.9 Input Bus Voltage

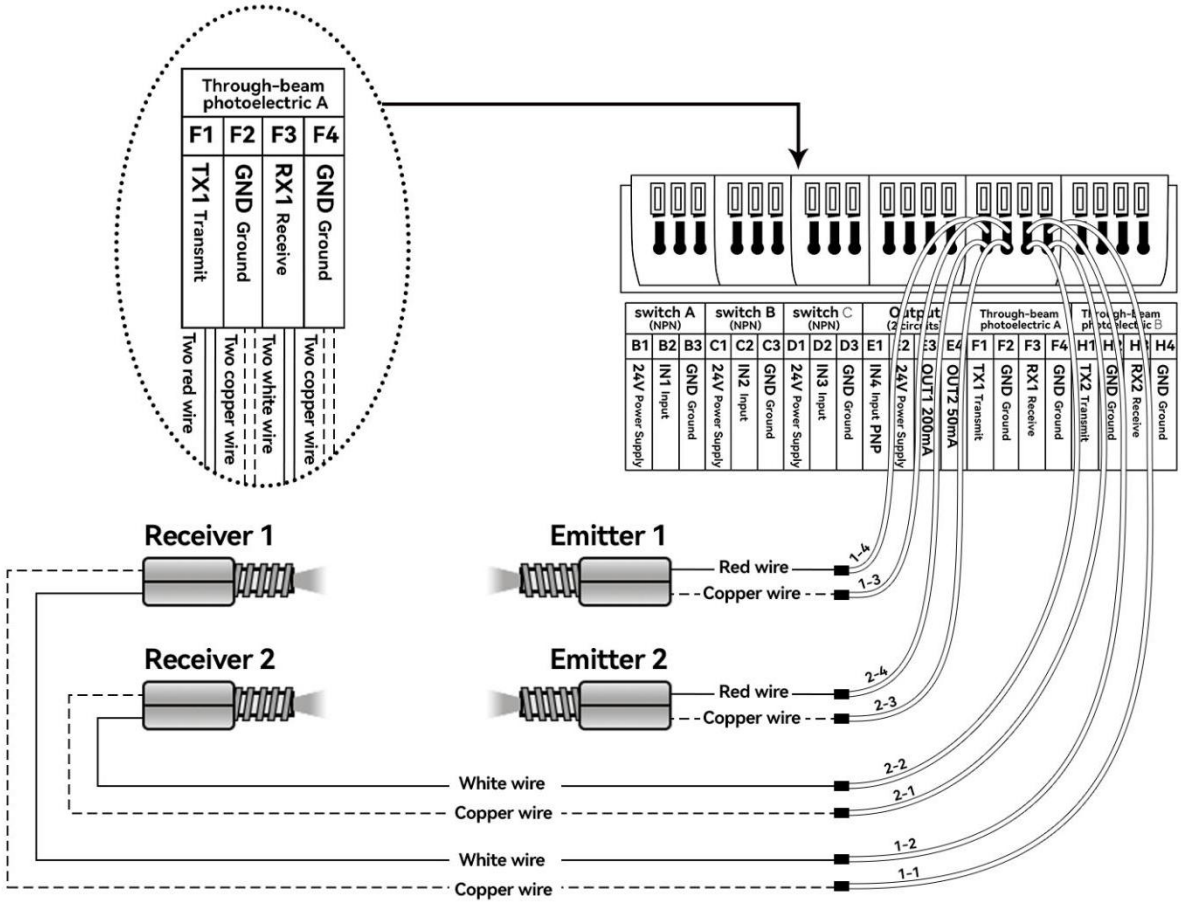
The controller detects and displays the bus voltage. Divide the bus voltage by 1.414 to obtain the AC input voltage value.

Function Code	Name	Function Description	Parameter Range	Factory Value
Pr44	Bus voltage	Current Bus Value, approximately 1.414 times the input voltage.	0~500	-

Chapter 6 Application Cases

6.1 Dual Channel Photoelectric Sensor Solution

In some vibratory feeder applications, dual or multiple channels are required to improve vibration conveying efficiency. Photoelectric sensors need to be installed to detect the fullness of each channel. Control the vibration plate start and stop based on the detection results: if any channel's photoelectric sensor is not blocked, the vibration plate will vibrate. If both channels' sensors are blocked, the vibratory feeder stops. The wiring method is as follows:



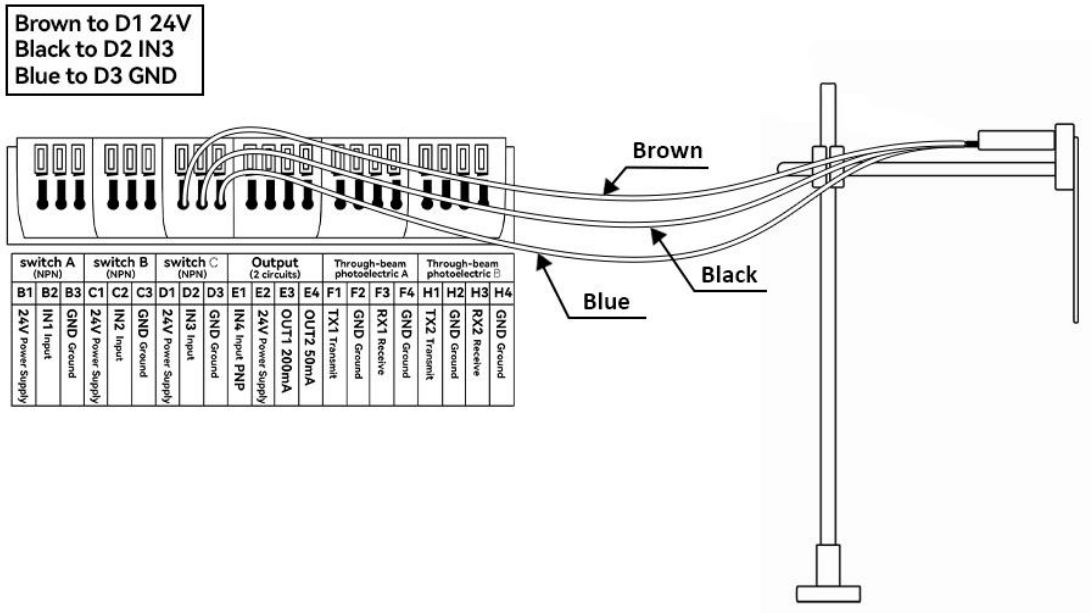
1.Connect the two intelligent photoelectric sensor lines together, red to red, white to white, and copper wire to copper wire, just like wiring a single sensor.

2.Press the sensor logic button to change the sensor logic to 1.

6.2 Hopper Control

Some vibratory feeder application sites use material bins, requiring control of the bin based on the actions of the circular vibrator and bin pendulum. The bin must stop when the circular vibrator stops; during vibrator operation, the bin runs when the pendulum signal light is on, and stops when the pendulum signal light is off.

This multi-function controller adds linkage features to simplify field applications. The wiring connections are as follows:



Additional settings required:

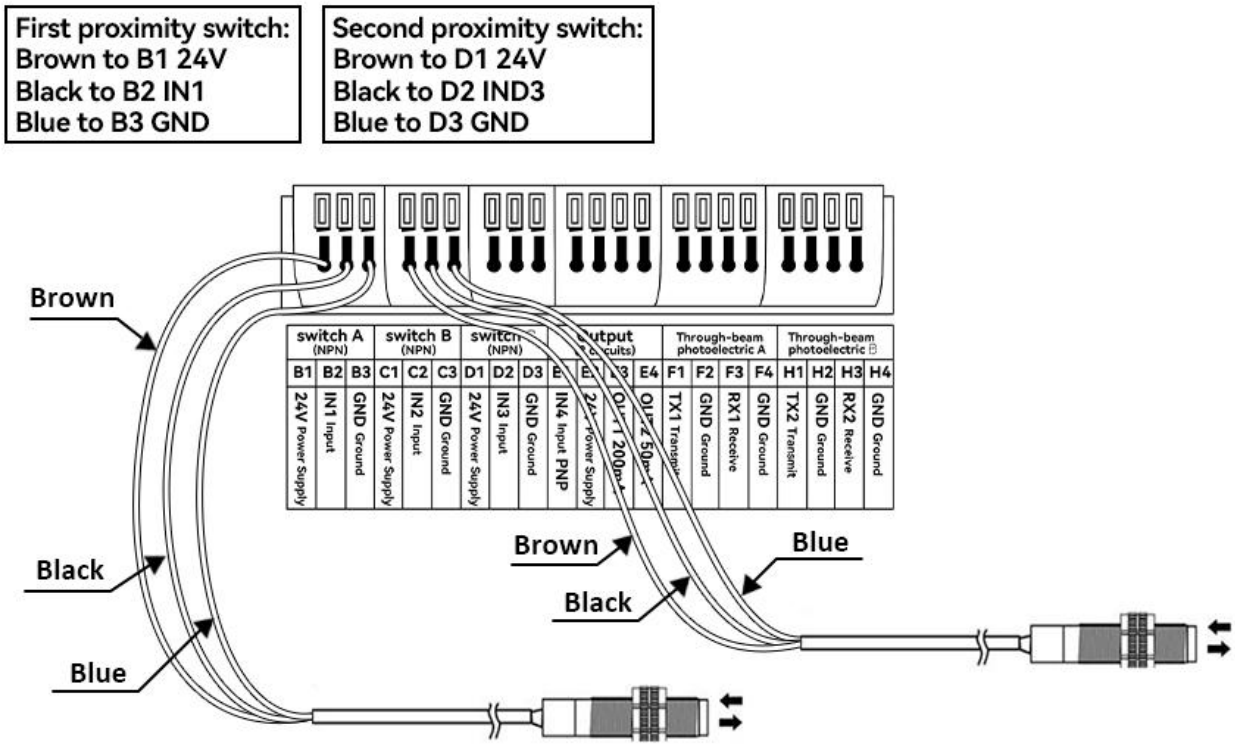
1. Set the linkage relationship parameter for the C-axis material bin (Pr05) to 1 for synchronization with the A-axis circular vibrator.
2. Configure the third proximity switch logic direction parameter for the C-axis (Pr10) to 1 (inverse logic).

If the material bin also controls a hoist:

Connect a relay between E3 (OUT1) and E2 (24V) to control hoist power supply switching,Configure DO1 logic selection parameter for A-axis (Pr07) according to operational logic between material bin and hoist.

6.3 Two Proximity Switch Solution

Some vibratory bowl applications require the use of two proximity switches to control the start and stop of the vibratory bowl, such as in dual-channel scenarios. The single-axis controller does not support using two proximity switches to directly control the start and stop of the vibratory feeder. Considering such applications, this controller has added configurable proximity switch functions to flexibly support two proximity switches. The wiring diagram is as follows:



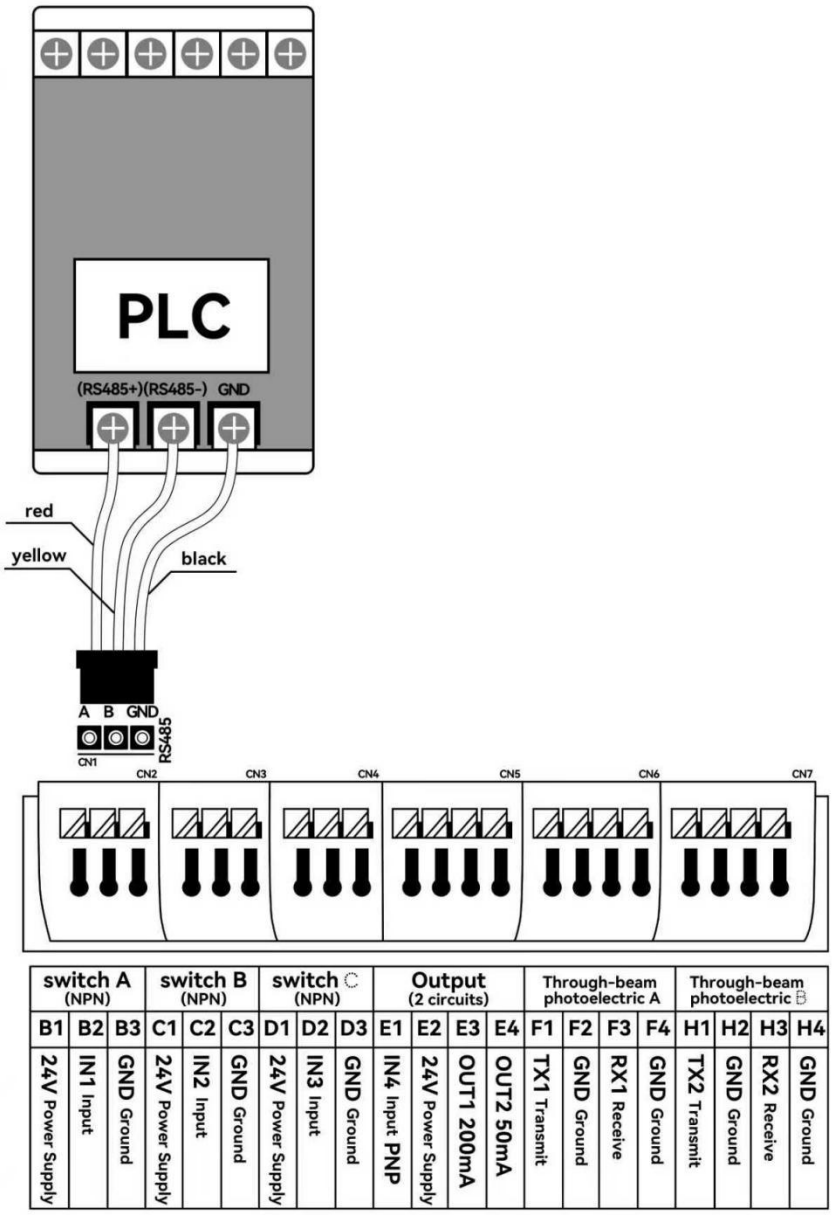
Additionally, the following settings need to be made:

1. Configure the third proximity switch to Axis A by setting Pr27 to 1.
2. Press the through-beam logic button to set the through-beam logic to 1.
3. Set the control signal logic relationship (Pr04) to 6 to enable the "OR" logic of the two proximity switches.

In addition, through flexible configuration of the controller, this controller also supports other application solutions for two proximity switches.

Chapter 7 Modbus Communication

7.1 RS485 Communication Wiring



switch A (NPN)			switch B (NPN)			switch C (NPN)			Output (2 circuits)				Through-beam photoelectric A				Through-beam photoelectric B			
B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	E4	F1	F2	F3	F4	H1	H2	H3	H4
24V Power Supply	IN1 Input	GND Ground	24V Power Supply	IN2 Input	GND Ground	24V Power Supply	IN3 Input	GND Ground	IN4 Input PNP	24V Power Supply	OUT1 200mA	OUT2 50mA	TX1 Transmit	GND Ground	RX1 Receive	GND Ground	TX2 Transmit	GND Ground	RX2 Receive	GND Ground

7.2 Set RS485 Communication Address (Pr35)

When multiple RS485 devices participate in networking, each device's address must be unique; otherwise, communication abnormalities will occur, making communication impossible. Wherein:

Function Code	Name	Option Description	Parameter Range	Defaults
Pr35	RS485 Communication Address	0: Broadcast Address 1~247: Slave Address.	0~247	1

The master device can perform write operations on slaves through broadcast frames. Slave devices will perform corresponding operations upon receiving broadcast frames but will not respond.

7.3 RS485 Baud Rate Setting (Pr36)

The controller's communication baud rate must match the master device's baud rate setting; otherwise, communication will fail.

Function Code	Name	Option Description	Parameter Range	Defaults
Pr36	RS485 Baud Rate Selection	0 : 2400bps 1:4800bps 2 : 9600pbs 3:19200bps 4:38400bps 5:57600pbs 6:115200bps	0~6	2

When multiple devices participate in networking, if a device's baud rate does not match the host's, it will cause communication errors for that device or affect other devices' communication.

7.4 Confirm RS485 Write EEPROM Enable (Pr37)

The controller provides real-time saving of Function Codes (Pr37=1). After modifying Function Codes through communication, they are saved in EEPROM in real-time, ensuring data retention after power loss.

Function Code	Symbol	Option Description	Parameter Range	Defaults
Pr37	RS485 Write EEPROM Enable	0: Do not save written parameters 1: Save written parameters	0~1	0

This function should be used with caution:

1. If the Function Code only needs to be modified once and then used continuously, the real-time saving function can be enabled (Pr37=1);

2. If the Function Code value needs to be changed frequently, it is recommended to disable the real-time saving function (Pr37=0). Otherwise, frequent EEPROM writes will reduce its lifespan.

3. Default Pr37=0.

7.5 Communication Protocol

The controller's data length is 16-bit, and the Function Code can be read and written through RS485 RTU. The command codes are as follows:

Operation	Command Code
Read 16-bit Function Code	0x03
Write 16-bit Function Code	0x06

Offset address is queried according to the address table

Supports reading up to 10 function codes continuously in a single operation.

7.5.1 Read Function Code 0x03

Request Frame Format:

Start	A frame starts when the idle time is greater than or equal to 3.5 characters.
ADDR	Communication Address 1~247
CMD	0x03
DATA[0]	Starting Function Code group number. The Pc group number for the A-axis is 1, the PI group number is 2, and the Pr group number is 3. The Pc group number for the B-axis is 11 (0x0B), the PI group number is 12 (0x0C), and the Pr group number is 13 (0x0D). The Pc group number for the C-axis is 21 (0x15), the PI group number is 22 (0x16), and the Pr group number is 23 (0x17).
DATA[1]	Starting Function Code Group Offset, e.g., the offset within Pr01 group is 1
DATA[2]	High 8-bit of the number of Function Codes to read (Hexadecimal)
DATA[3]	The lower 8 bits (hexadecimal) of the read Function Code count support a maximum read of 20 8-bit codes at a time.
CRCL	Low 8-bit of CRC check valid bytes
CRCH	High 8-bit of CRC check valid bytes
END	A frame ends when the idle time is greater than or equal to 3.5 characters.

Response Frame Format:

Start	A frame starts when the idle time is greater than or equal to 3.5 characters.
ADDR	Communication Address 1~247

CMD	0x03
DATALENGTH	The number of Function Code bytes, equal to twice the number of Function Codes (16-bit).
DATA[0]	Function Code value, high 8 bits.
DATA[1]	Function Code value, low 8 bits.
CRCL	Low 8-bit of CRC check valid bytes
CRCH	High 8-bit of CRC check valid bytes
END	A frame ends when the idle time is greater than or equal to 3.5 characters.

7.5.2 Write Function Code 0x06

In the MODBUS RTU protocol, writing a 16-bit Function Code uses 0x06.

Request Frame Format:

Start	A frame starts when the idle time is greater than or equal to 3.5 characters.
ADDR	Communication Address 1~247
CMD	0x06
DATA[0]	Starting Function Code group number. The Pc group number for the A-axis is 1, the PI group number is 2, and the Pr group number is 3. The Pc group number for the B-axis is 11 (0x0B), the PI group number is 12 (0x0C), and the Pr group number is 13 (0x0D). The Pc group number for the C-axis is 21 (0x15), the PI group number is 22 (0x16), and the Pr group number is 23 (0x17).
DATA[1]	Starting Function Code Group Offset, e.g., the offset within Pr01 group is 1
DATA[2]	Write data high 8 bits (hexadecimal).
DATA[3]	Write data low 8 bits (hexadecimal).
CRCL	Low 8-bit of CRC check valid bytes
CRCH	High 8-bit of CRC check valid bytes
END	A frame ends when the idle time is greater than or equal to 3.5 characters.

Response Frame Format:

Start	A frame starts when the idle time is greater than or equal to 3.5 characters.
ADDR	Communication Address 1~247
CMD	0x06
DATA[0]	The Function Code group number to be written. The Pc group number for the A-axis is 1, the PI group number is 2, and the Pr group number is 3. The Pc group number for the B-axis is 11 (0x0B), the PI group number is 12 (0x0C), and the Pr group number is 13 (0x0D). The Pc group number for the C-axis is 21 (0x15), the PI group number is 22 (0x16), and the Pr group number is 23 (0x17).
DATA[1]	Offset within the written Function Code group, for example,

	the offset within Pr01 group is 1
DATA[2]	High byte of the written data, in hexadecimal
DATA[3]	Low byte of the written data, in hexadecimal
CRCL	Low 8-bit of CRC check valid bytes
CRCH	High 8-bit of CRC check valid bytes
END	A frame ends when the idle time is greater than or equal to 3.5 characters.

7.5.3 Communication error frame

Error frame response format:

Start	A frame starts when the idle time is greater than or equal to 3.5 characters.
ADDR	Communication Address 1~247
CMD	Command code + 0x80
DATA[0]~DATA[3]	DATA|ERRORCODE
CRCL	Low 8-bit of CRC check valid bytes
CRCH	High 8-bit of CRC check valid bytes
END	A frame ends when the idle time is greater than or equal to 3.5 characters.

Error Frame Code:

Error Code	Encoder Description
0x0001	Illegal Command Code
0x0002	Illegal Data Address
0x0003	Illegal Data
0x0004	Slave Device Failure

7.5.4 Communication Example

1. Master Sends Read Request

01	03	02	01	00	01	D4	72

The request frame indicates: the master station reads the slave station with address 1, starting from the Function Code PI01 of the A-axis, and 1 piece of 16-bit data.

The last two digits are CRC check bits, with the low bit first and the high bit last.

Slave Return Frame:

01	03	02	00	96	38	2A

The response frame indicates: the slave station returns 2 bytes of data, with the data content being 0x96, and the last two digits are CRC check bits, actively returned by the slave station.

Combined with the previous frame, the master station reads PI01, which is the output voltage of the A-axis, and the slave station returns 150 (V). If 018x is returned, it indicates a read failure.

2. Master Sends Write Request

01	06	0c	02	03	20	CRCL	CRCH

The request frame indicates that the master station writes 0x320 (800) to the Function Code PI02 of the B-axis for the slave station with address 1. Slave Return Frame:

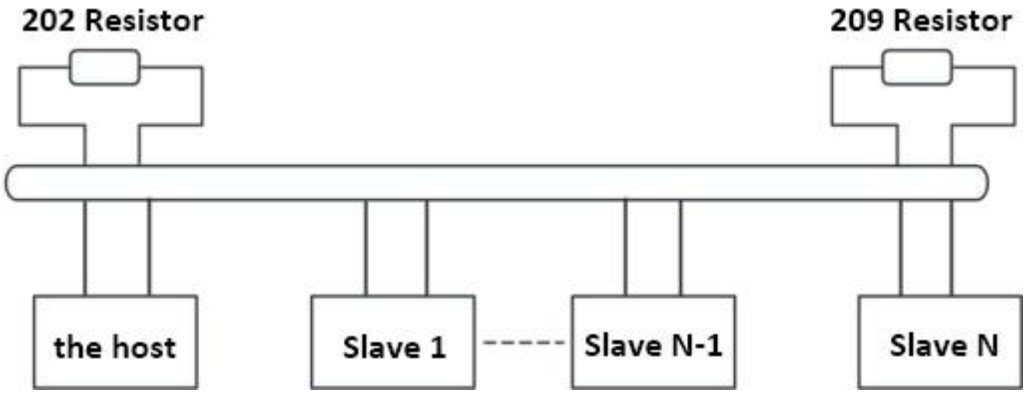
01	06	0c	02	03	20	CRCL	CRCH

This return frame indicates: the slave has successfully written.

Combined with the previous frame, the master station writes an output frequency of 80.0Hz to the B-axis PI02.

7.6 Common Issues and Troubleshooting for 485

7.6.1 Terminal Resistor Connection Method

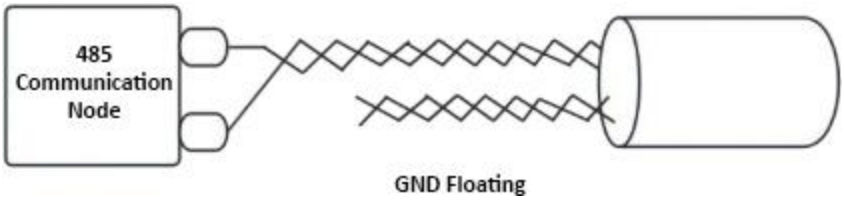


◆ Only 120Ω resistors can be connected at the RS485 terminals.

◆ It is recommended to place the master station on one side of the bus.

◆Measure the resistance of the 485 bus when the device is powered off; the resistance should be around 60Ω. If the resistance is less than 50Ω, check if terminal resistors are connected at nodes other than the two ends of the bus and disconnect them. If the resistance is 0, check if the node is short-circuited or damaged.

7.6.2 Correct Wiring Method (For Nodes Without a GND Connection Point)



◆ Look for a reference ground shared with RS485 on this node; if there is a GND, connect it to this reference ground. Pay special attention that the shield layer should not be connected to the reference ground, as it may cause port damage.

◆Look for a shared reference ground with 485 on the board at this node. If there is a GND, connect it to this reference ground. Pay special attention that the shield layer should not be connected to the reference ground, as it may cause port damage.

◆If the 485 reference ground cannot be found, as shown in the figure, leave 485GND floating while ensuring the PE ground wire is reliably connected.

Chapter 8 Safety Protection Functions

8.1 Short Circuit Protection Function

When a short circuit occurs at the output, the controller will immediately stop the output and display XErr.1, where X represents the axis information (A, B, C), indicating an Err1 alarm on a certain axis. By operating the buttons (voltage, frequency, beam logic, function, etc.), the displayed alarm can be removed. At this time, the controller cannot output voltage, but parameter adjustments can be made.

8.2 Over-current Protection Function

The controller can stop the output when user misoperation or excessive load causes the output current to exceed the set value. At the same time, it displays Err.02, indicating an over-current alarm for the controller (including three axes). The three axes will stop running to protect the machine and user equipment. This alarm will automatically reset.

8.3 Overheat Protection Function

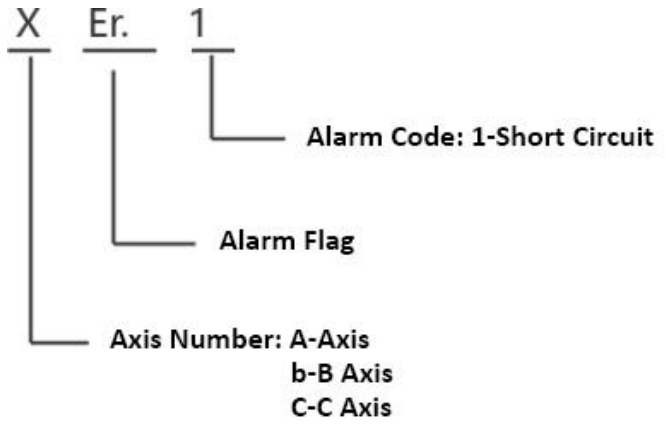
When the controller detects that the working temperature exceeds 70℃, it stops the output and displays Err.03, indicating an over-temperature alarm for the controller (including three axes). The three axes will stop running. When the temperature decreases, the alarm will automatically reset.

8.4 Under/Over-voltage Protection Function

When the controller detects that the input voltage is too high, it enters an over-voltage alarm and stops the output. At the same time, it displays Err.04, indicating an over-voltage alarm for the controller (including three axes). The three axes will stop running. When the voltage returns to normal, the alarm will automatically reset.

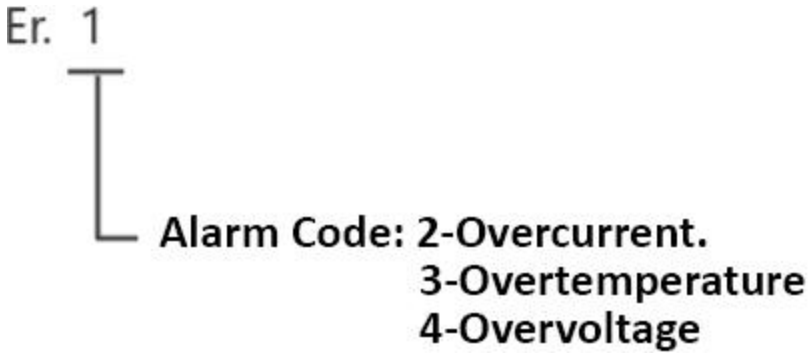
8.5 Alarm Information Explanation

8.5.1 Axis Alarm Information



Axis alarm, the alarmed axis stops, while other axes continue to run. Includes Er.01 short circuit alarm.

8.5.2 Controller Alarm Information



Controller alarm, all three axes stop simultaneously. Includes Er.02 over-current alarm, includes Er.03 over-temperature alarm, includes Er.04 over-voltage alarm.

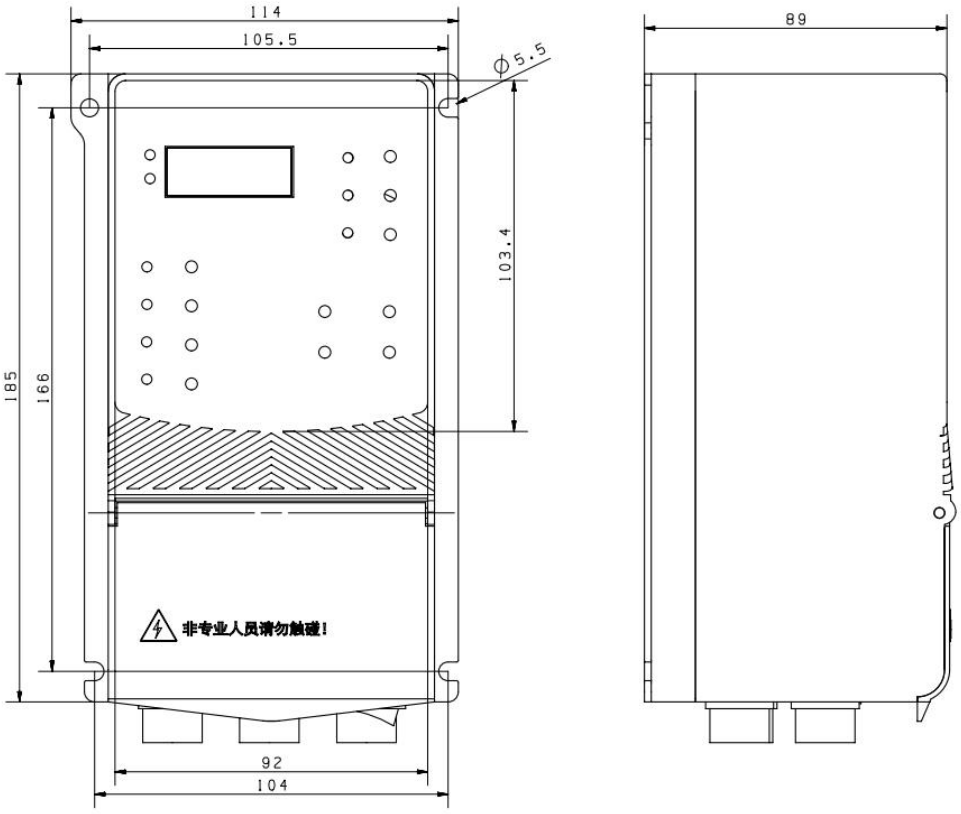
8.6 Error Information and Troubleshooting Table

1	**Turn on the switch, no display**	(1) Verify mains power presence at the electrical outlet (2) Ensure the power plug is securely plugged into the outlet
2	**There is a display, but the vibration plate is not moving, and there is no sound**	(1) Please verify that the output cable between the controller and the vibrating bowl feeder is correctly and securely connected. (2) Check the controller parameters to confirm whether the output voltage is set too low. (3) Inspect if the "RUN" lamp on the controller is illuminated, indicating operational status. If confirmed operational, examine the switches, input signals, and validate proper configuration of logic parameters.
3	**Control signal does not work**	(1) Please check if the control signal is correctly connected; (2) Please check if the control signal ground is correctly connected to the controller ground; (3) Please check if the control signal logic relationship settings match the expected configuration.

4	**There is a display, the vibration plate does not move but sound can be heard**	(1) Please adjust the relevant parameters step by step according to the methods introduced in this manual.
5	**Periodically fluctuating**	(1) Please check the vibration coupling issue between multiple vibration bodies; (2) Please adjust the working frequencies of the coupled vibration equipment to increase the frequency difference.
6		(1) Output short circuit, check the wiring and the vibration plate coil for short circuits, and cross-check with other bases. (2) Inappropriate parameter settings causing excessive current. The first digit displays the axis number, which are A, B, C.
7		(1) Output short circuit, check the wiring and the vibration plate coil for short circuits; (2) Incorrect parameter settings, such as frequency and voltage, causing excessive current; (3) Whether the vibration plate base is too large, resulting in excessive load.
8		(1) Controller overheating, install the controller in a well-ventilated or heat-dissipating environment; (2) Whether the controller base is securely locked to the mounting plate; (3)Evaluate whether the controller may be undersized for the application.
9		(1) Voltage is too high, check if the controller input voltage is too high; (2) If the input voltage is normal, please return to the factory for repair.

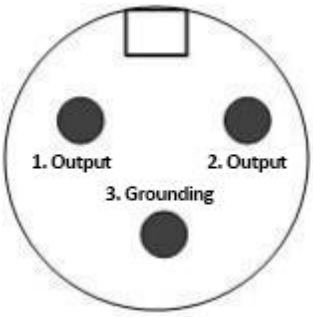
Appendix A Dimensions

JZ80 Vibration Feeding Controller Dimensions: (mm)



Appendix B Port Definitions

Output Port Definitions



Please note:

1. Please confirm that the electromagnetic coil is connected to the two output pins, and the mechanical shell of the vibration body needs to be reliably grounded, otherwise it will cause the shell to be electrified, which may lead to serious safety accidents.

2. When soldering an aviation plug, be sure to tightly wrap the joint part with heat shrink tubing or insulating tape, and then insert it into the metal sleeve of the aviation plug to avoid electric leakage or short circuit accidents.

Appendix C Controller Parameter List

Address Table Query

Pc01, Pc02, and after Pr16 are shared Function Codes, operate on Axis A.

Function Code	Name	Function Description	Default Value	RS485 Address			Read/ Write Attribute
				Axis A	B-axis	C axis	
PI01	output voltage	0~260V, in 1V	100	0x101 （257）	0x1101 (4353)	0x2101 (8449)	RW
PI02	output frequency	40~400.0HZ, in 0.1HZ	80	0x102 (258)	0x1102 (4354)	0x2102 (8450)	RW
Pc01	Through-beam Photoelectric Sensor 1 Logic Direction	0: Normally Open Logic 1: Normally Closed Logic	0	0x103 （259）	-	-	RW
Pc02	Through-beam photoelectric 2 sensor logic direction	0: Normally Open Logic 1: Normally Closed Logic	0	0x104 （260）	-	-	RW
Pr01	Turn-On Delay Time	0.0~10.0S, in 0.1S	0.2	0x201 (513)	0x1201 (4609)	0x2201 (8705)	RW
Pr02	Turn-Off Delay Time	0.0~10.0S, in 0.1S	0.2	0x202 (514)	0x1202 (4610)	0x2202 (8706)	RW
Pr03	Maximum output voltage	0~260V, in 1V	260	0x203 (515)	0x1203 (4611)	0x2203 (8707)	RW
Pr04	Control signal logical relationship	0: Logical "OR" 1: Logical "AND" 2: Logical "XOR" 3: Two proximity switches and through-beam logic "OR" 4: Two proximity switches and through-beam logic "AND" 5: Two proximity switches and through-beam logic "XOR" 6: Two proximity switches OR, then AND with through-beam logic	1	0x204 (516)	0x1204 (4612)	0x2204 (8708)	RW
Pr05	Interlock Relationship Setting	0: No interlock 1: Link A Axis 2: Link B Axis 3: Link C Axis 4: Link the other two axes, AND relationship 5: Link the other two axes, OR relationship	0	0x205 (517)	0x1205 (4613)	0x2205 (8709)	RW
Pr06	Through-beam 1 sensitivity	0~1000	80	0x206 (518)	0x1206 (4614)	-	RW
Pr07	DO Logic Selection	0: Normally Open 1: Normally Closed	0	0x207 (519)	0x1207 (4615)	-	RW
P10	Proximity switch logic direction	0: Normally Open Logic 1: Normally Closed Logic	0	0x20A (522)	0x120A (4618)	0x220A (8714)	RW
P11	Proximity switch open delay	0.0~4.0S, in 0.1S	0	0x20B (523)	0x120B (4619)	0x220B (8715)	RW
Pr12	Proximity switch close delay	0.0~40.0S, in 0.1S	0	0x20C (524)	0x120C (4620)	0x220C (8716)	RW
Pr13	Soft Start Time	0.0~20.0S, in 0.1S	1.5	0x20D (525)	0x120D (4621)	0x220D (8717)	RW
Pr14	Run Control Selection	0: External switch controls the controller, DO indicates	0	0x20E (526)	0x120E (4622)	0x220E (8718)	RW

		whether the controller is running. 1: External switch does not control the controller, DO indicates the external switch signal. 2: Proximity switch port controls the controller, DO indicates the photoelectric signal. 3: The photoelectric port control controller of the through-beam sensor, DO represents the proximity switch signal 4: The "AND" control of the through-beam and proximity switch 3 controls the controller start/stop, DO represents proximity switch 1					
Pr15	Acceleration Index	100~150, in %	100	0x20F (527)	0x120F (4623)	0x220F (8719)	RW
Pr16	Communication Enable	Bit0: Axis enable setting bit Bit1: Axis communication enable selection bit. Bit2: Axis communication force enable	0	0x210 (528)	0x1210 (4624)	0x2210 (8720)	RW
Pr17	Axis Status	Unit digit 0: Initialization unit digit is 1: Not enabled unit digit is 2: Enabled unit digit is 3: Alarm tens digit, hundreds digit is alarm code	2	0x211 (529)	0x1211 (4625)	0x2211 (8721)	RO
Pr18	Linkage open delay time	0.0~40.0	0	0x212 (530)	0x1212 (4626)	0x2212 (8722)	RW
Pr19	Linkage close delay time	0.0~40.0	0	0x213 (531)	0x1213 (4627)	0x2213 (8723)	RW
Pr20	DO Axis Selection	1: A Axis Output 2: B Axis Output 3: C Axis Output	1	0x214 (532)	0x1214 (4628)	-	RW
Pr25	Port input status	Bit0~Bit2 correspond to 3 proximity switches respectively Bit3: PNP proximity switch Bit4: Through-beam 1 status Bit5: Through-beam 2 status	0	0x219 (537)	-	-	RO
Pr26	Two-port configuration for through-beam	2: Configure to B-axis 3: Configure to C-axis	2	0x21A (538)	-	-	RW
Pr27	Third proximity switch axis selection	1: Configure to A-axis 2: Configure to B-axis 3: Configure to C-axis 4: Replace the first proximity switch 5: Replace the second proximity switch	3	0x21B (539)	-	-	RW
Pr28	Third proximity switch logic direction	0: Normally Open Logic 1: Normally Closed Logic	0	0x21C (540)	-	-	RW
Pr29	Third proximity switch on delay	0.0~10.0S, in 0.1S	0	0x21D (541)	-	-	RW
Pr30	Third proximity	0.0~10.0S, in 0.1S	0	0x21E	-	-	RW

	switch off delay			(542)			
Pr31	PNP Port Setting	0: Do not enable PNP port 1: AND with proximity switch port 1 2: AND with proximity switch port 2 3: AND with proximity switch port 3 4: Replace proximity switch port 1 5: Replace proximity switch port 2 6: Replace proximity switch port 3	1	0x21F (543)	-	-	RW
Pr35	RS485 Communication Address	1~255	1	0x223 (547)	-	-	RW
Pr36	RS485 baud rate	0 : 2400bps 1:4800bps 2 : 9600pbs 3:19200bps 4:38400bps 5:57600pbs 6:115200bps	2	0x224 (548)	-	-	RW
Pr37	RS485 Write EEPROM Enable	0: Do not save written parameters 1: Save written parameters	0	0x225 (549)	-	-	RW
Pr38	Parity Check	0: No parity, 2 stop bits 1: Even parity, 1 stop bit 2: Odd parity, 1 stop bit 3: No parity, 1 stop bit	0	0x226 (550)	-	-	RW
P39	DO2 Settings	Bit0: DO1 level Bit1: DO2 level Bit2: DO setting communication enable	0	0x227 (551)	-	-	RW
Pr40	DO turn-on time	0~60000	200	0x228 (552)	-	-	RW
Pr41	DO turn-off time	0~60000	200	0x229 (553)	-	-	RW
Pr43	Controller temperature	0~100	-	0x22B (555)	-	-	RO
Pr44	Bus voltage	0~500	-	0x22C (556)	-	-	RO

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Address: Floor 4, Building 13A, No. 619, Wangmei Road, Linping District,
Hangzhou City, Zhejiang Province
Contact: Mr. Zhang, 13175555185
Website: http://www.tonghuiintell-tech.com/