



Z-Arm 2442B

Product Manual

Industrial Robot / Collaborative Robot / Electric Gripper/
Intelligent Actuator / Automation Solution



Z-Arm 2442B/Z-Arm XX42B



High precision

Repeatability
 $\pm 0.02\text{mm}$

Large Payload

5kg

Large Arm Span

J1 axis 220mm
J2 axis 200mm

Competitive Price

Industrial-level quality
Consumptive price

Model Definition

Z-Arm T2442BN0-A0M1-FXXX-01

T	24	42	B	N	0	A0	M1
Blank: Four axis F: Five axis T: Three axis	If z-axis stroke is 240, here is 24	If robot arm span is 420, here is 42	B: High-end version Empty: Standard version	C: Collaborative N: Non-collaborative	0: Silver 1: Black	A0: Means two straight-through cables A2: Means two vacuum tubes	M1: Second arm motion range $\pm 164^\circ$ (rotate outwards) M2: Second arm motion range $15^\circ - 345^\circ$ (rotate inwards)
FXXX-01							
F: Non-standard customized option, if it is a standard product, it is blank XXX: XXX: Customer label number 01: version number							

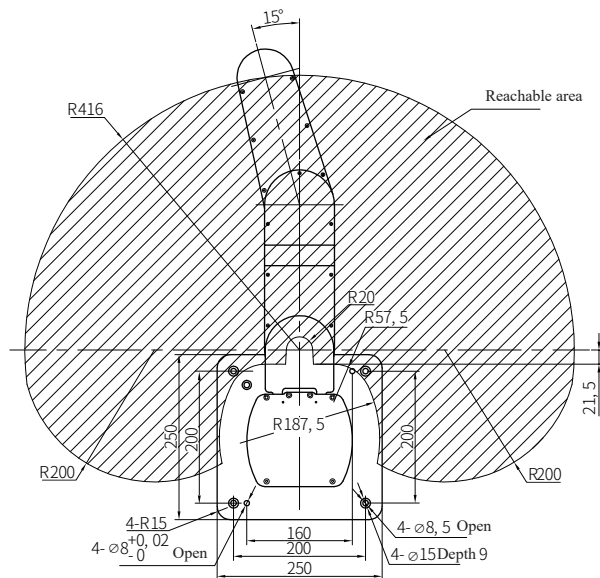
Specification

Z-Arm XX42B Collaborative Robot arm	Parameters
1 axis arm length	220mm
1 axis rotation angle	±90°
2 axis arm length	200mm
2 axis rotation angle	±164° Optional: 15°-345°
Z axis stroke	240 mm (height can be customized)
R axis rotation range	±1080°without mechanical limit / ±170°with mechanical limit
Linear speed	1600mm/s (payload 4kg)
Repeatability	±0.02mm
Standard payload	4kg
Maximum payload	5kg
Degree of freedom	4
Power supply	220V/110V50-60HZ adapt to 48VDC peak power2000W
Communication	Ethernet
Z-axis can be customized in height	0.1m-0.5m
Electrical interface reserved	Standard configuration: 4*23awg (unshielded) wires from the socket panel through the lower arm cover Optional: 2 φ4 vacuum tubes through the socket panel and flange
Optional accessories	Z-EFG-8S/Z-EFG-12/Z-EFG-20/Z-EFG-20S/Z-EFG-30/Z-EFG-50/ Z-EFG-20F/Z-ERG-20C/Z-EFG-100
Use environment	Ambient temperature: 0-45°C Humidity: RH20-80 (no frost)
I/O port digital input (isolated)	9+3+ forearm extension (8 in 8 out; Gripper dedicated port: pulse or 485)
I/O port digital output (isolated)	9+3+ forearm extension (8 in 8 out; Gripper dedicated port: pulse or 485)
I/O port analog input (4-20mA)	/
I/O port analog output (4-20mA)	/
Robot arm height	683mm
Robot arm weight	240mm stroke net weight 27kg
Base size	250mm*250mm*15mm
Distance between base fixing holes	200mm*200mm with four M8*20 screws
Collision detection	/
Drag teaching	/
Emergency stop	√
Debugging/Online upgrade (USB port)	√

Technical drawing of the rear view of a vehicle seat, showing dimensions and reachability. The drawing includes a central vertical section with a high backrest and a lower seat cushion. A large, hatched semi-circular area labeled "Reachable area" extends from the seat. Various radii (R420, R200, R62, R57,5, R187,5) and dimensions (250, 200, 160, 200, 250) are indicated. Mounting points are specified as 4-ø8,02 Open, 4-ø8,50 Open, and 4-ø15 Depth 9.

Technical drawing of the front view of the control cabinet. The drawing includes the following dimensions and labels:

- Dimensions:**
 - Top horizontal dimensions: 200, 220, 207.
 - Left vertical dimension: 355.
 - Bottom left vertical dimension: 115 ± 1 .
 - Right vertical dimension: 683.
 - Bottom right vertical dimension: 15.
- Section Line:** A-A
- Ports and Features (labeled on the right side):**
 - Emergency stop port
 - Ethernet cable port
 - Switch
 - Straight line port
 - I/O port
 - Power supply
 - USB port
- Connectors:** Two DB15 connectors are labeled on the left side of the port block.

3  HITBOT

Interface Introduction

The mounting interfaces of the Z-Arm 2442B manipulator are distributed in 2 positions, the side of the manipulator base (defined as A) and the bottom surface of the end arm (defined as B).

Interface Diagram and Instructions for Use

1. General schematic diagram of the base interface at A (as shown in Figure 1)

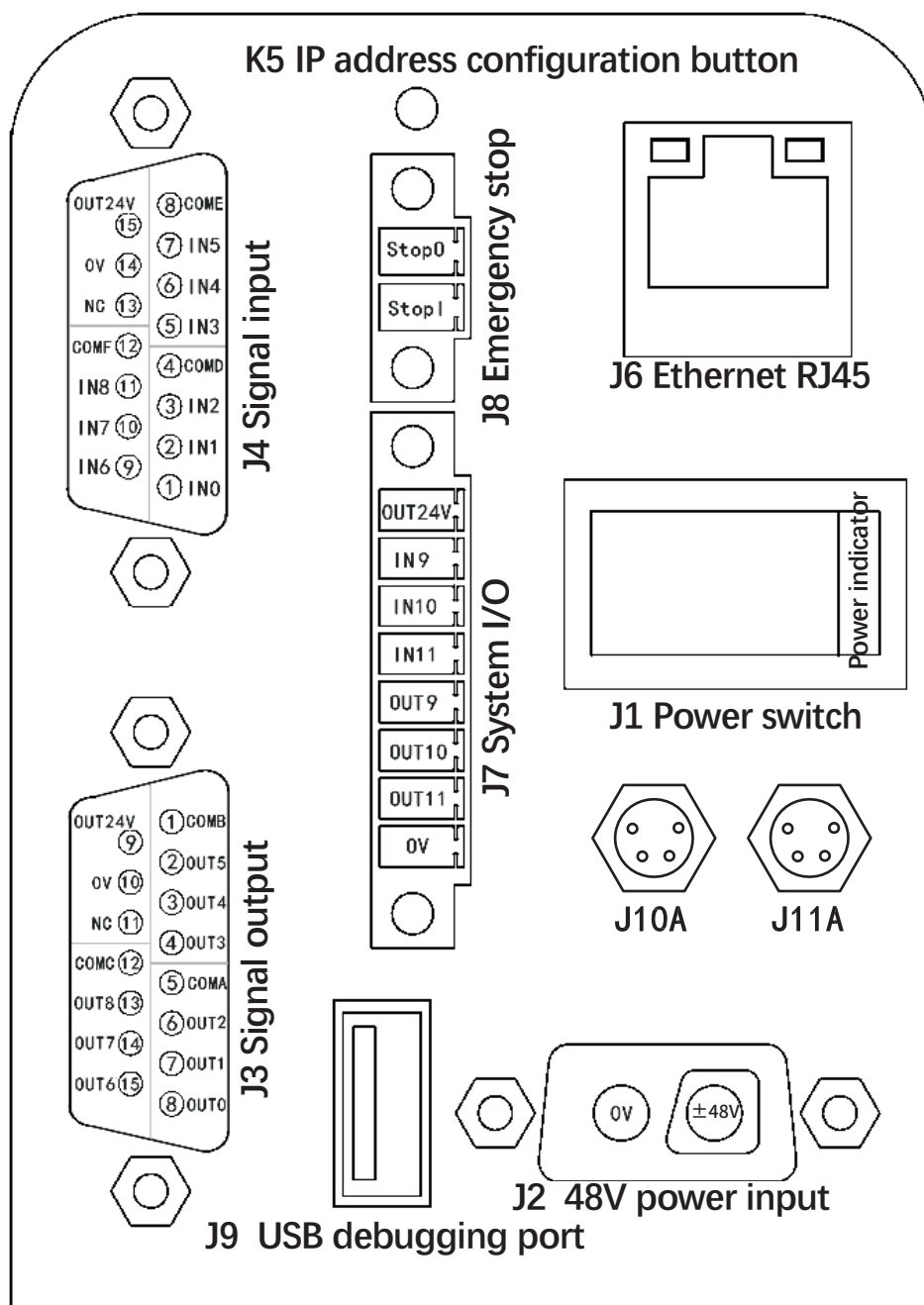


Figure 1

2. Figure 1 interface definition description

- (1) J1 is the power switch interface, which is used to control the power on and off;
- (2) J2 is the power input port, 48V DC voltage input;
- (3) J3 is the I/O output port, with 9 groups of internal optocoupler isolated NPN outputs;
- (4) J4 is the user I/O input port, with 9 groups of internal optocoupler isolated inputs;
- (5) K5 is the IP address configuration button of robot arm , press and hold the button to power on, the robot arm enters the IP address configuration state;
- (6) J6 is the Ethernet port, used for computer communication;
- (7) J7 is the system I/O, there are 3 groups of common ground optocoupler isolation input and output inside;
- (8) J8 is the emergency stop interface, which can be connected to the emergency stop button to control the emergency stop function of the robotic arm;
- (9) J9 is the USB debugging port;
- (10) J10A is a 4-core straight through wire aviation plug to the end or straight air pipe $\varnothing 4$ to the end (optional);
- (11) J11A is a 4-core straight through wire aviation plug to the end or straight air pipe $\varnothing 4$ to the end (optional).

3. The internal circuit design of the J3 and J4 interfaces (as shown in Figure 2)

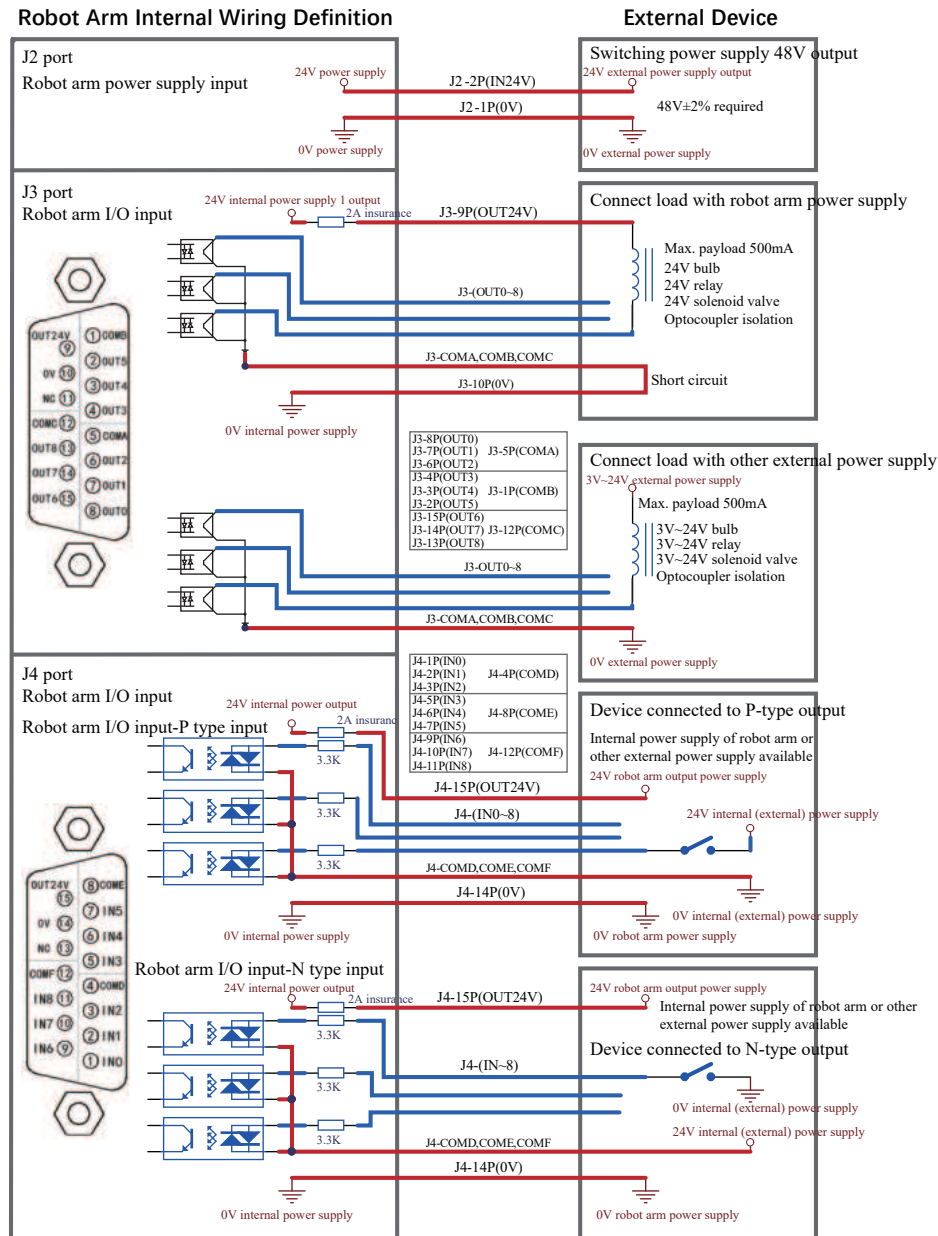


Figure 2

4. J7, J8 interface male socket pin definition (as shown in Figure 3)

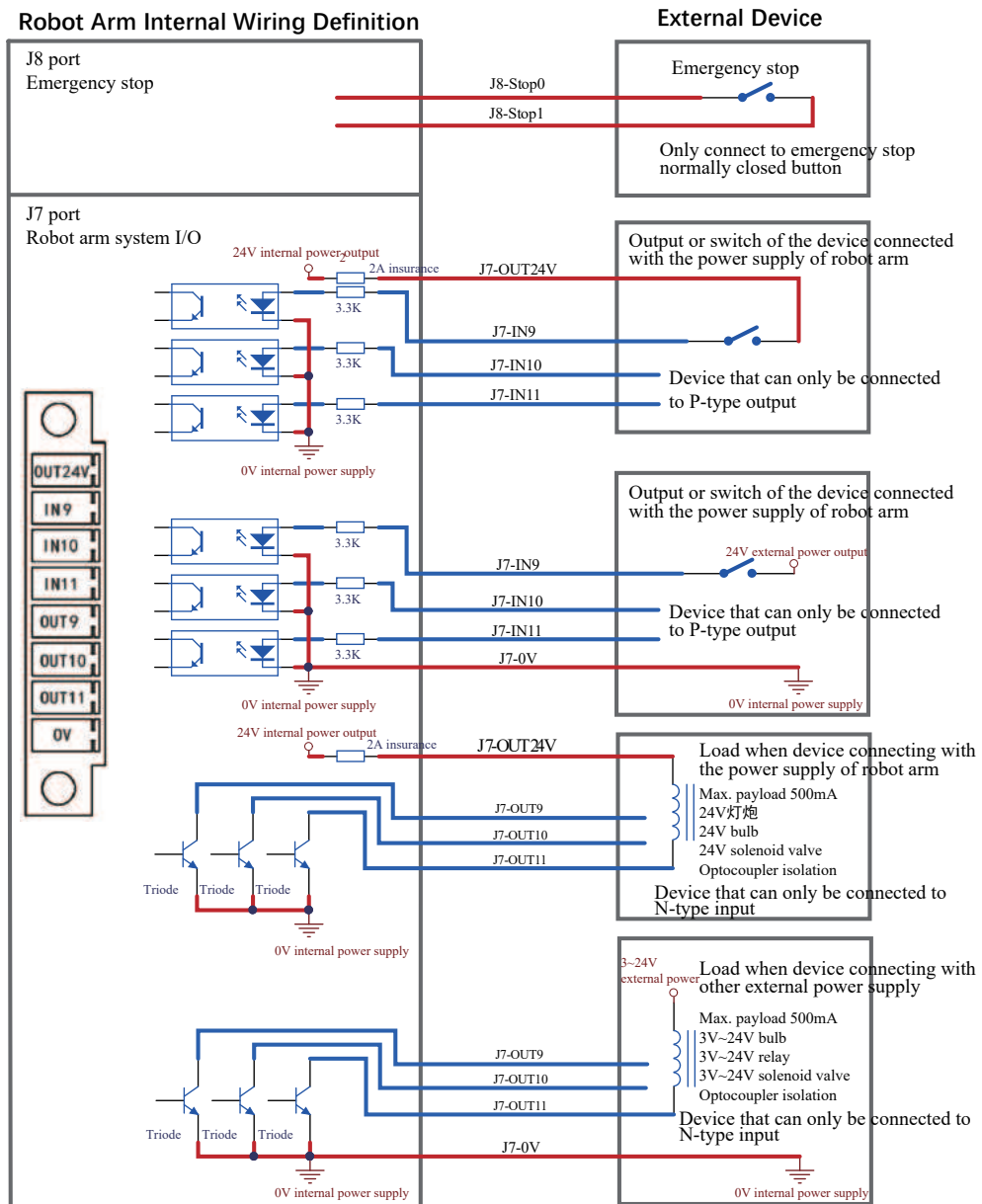


Figure 3

5. General schematic diagram of the I/O interface panel at B (as shown in Figure 4)

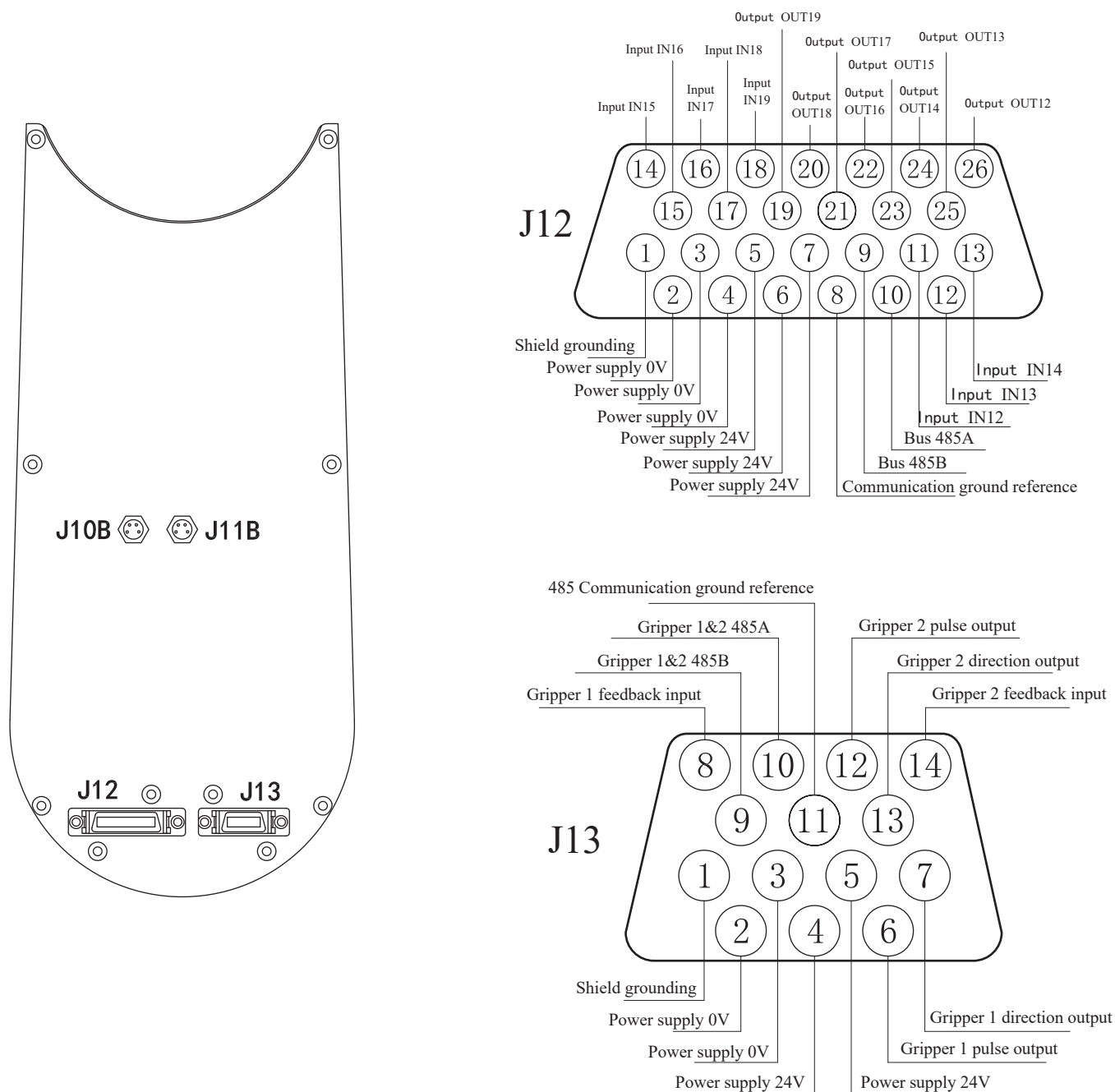


Figure 4

6. Interface definition description at B

- (1) J10B is a 4-core straight through wire aviation plug to the end of J10A;
- (2) J11B is a 4-core straight through wire aviation plug to the end of J11A.

7. J12 interface internal circuit design (as shown in Figure 5)

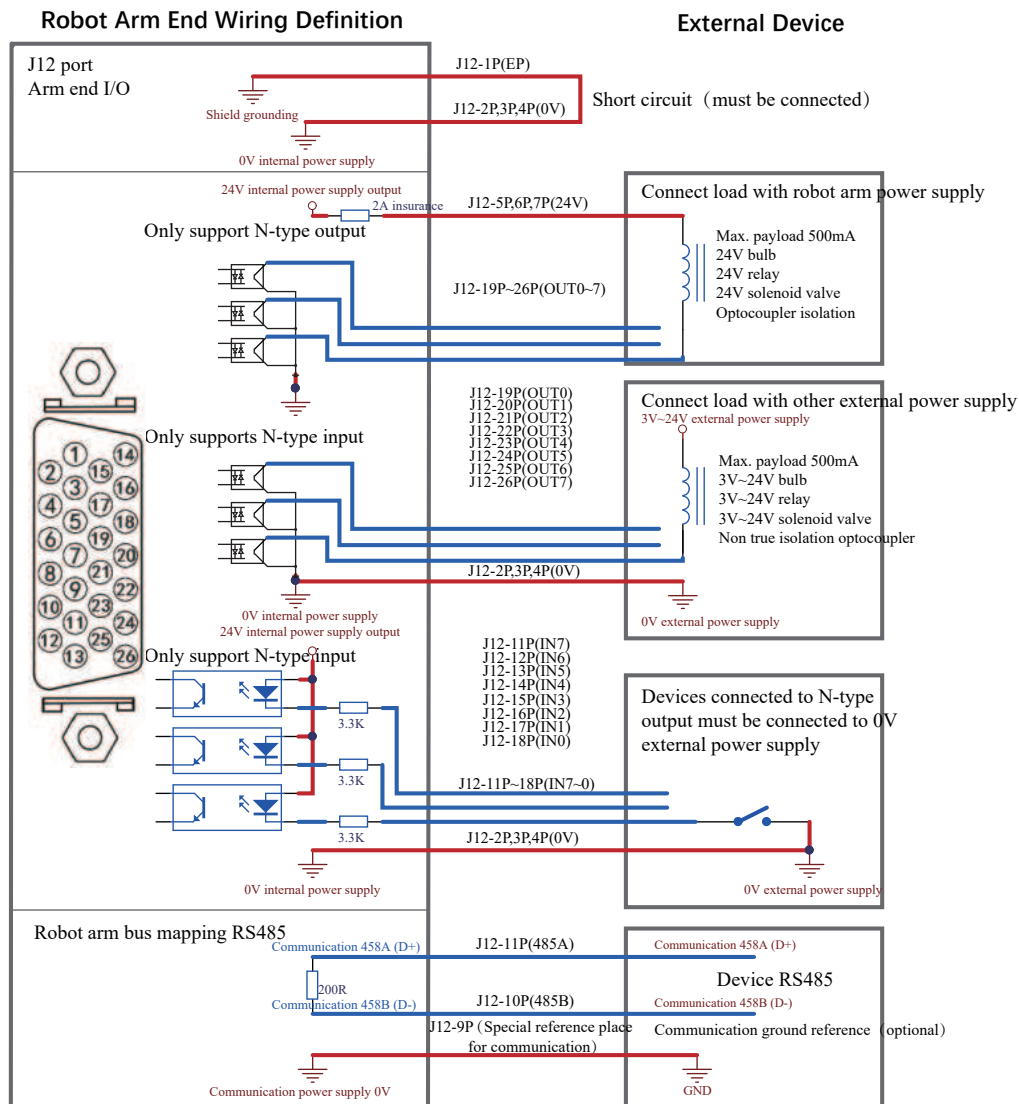


Figure 5

8. J13 interface SCSI-14P pin definition (as shown in Figure 6)

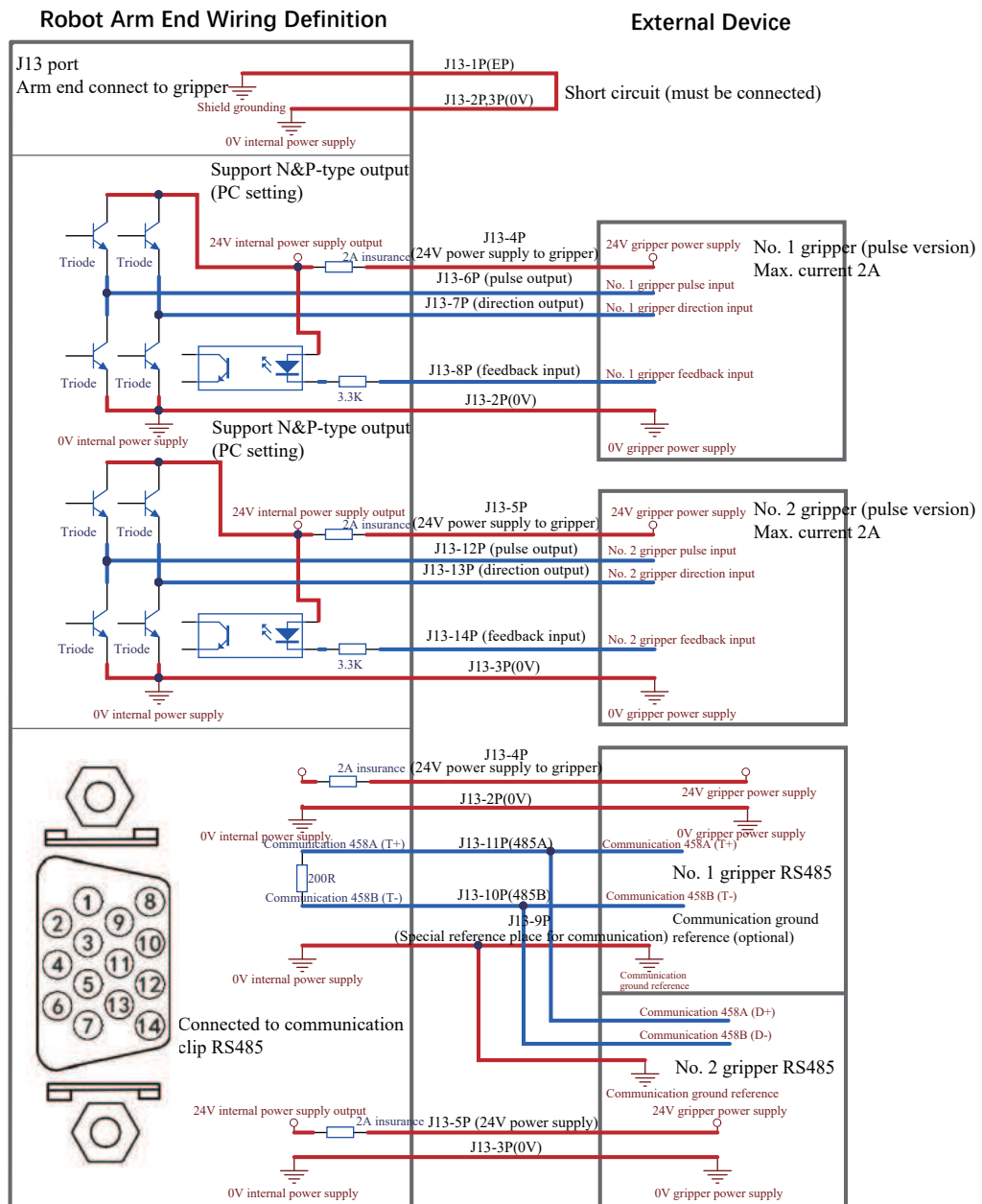


Figure 6

9. Wide I/O Board Diagram (as shown in Figure 7)

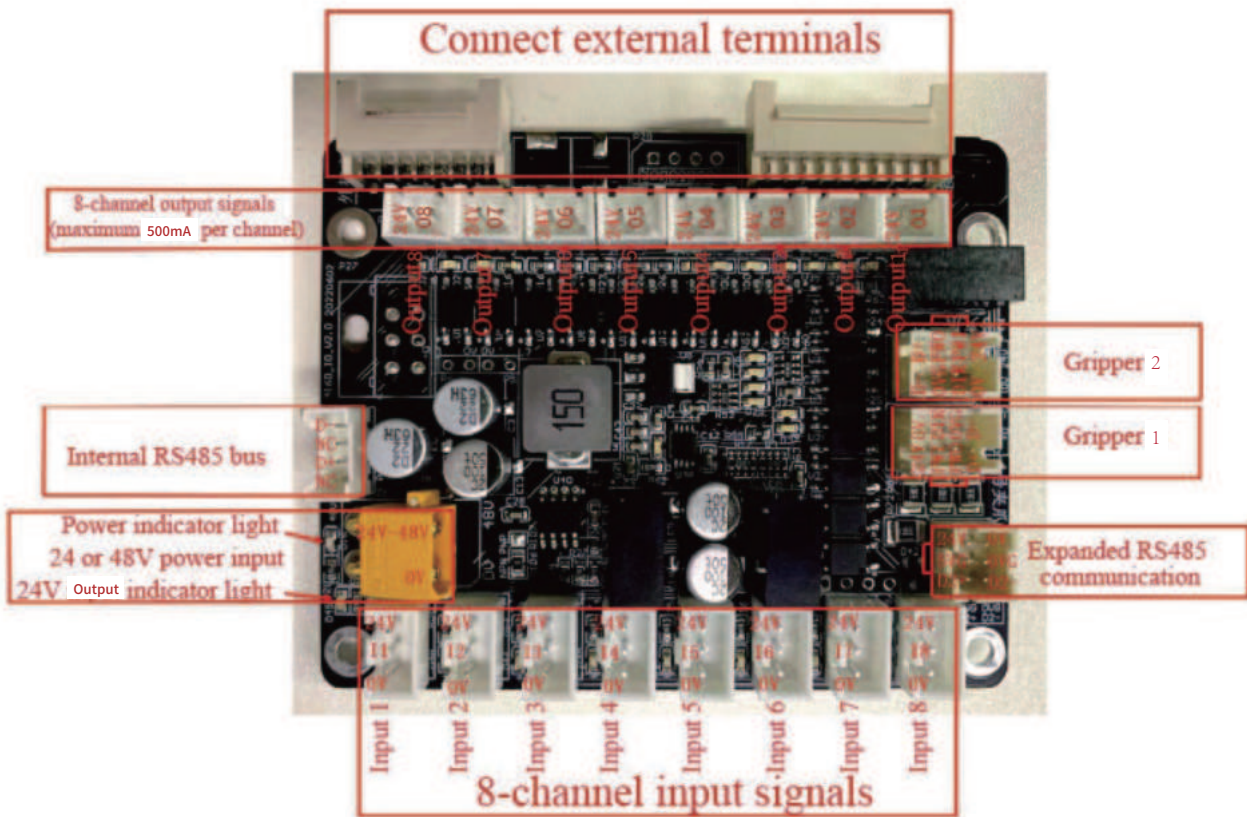


Figure 7

10. Internal I/O board wiring definition (as shown in Figure 8)

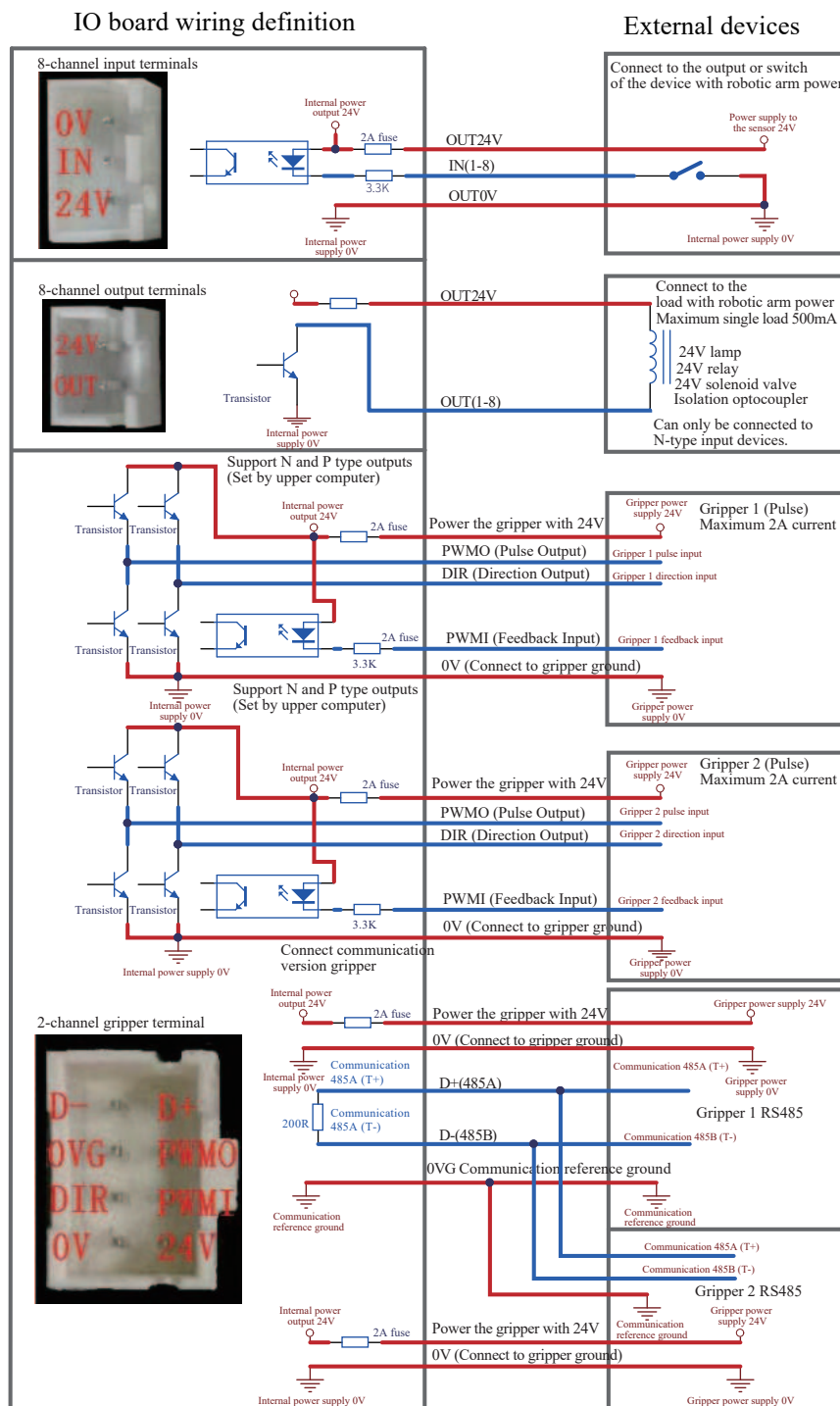


Figure 8

Precautions

1. Payload inertia

The payload center of gravity and the recommended payload range with the Z axis movement inertia are shown in Figure 9.

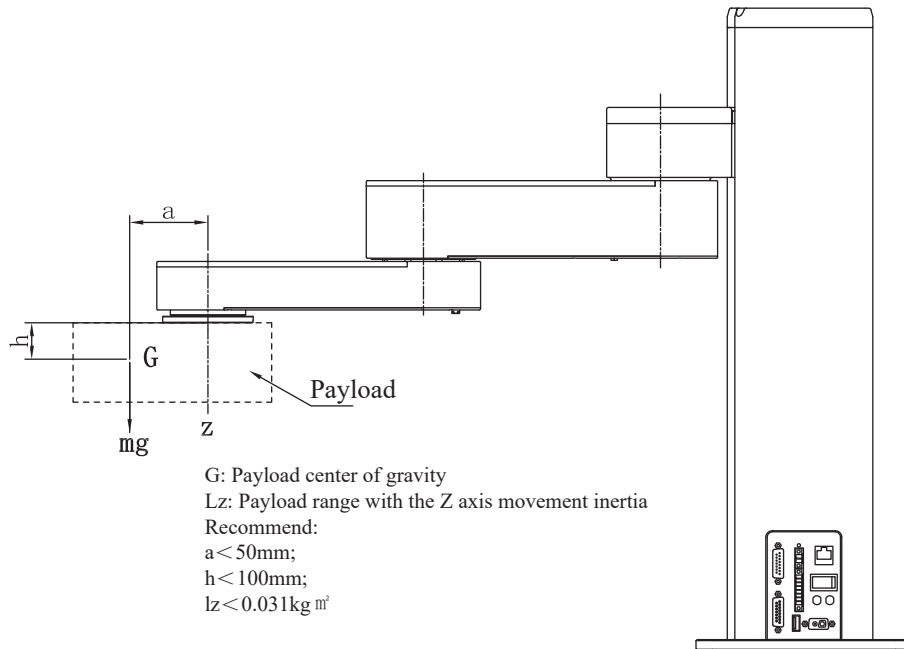


Figure 9

2. Z-axis external force

The external force of the Z axis shall not exceed 120N (as shown in Figure 10).

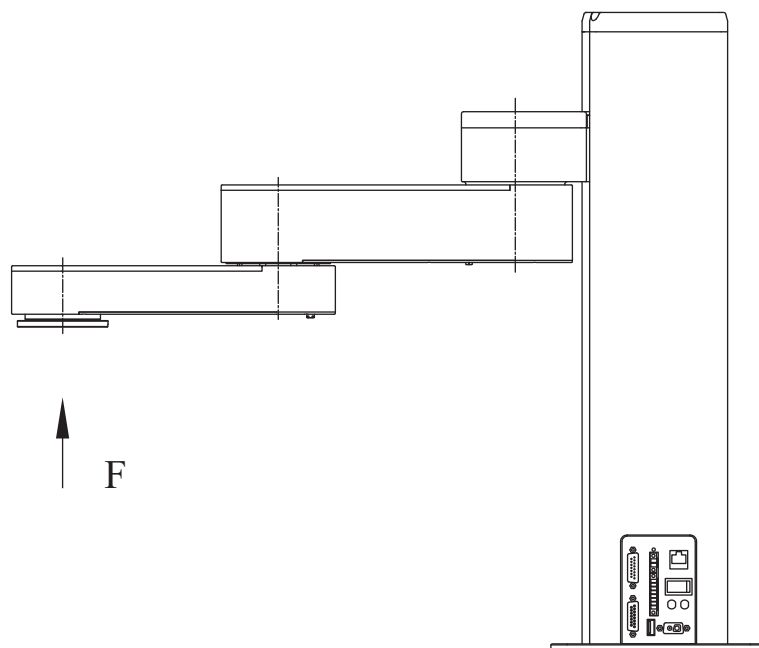
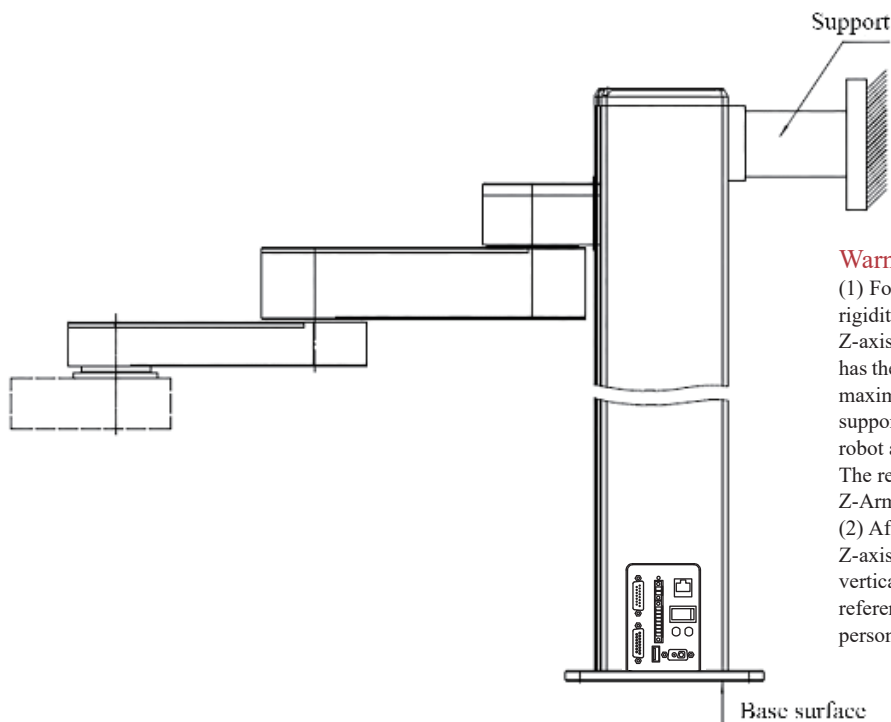


Figure 10

3. Notes for installation of customized Z axis, see Figure 11 for details.



Warning:

(1) For customized Z-axis with a large stroke, the Z-axis rigidity decreases as the stroke increases. When the Z-axis stroke exceeds the recommended value, the user has the rigidity requirement, and the speed is >50% of the maximum speed, it is highly recommended to install a support behind the Z-axis to ensure that the rigidity of the robot arm meets the requirement at high speed.

The recommended value are as follows:

Z-ArmXX42B series Z-axis stroke >600mm

(2) After the Z-axis stroke is increased, the verticality of Z-axis and the base will be greatly reduced. If strict verticality requirements for the Z-axis and the base reference are not applicable, please consult the technical personnel separately.

Figure 11

4.Power cable hot-plugging forbidden. Warning when the positive and negative poles of the power supply are reversed (as shown in Figure 10).

5 .Do not press down the horizontal arm when the power is off (as shown in Figure 12).

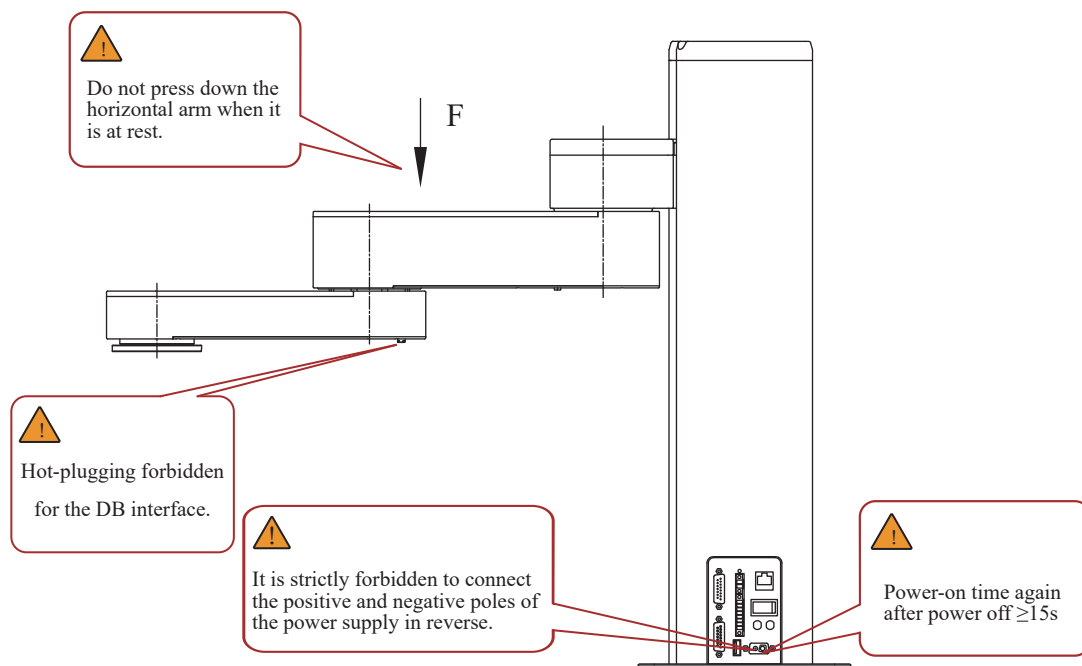


Figure 12

DB15 Connector Recommendation

Recommended model: Gold-plated male head with ABS shell YL-SCD-15M

Gold-plated female with ABS shell YL-SCD-15F

Size Description: 55mm*43mm*16mm

(Refer to Figure 13)



Figure 13

Robot Arm Compatible Grippers Table

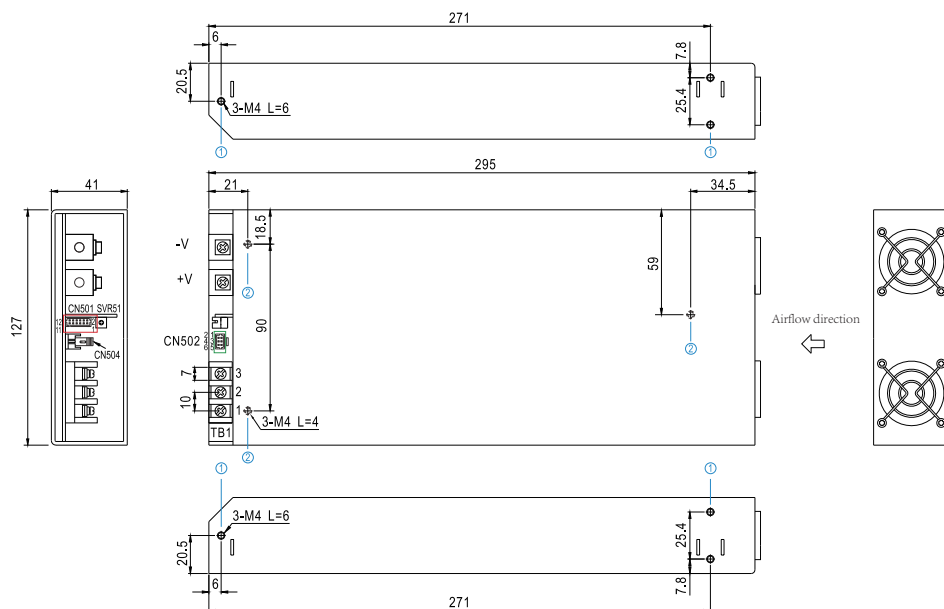
Robot arm Model No.	Compatible grippers
XX42B	Z-EFG-8S/Z-EFG-12/Z-EFG-20/Z-EFG-20S/Z-EFG-30/ Z-EFG-50/, the fifth axis, 3D painting

Power Adapter Installation Size Diagram

XX42B configuration 48V 2000W PSP-2000-SPEL-CN power supply

Machine case number: 952D Unit: mm

■ structure size



※ Pin Definition of AC Input End

Pin Number	Pin Function	Picture	Tightening torque
1	AC/N		18Kgf-cm
2	AC/L		
3	FG		

※ Pin Definition of DC Input End

Pin Function	Picture	Tightening torque
+V, -V		10Kgf-cm

Instructions

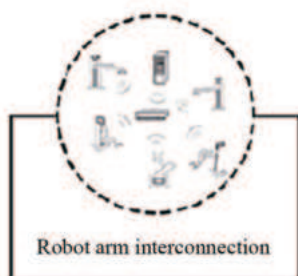
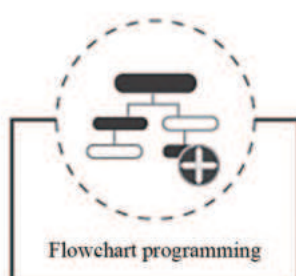
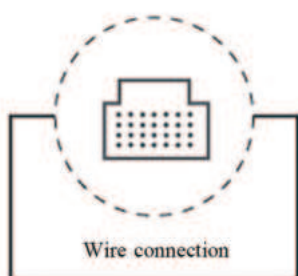
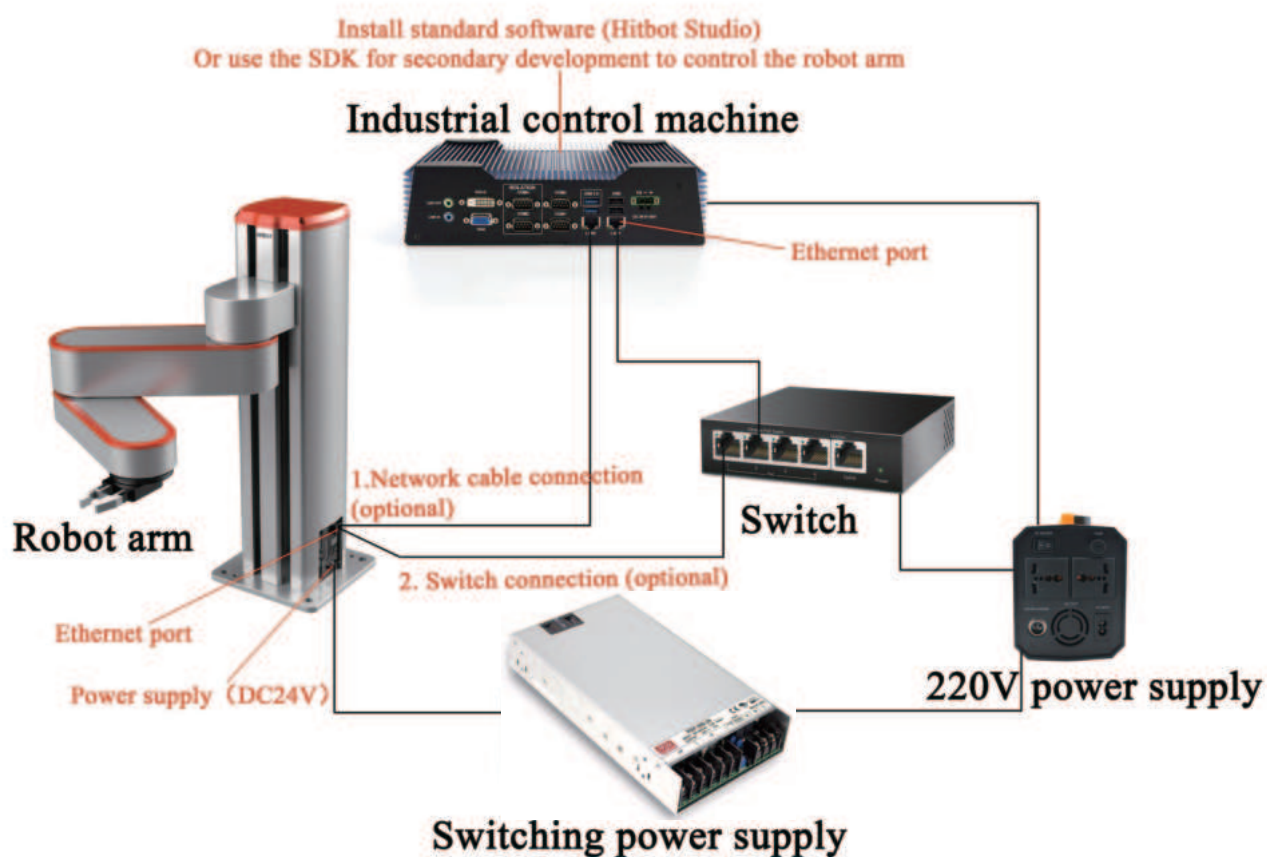


Diagram of the External Use Environment of the Robot Arm





M a k i n g A u t o m a t i o n E a s i e r

Huiling-tech Robotic Co.,Ltd.

Tel: 0755-36382405

Hotline: 0086-15220259858

Email: Marketing@hitbot.cc

Website: hitbotrobot.com

Address: 2nd Floor, Building E, Huafeng International Robot Industrial Park,
Hangcheng Ave, Xixiang St, Baoan District, Shenzhen City, Guangdong Province, China

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