

Z-Arm 4150

Product Manual

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



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Z-Arm 4150/Z-Arm XX50



High Precision

Repeatability
 $\pm 0.05\text{mm}$

Z-axis Customization

0.1-1m

Maximum Payload

Standard load 4kg
Maximum load 5kg

High Speed

Standard payload
Max linear speed 1.4m/s

Competitive Price

Industrial-level quality
Consumptive price

Model Definition

Z-Arm T4150 C0-A0M1-FXXX-01

T	41	50	N	0	A0	M1
Blank: Four axis F: Five axis T: Three axis	If z-axis stroke is 410, here is 41	If robot arm span is 500, here is 50	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						

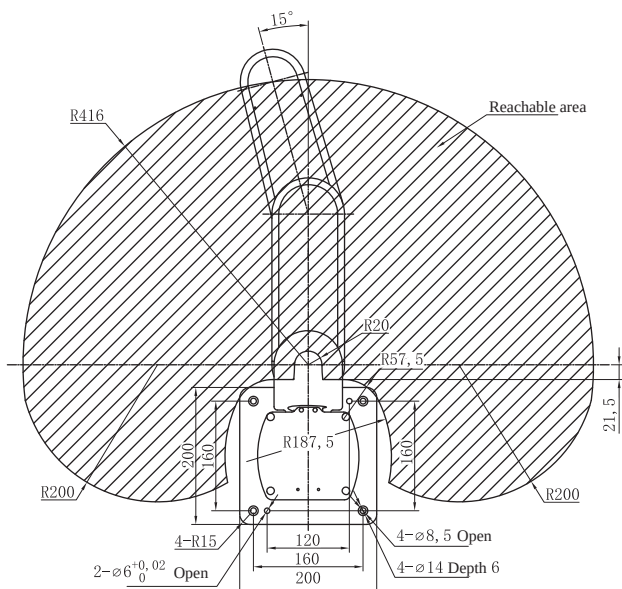
Specification

Z-Arm XX42 Collaborative Robot arm	Parameters
1 axis arm length	275mm
1 axis rotation angle	±90°
2 axis arm length	225mm
2 axis rotation angle	±164° Optional: 15°-345°
Z axis stroke	410mm (height can be customized)
R axis rotation range	±1080°without mechanical limit / ±170°with mechanical limit
Linear speed	1400mm/s (payload 4kg)
Repeatability	±0.05mm
Standard payload	4kg
Maximum payload	5kg
Degree of freedom	4
Power supply	220V/110V50-60HZ adapt to 48VDC peak power 960W
Communication	Ethernet
Z-axis can be customized in height	0.1m-1m
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-20F/Z-ERG-20C/ Z-EFG-30/Z-EFG-50/Z-EFG-100, the fifth axis, 3D painting
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	830mm
Robot arm weight	410mm stroke net weight 28kg
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 a mechanical component, likely a valve or actuator, showing a cross-section. The drawing includes dimensions and labels for various parts.

Key features and dimensions:

- Central vertical shaft with a diameter of 120 mm.
- Large circular flange at the bottom with an outer diameter of 200 mm and a thickness of 160 mm.
- Smaller circular flange above it with an outer diameter of 160 mm and a thickness of 160 mm.
- Central shaft diameter: 120 mm.
- Labels: R420, R200, R62, R57, 5, R187, 5, 4-R15, 2- $\varnothing 6^{+0,02}_0$ Open, 4- $\varnothing 8, 5$ Open, 4- $\varnothing 14$ Depth 6, and Reachable area.

3  HITBOT

Interface Introduction

The mounting interfaces of the Z-Arm 4150 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)

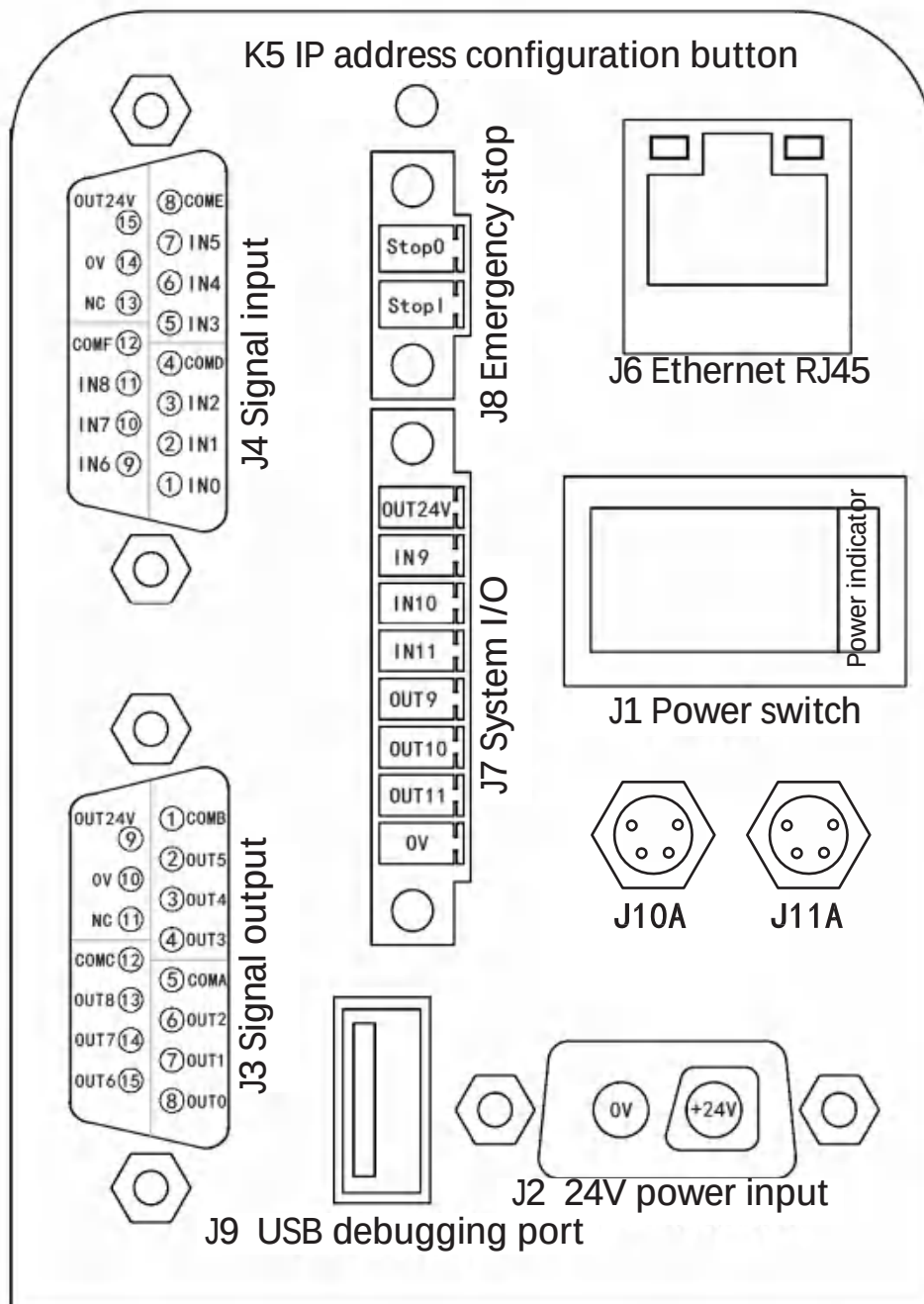


Figure 1

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

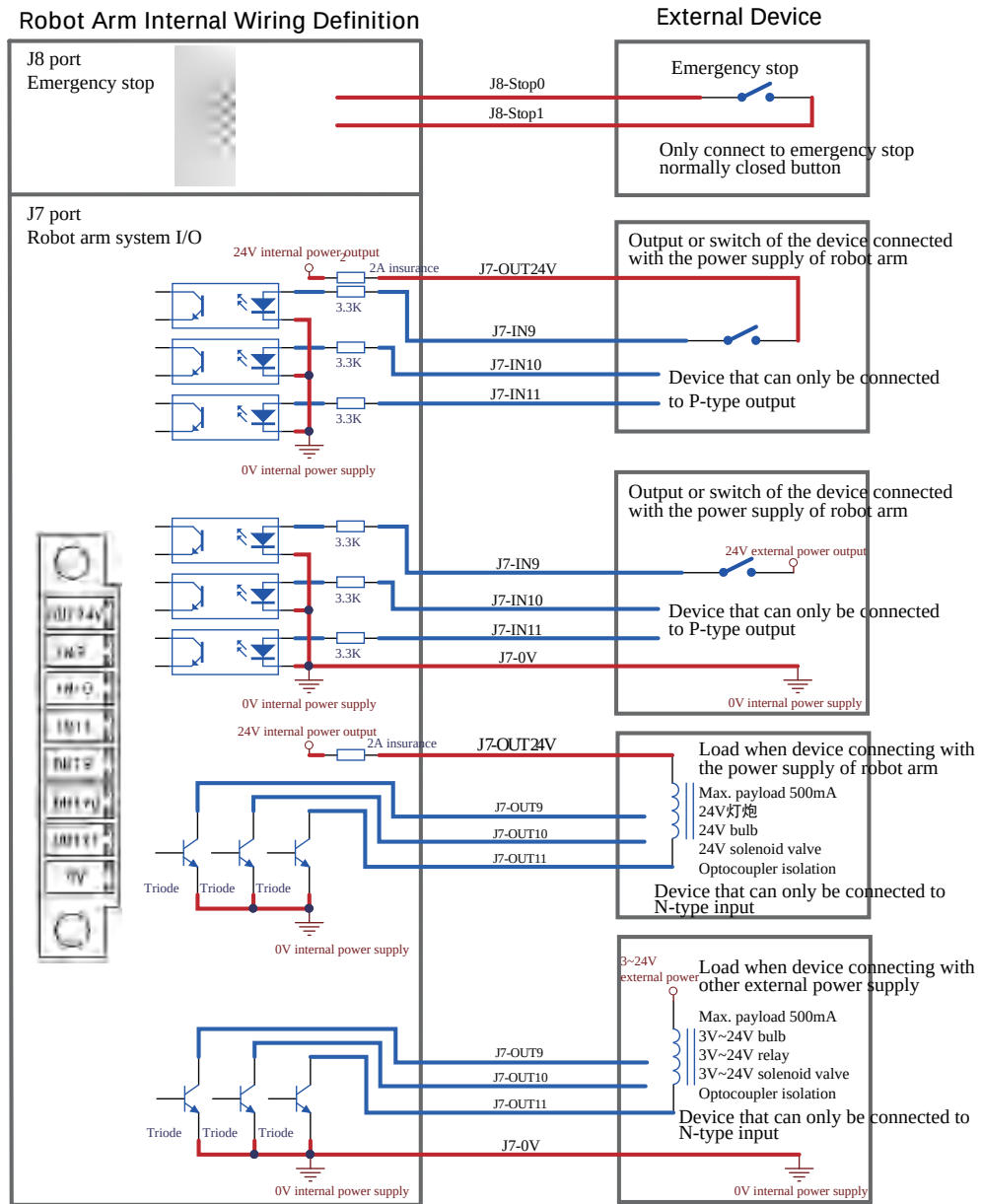


Figure 3

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

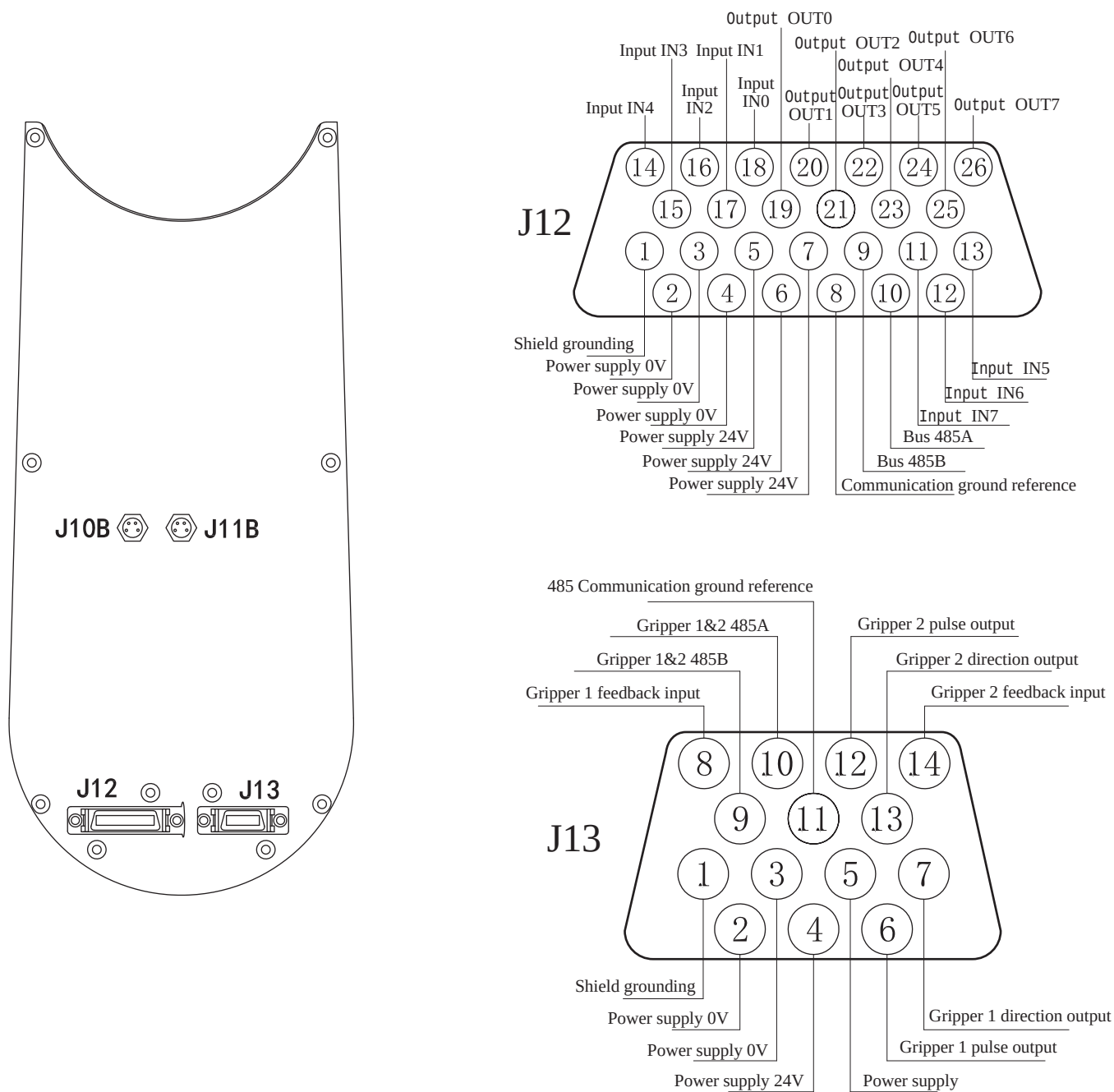


Figure 4

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)

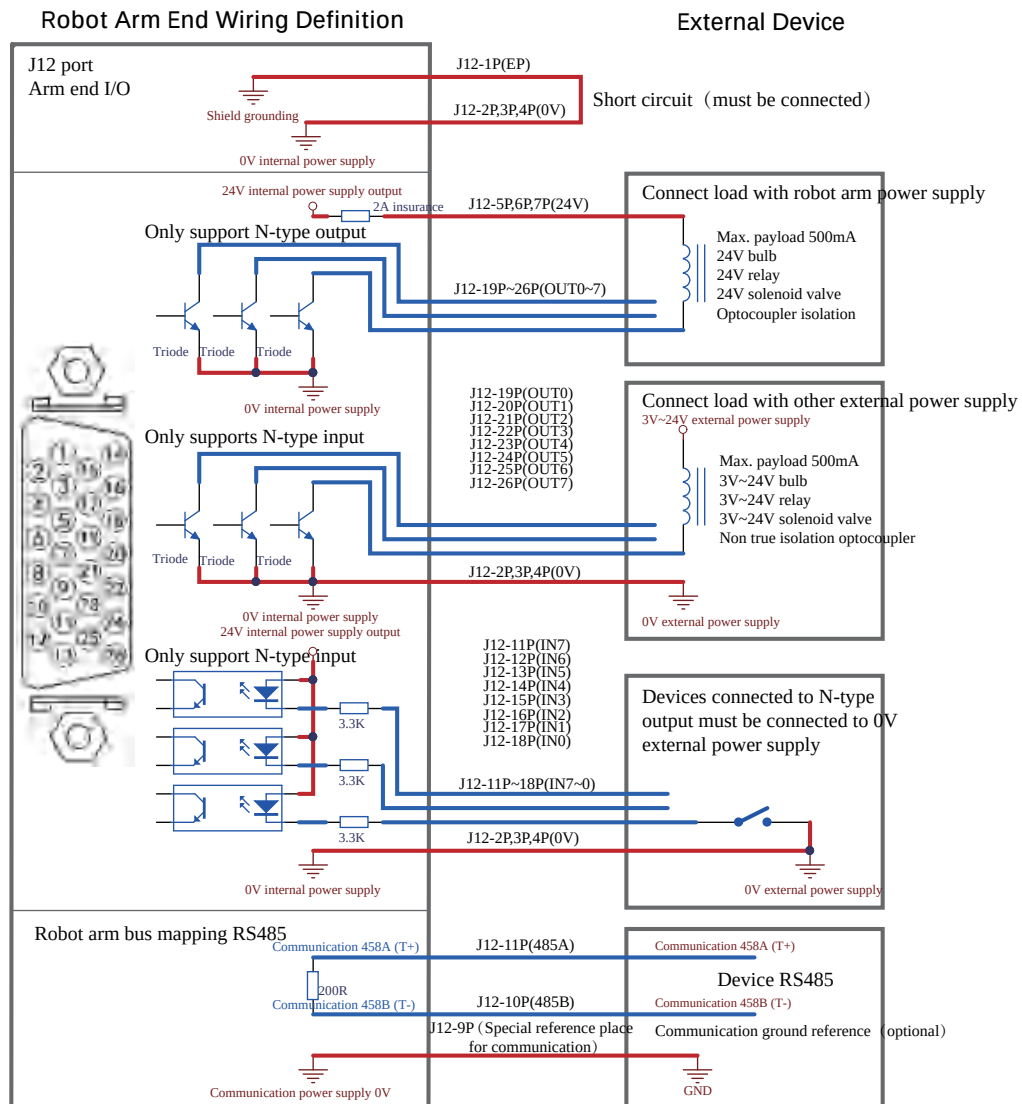


Figure 5

8. J13 interface DB9 male sock with needle pin definition (as shown in Figure 6)

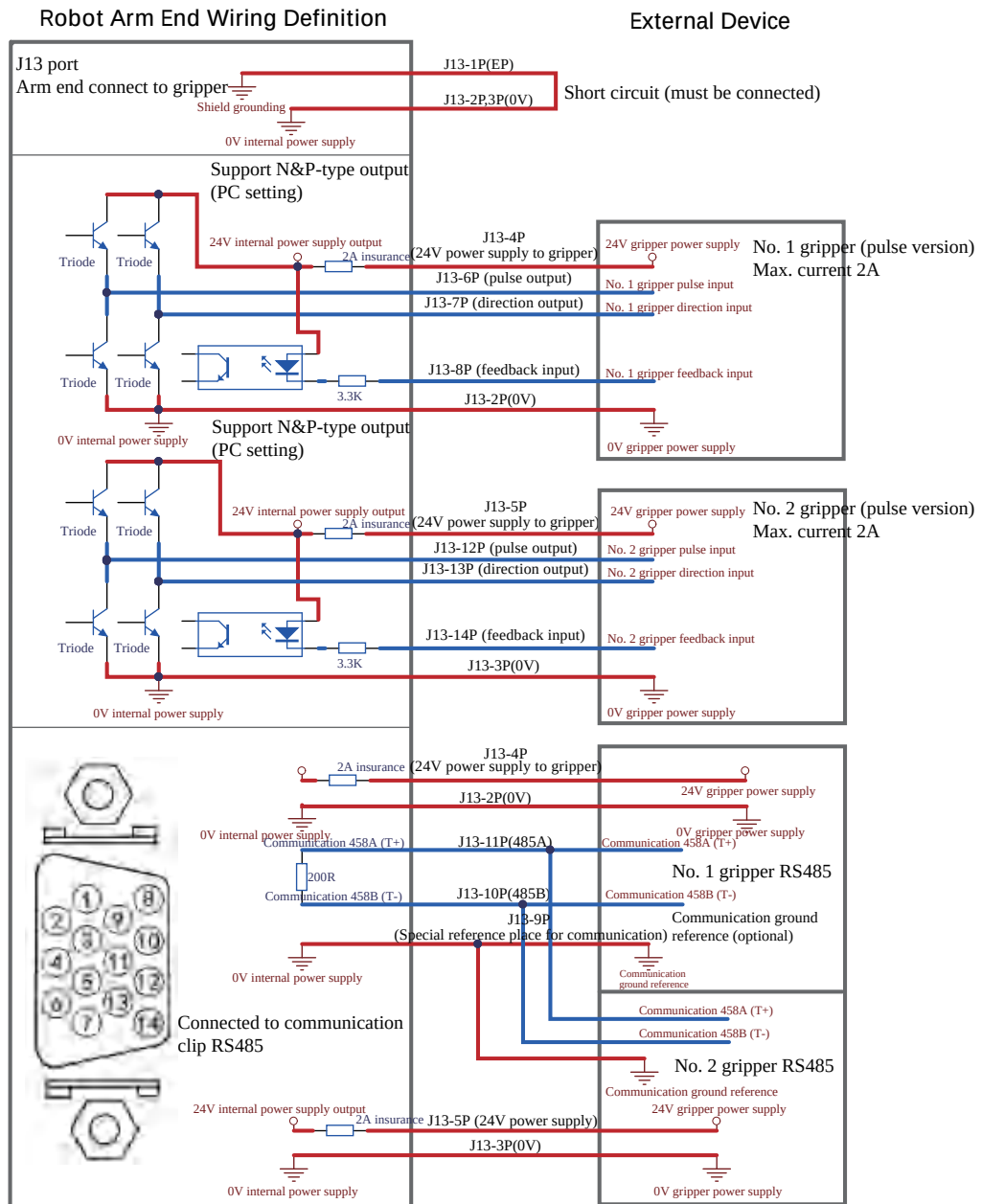


Figure 6

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

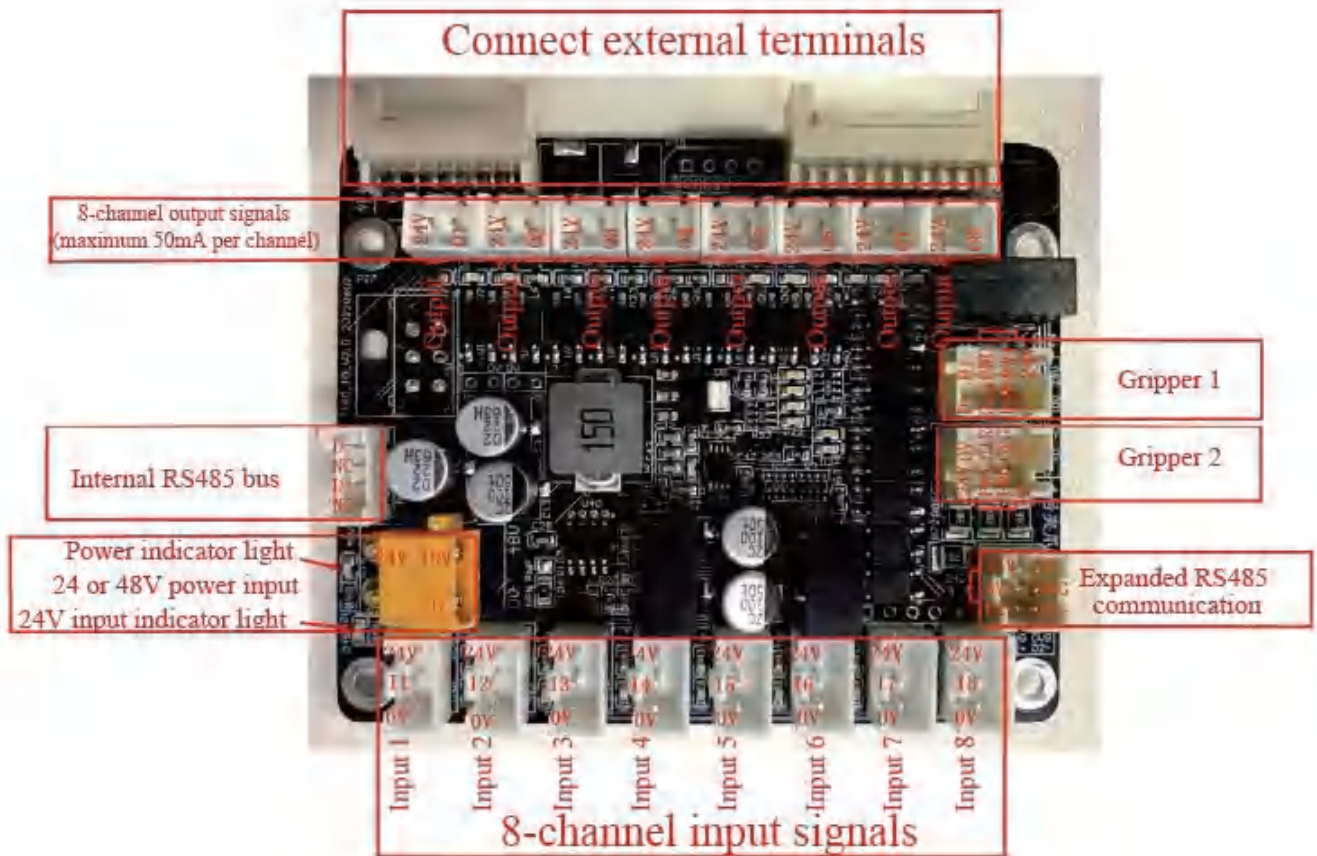


Figure 7

IO board wiring definition

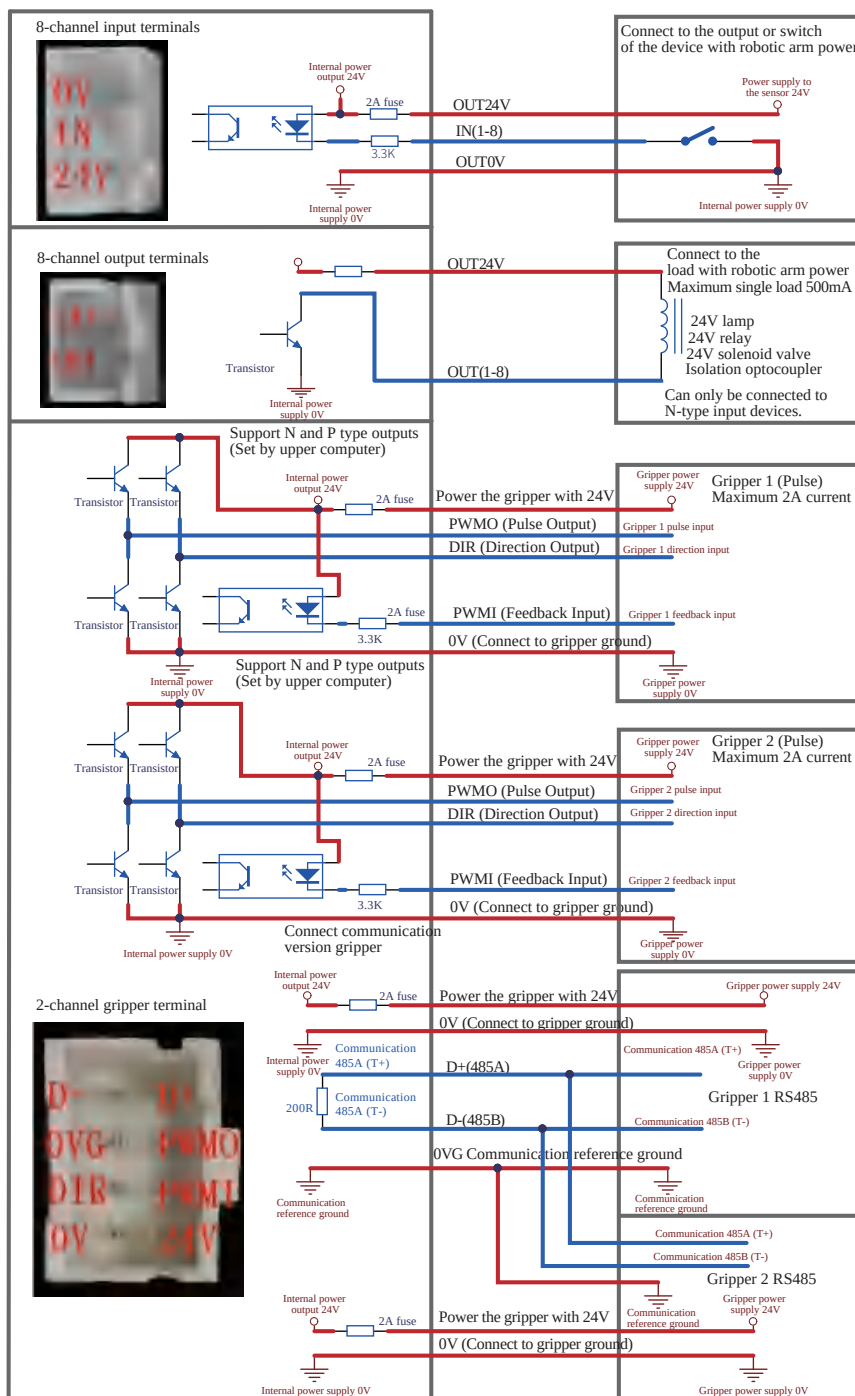


Figure 8

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.

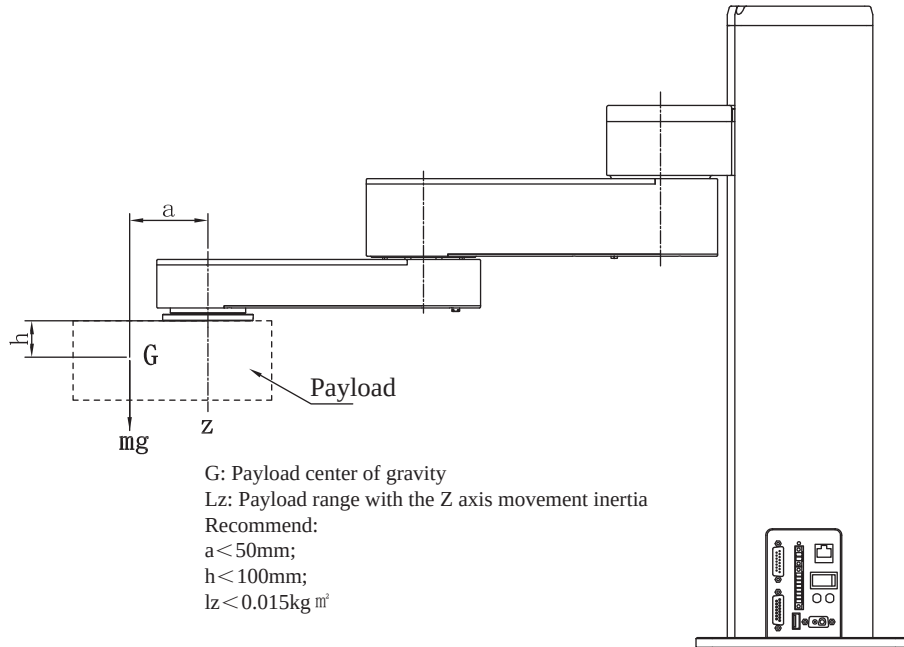


Figure 9

2. Collision force

Trigger force of horizontal joint collision protection: XX50 non-collaboration

3. Z-axis external force

The external force of the Z axis shall not exceed 110N (as shown in Figure 10).

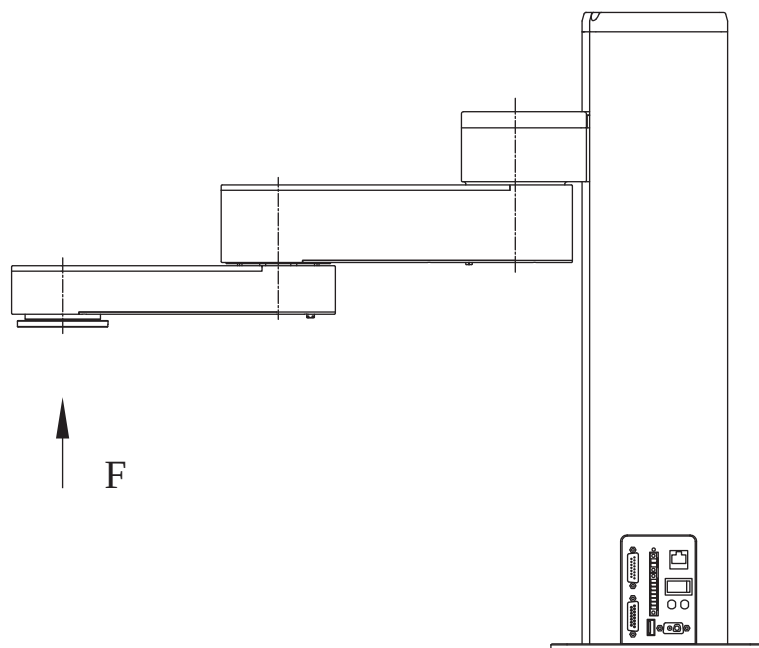


Figure 10

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

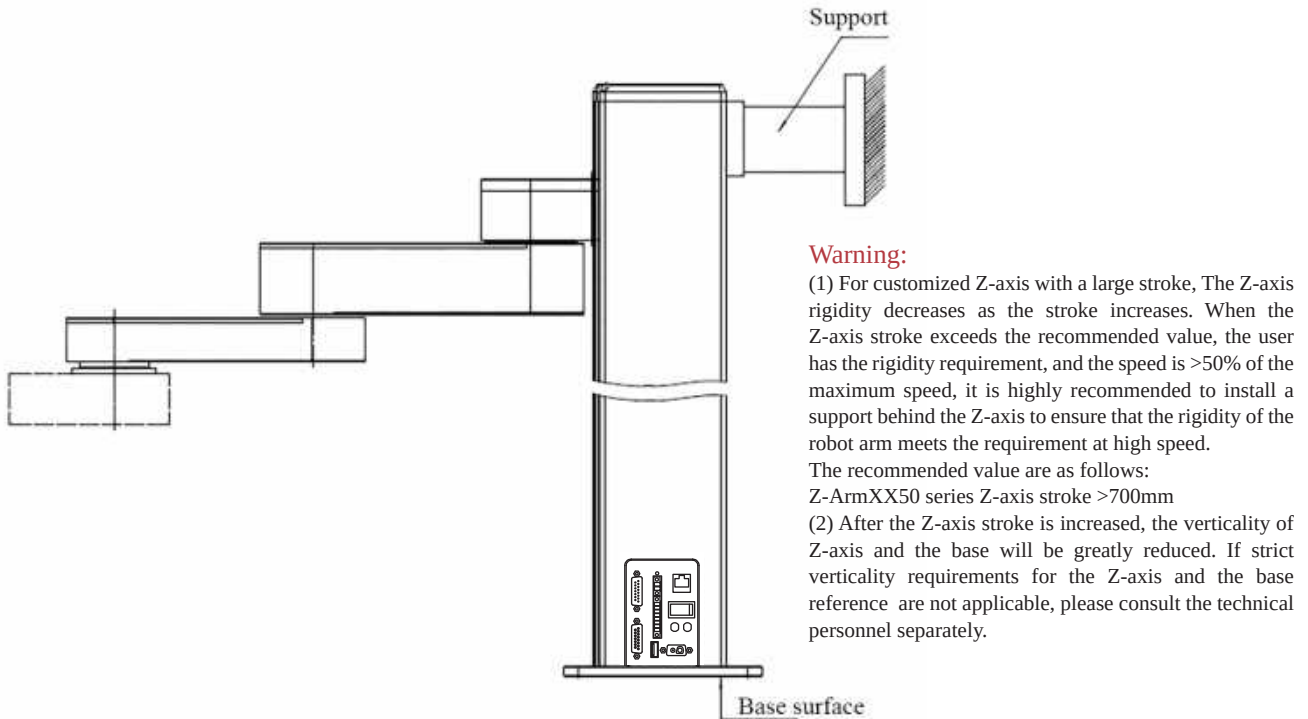


Figure 11

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

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

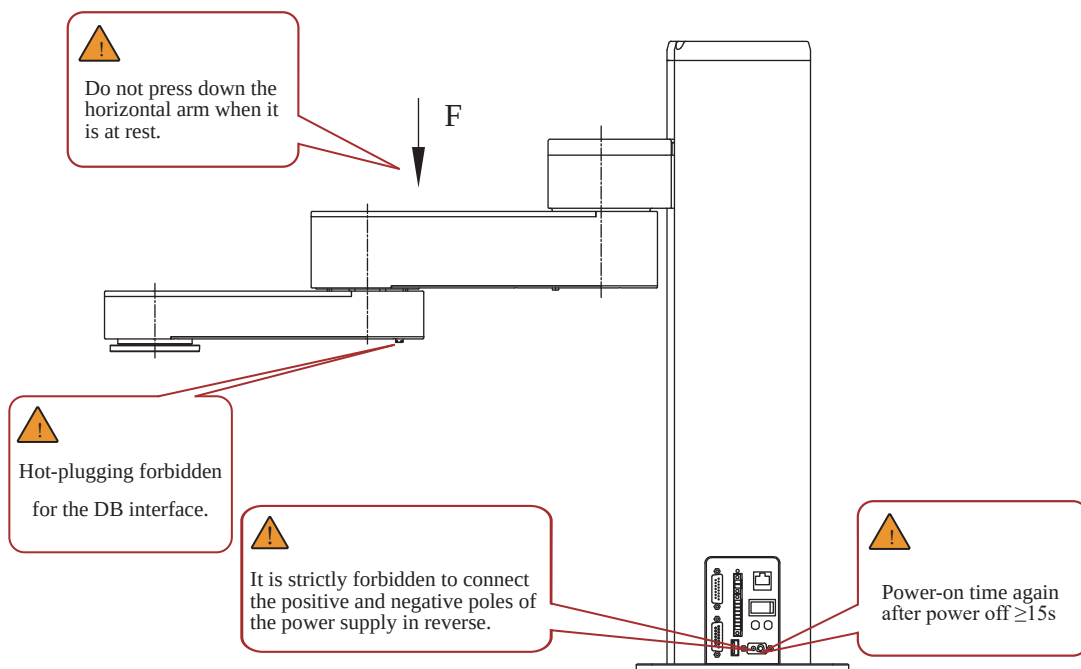


Figure 12

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

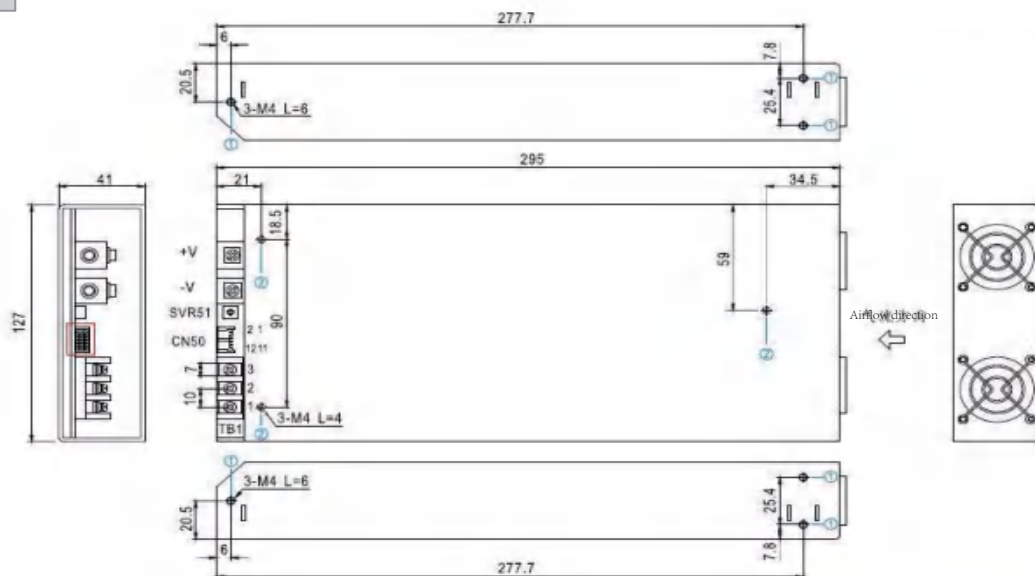
Robot arm Model No.	Compatible grippers
XX50	Z-EFG-8S/Z-EFG-12/Z-EFG-20/Z-EFG-20S/Z-EFG-20F/ Z-ERG-20C/Z-EFG-30/Z-EFG-50/Z-EFG-100, the fifth axis, 3D painting

Power Adapter Installation Size Diagram

XX50 configuration 48V 1000W RSP-1000-SPEC-CN power supply

Machine case number: 952B Unit: mm

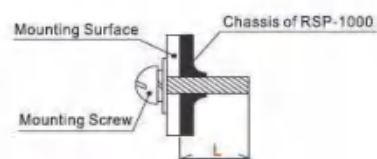
structure size



Installation Instruction

Hole number	Recommended screw type	Penetration depth	Recommended Mounting Torque
①	M4	6mm	7~11Kgf-cm
②	M4	4mm	7~11Kgf-cm

Control pin definition (CN50):HRS DF11-12DP-2DS or equivalent level



Instructions

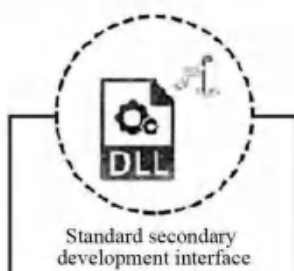
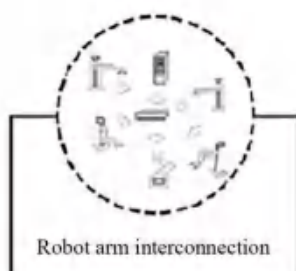
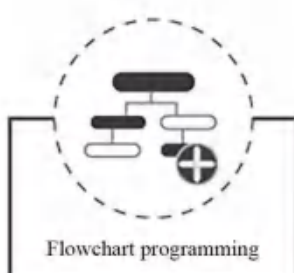
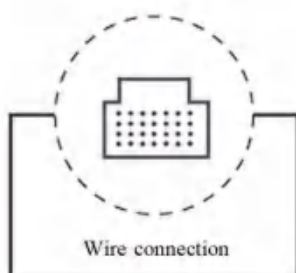
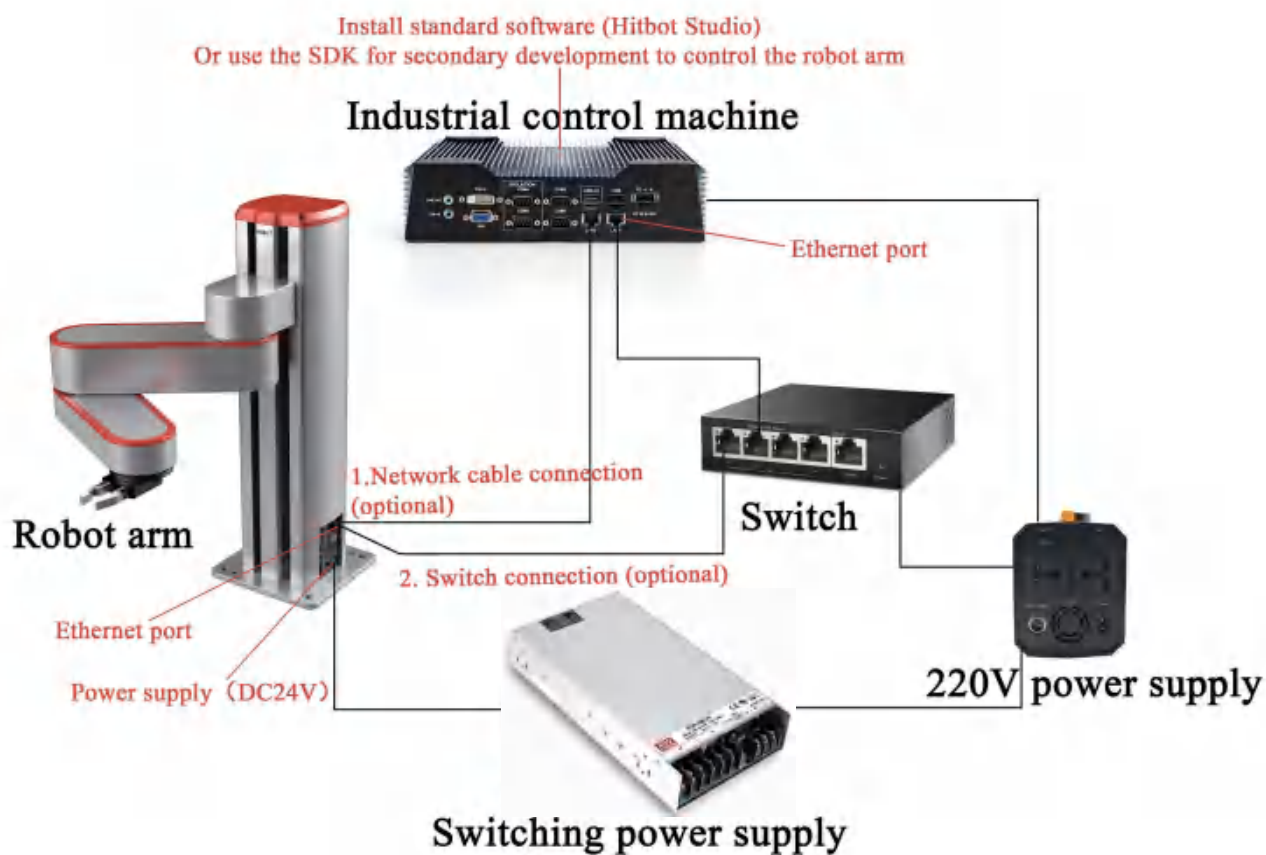


Diagram of the External Use Environment of the Robot Arm





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

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