HITBOT
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Product Brochure

Main category: Industrial robot arm / Collaborative robot arm / Electric gripper / Intelligent actuator / Automation solutions

Huiling-tech Robotic Co.,Ltd.

Z-Arm 2442/Z-Arm XX42

High precision

Repeatability
±0.03mm

Large Payload

3kg

Large Arm Span

J1 axis 220mm
J2 axis 200mm

Competitive Price

Industrial-level quality
Comsumptive price

Model Definition

Z-Arm T2442C0-A0M1-FXXX-01

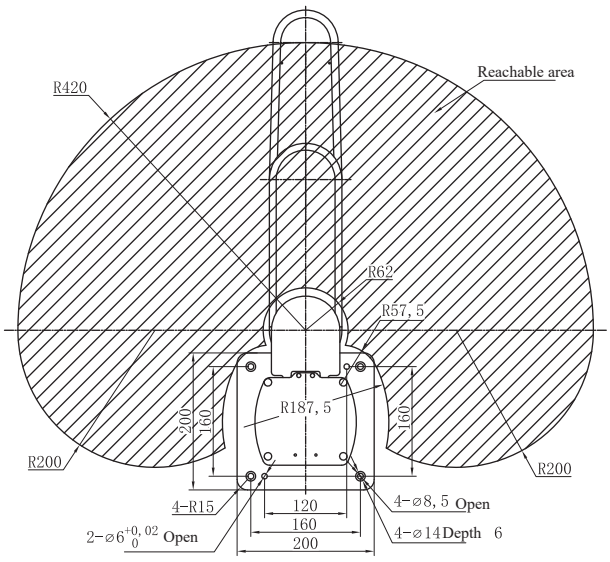
T	24	42	C	0	A0	M1
Blank: Four axis F: Five axis T: Three axis	If z-axis stroke is 240,here is 24	If robot arm span is 420, here is 42	Collaborative Non-collaborative N	0 is silver color 1 is black color	A0 means two straight-through cables A2 means two vacuum tubes	M1: Second arm motion range ±164 deg (rotate outwards) M2: Second arm motion range 15deg - 345deg （rotate inwards）

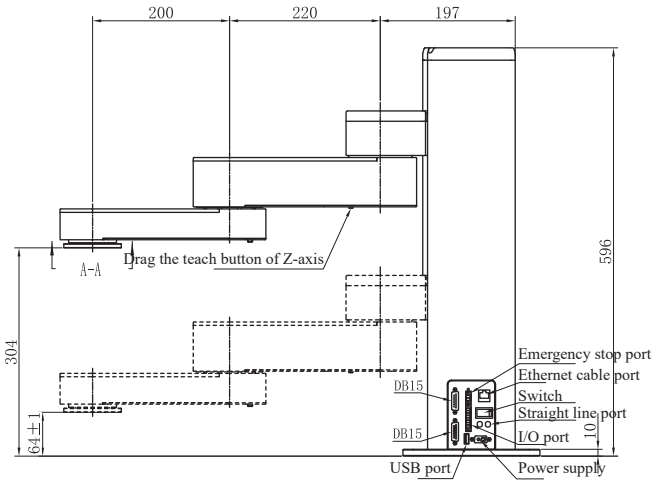
FXXX-01
F: Non-standard customized option, if it is a standard product, it is blank XXX: XXX: Customer label number 01: version number

Specification Parameter

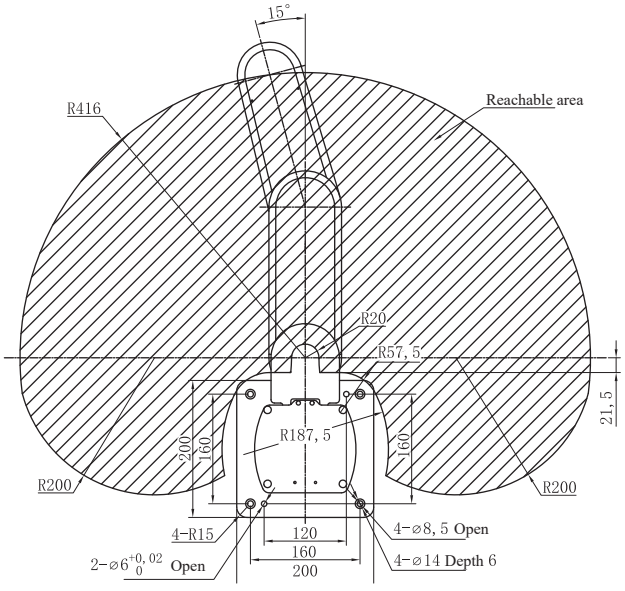
Z-Arm XX42 Collaborative Robot arm	Parameters
1 axis arm length	220mm
1 axis rotation angle	±90°
2 axis arm length	200mm
2 axis rotation angle	±164° (optional：15°-345°)
Z axis stroke	240mm (height can be customized)
R axis rotation range	±1080°without mechanical limit / ±170°with mechanical limit
Linear speed	1220mm/s（payload 2kg）
Repeatability	±0.03mm
Standard payload	2kg
Maximum payload	3kg
Degree of freedom	4
Power supply	220V/110V50-60HZ adapt to 24VDC peak power 500W
Communication	Ethernet
Z-axis can be customized in height	0.1m-1m
Electrical interface reserved	Standard configuration: 24*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/A-EFG-50, 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	596mm
Robot arm weight	240mm stroke net weight 19kg
Base size	200mm*200mm*10mm
Distance between base fixing holes	160mm*160mm with four M8*20 screws
Collision detection	√
Drag teaching	√
Emergency stop	√
Debug/Online upgrade (USB port)	√

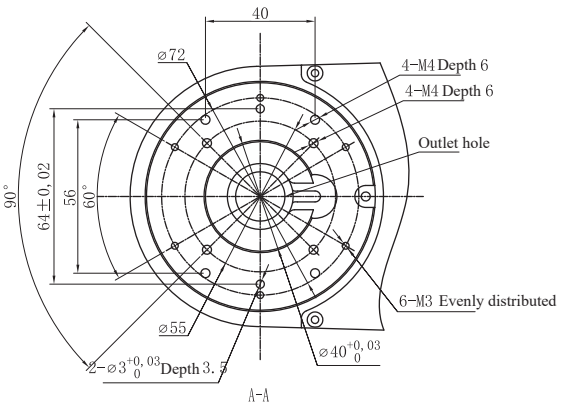
Motion Range and Dimensions





M1 Version (External Rotation)





M2 Version (Internal Rotation)

Remark: Some hardware of the control panel of the robot arm is not shown in the figure, please refer to the actual product.

Interface Introduction

The mounting interfaces of the Z-Arm 2442 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)

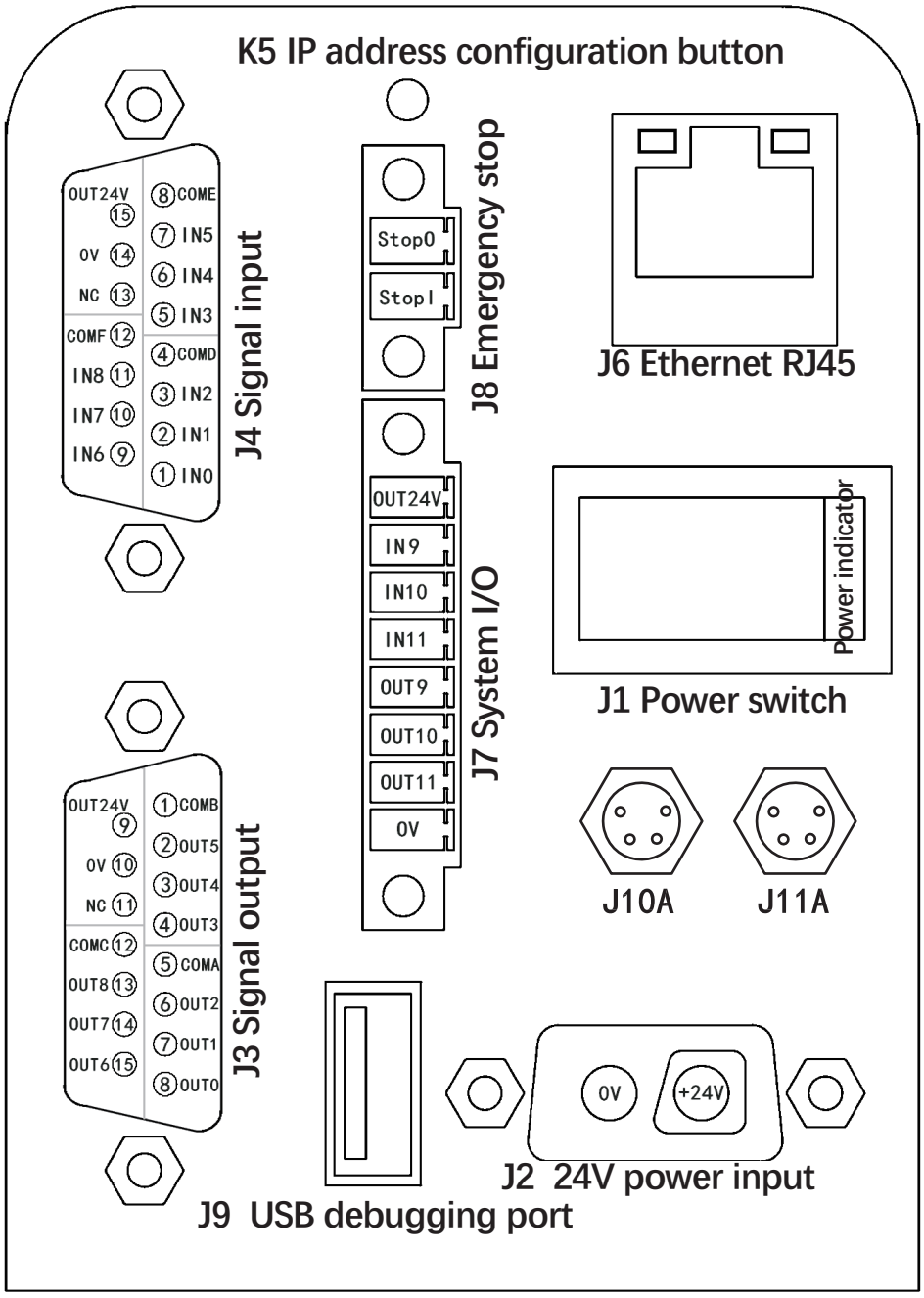


Figure 1

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, 24V 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 ∅4 to the end (optional);
(11) J11A is a 4-core straight through wire aviation plug to the end or straight air pipe ∅4 to the end (optional).

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

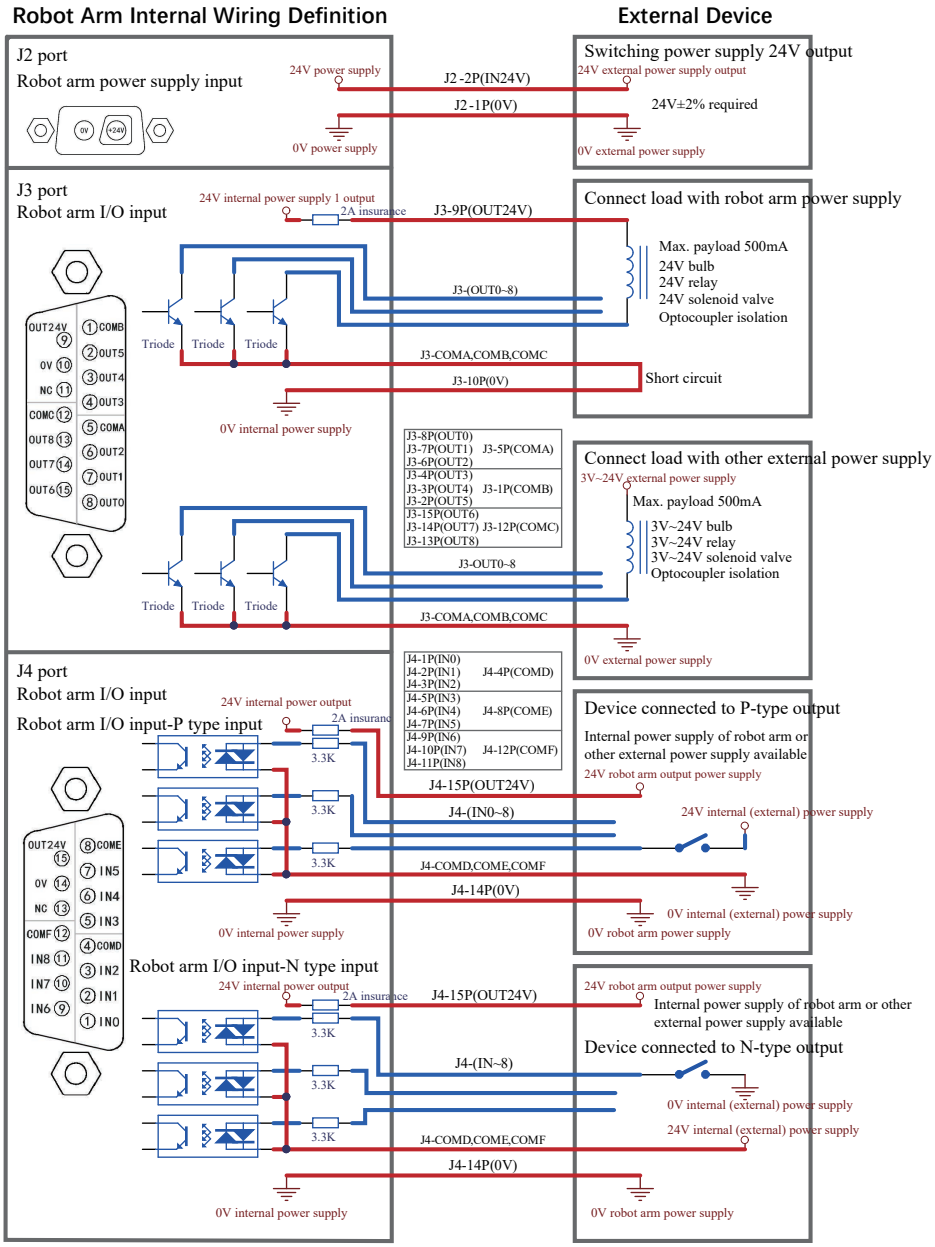


Figure 2

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

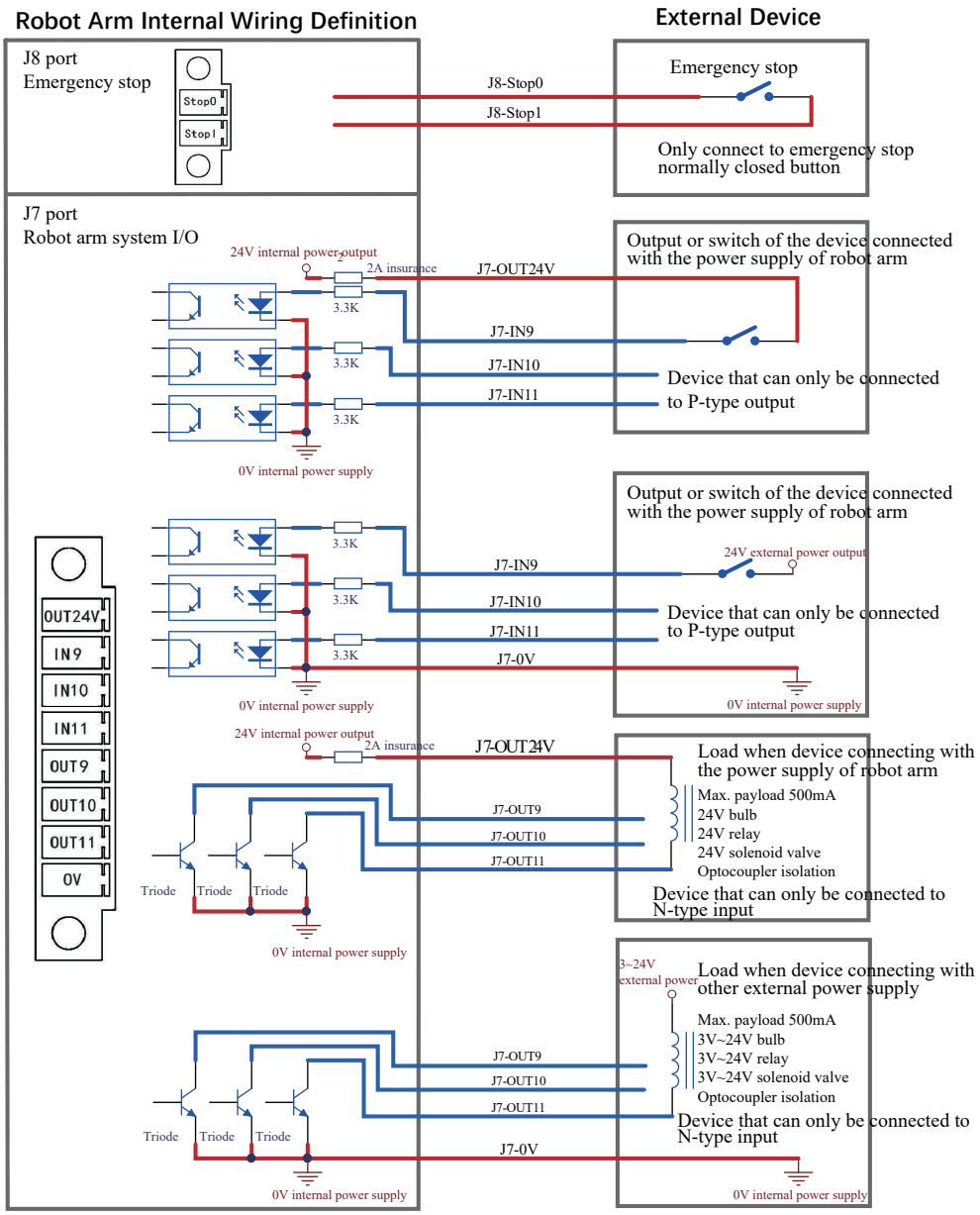
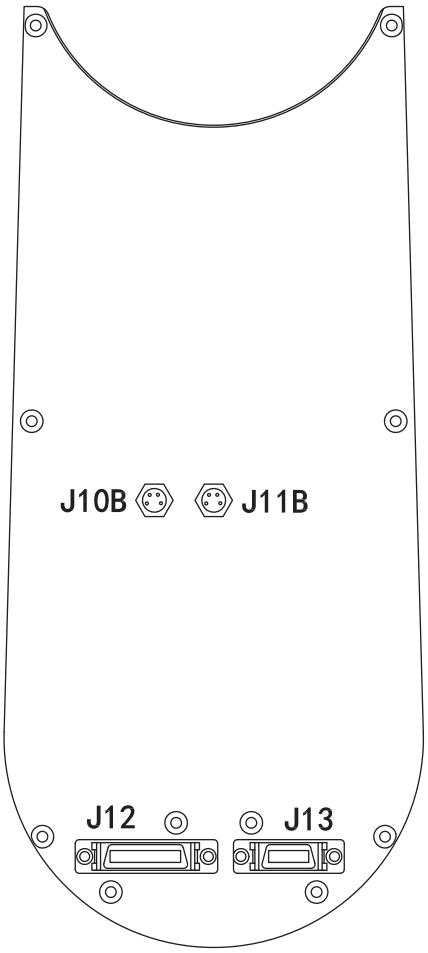


Figure 3

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



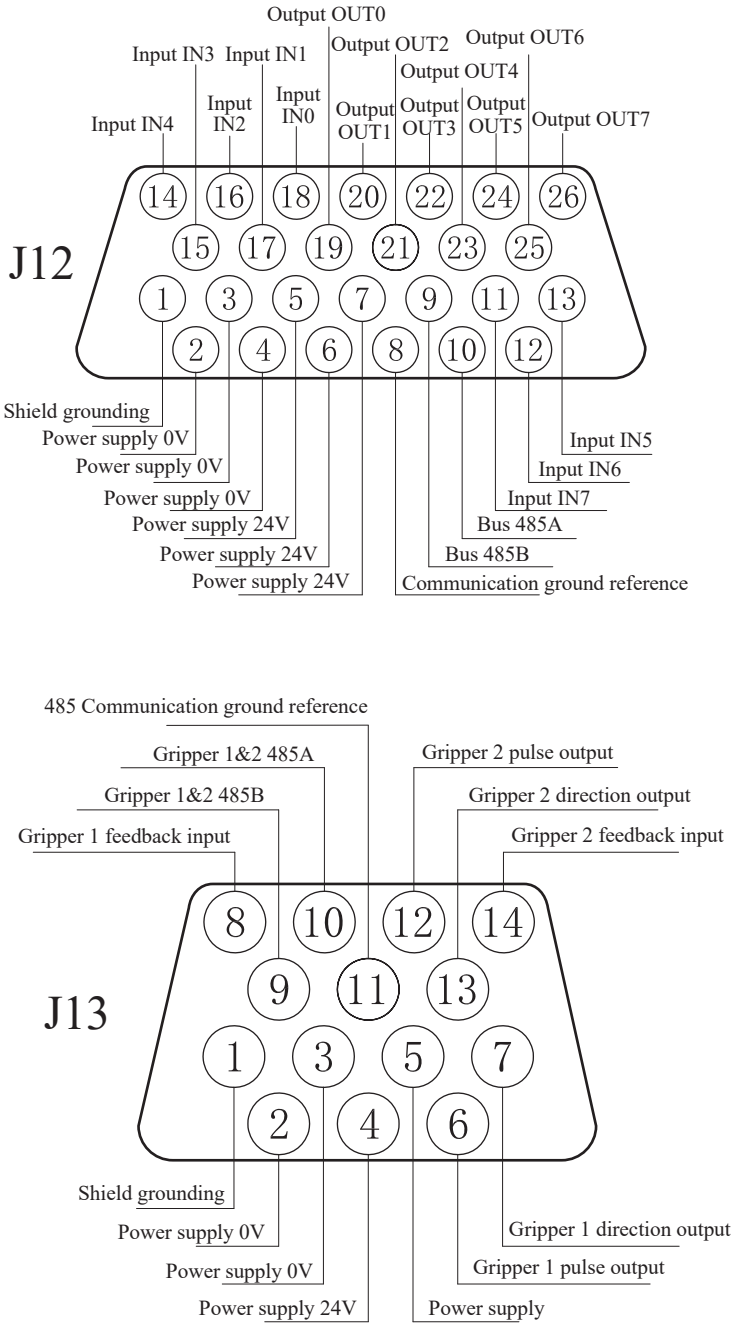


Figure 4

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)

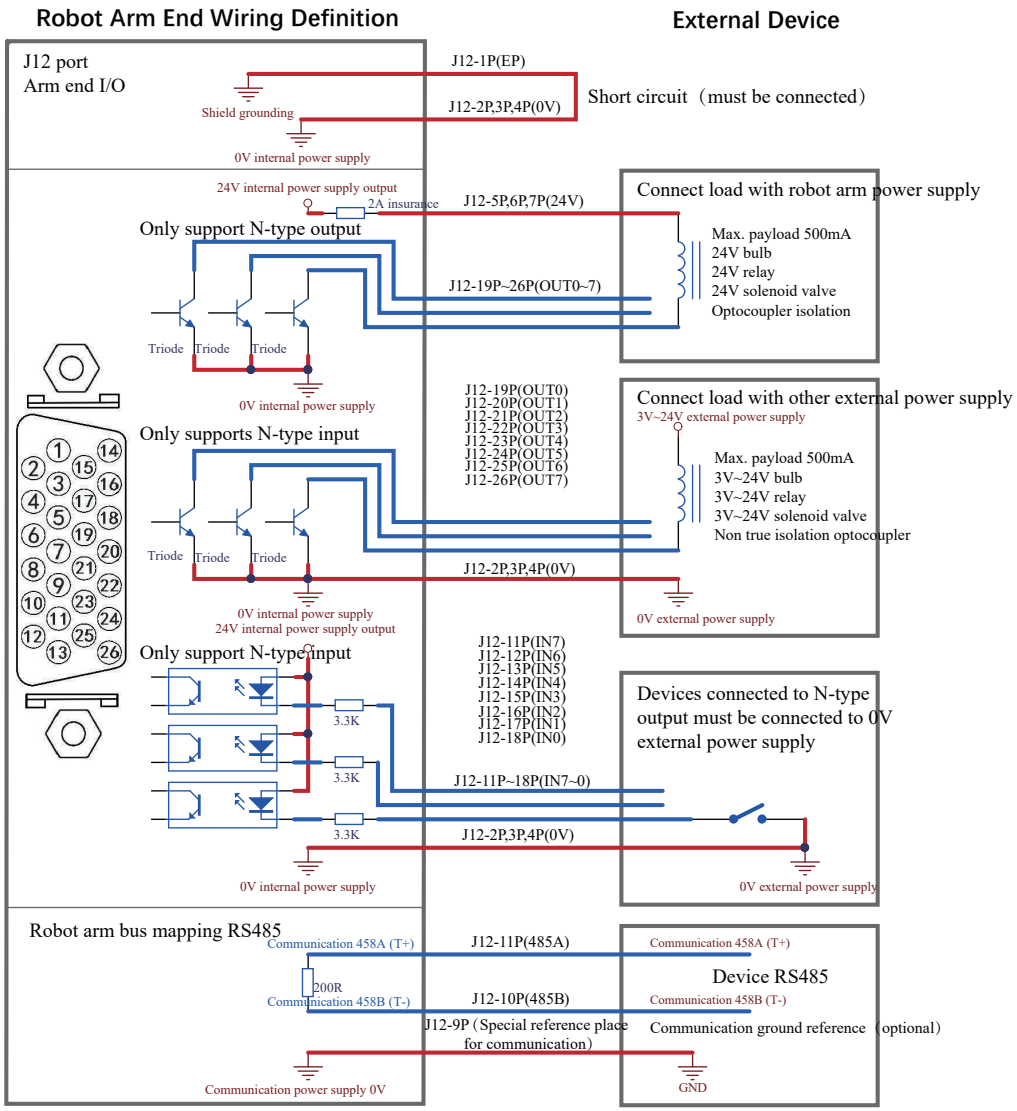


Figure 5

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

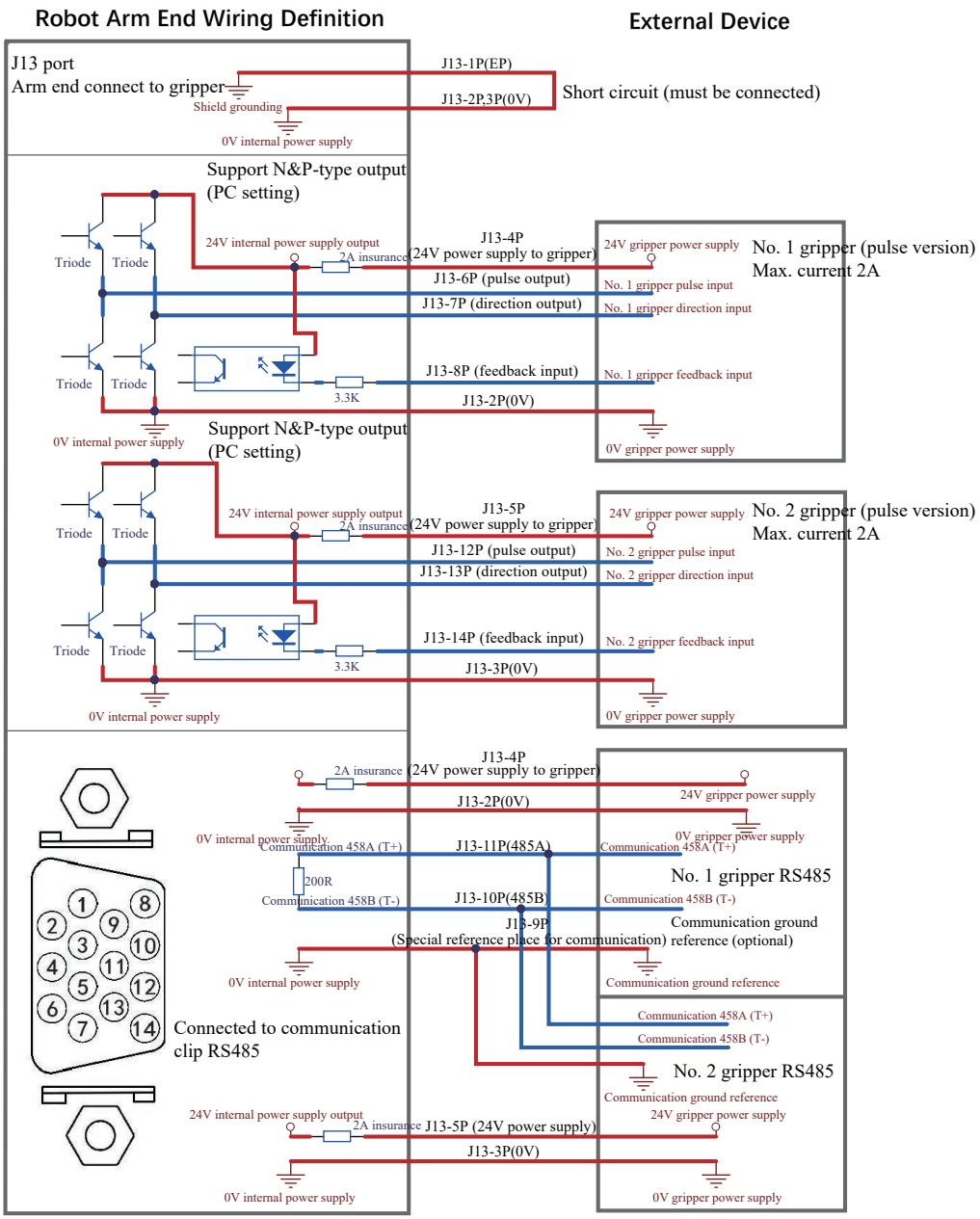


Figure 6

Precautions

1. Payload inertia
The payload center of gravity and the recommended payload range with the Z axis movement inertia are shown in Figure 7.

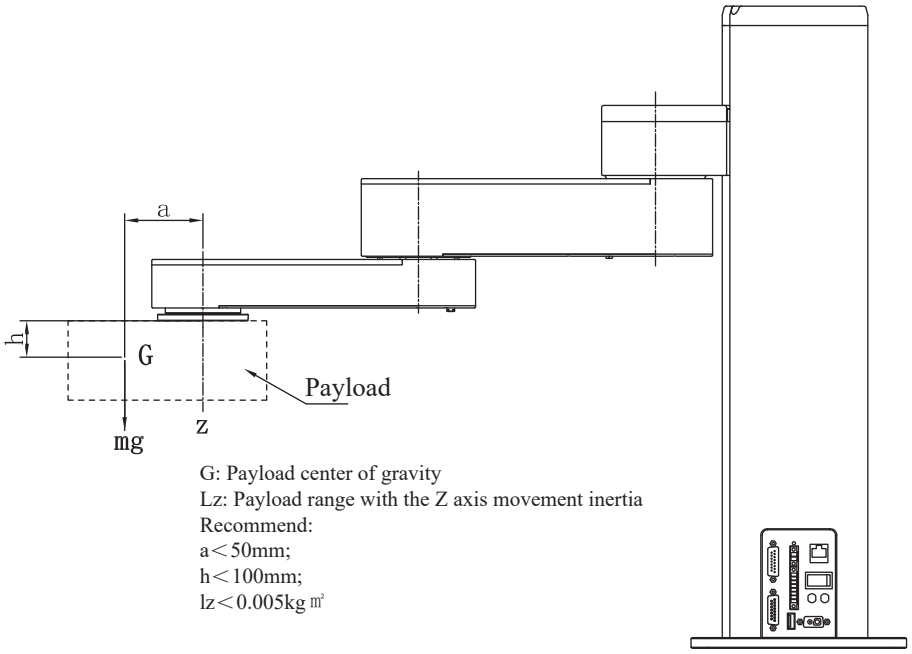


Figure 7

2. Collision force
Trigger force of horizontal joint collision protection: the force of XX42 series is 40N.

3. Z-axis external force
The external force of the Z axis shall not exceed 120N (as shown in Figure 8).

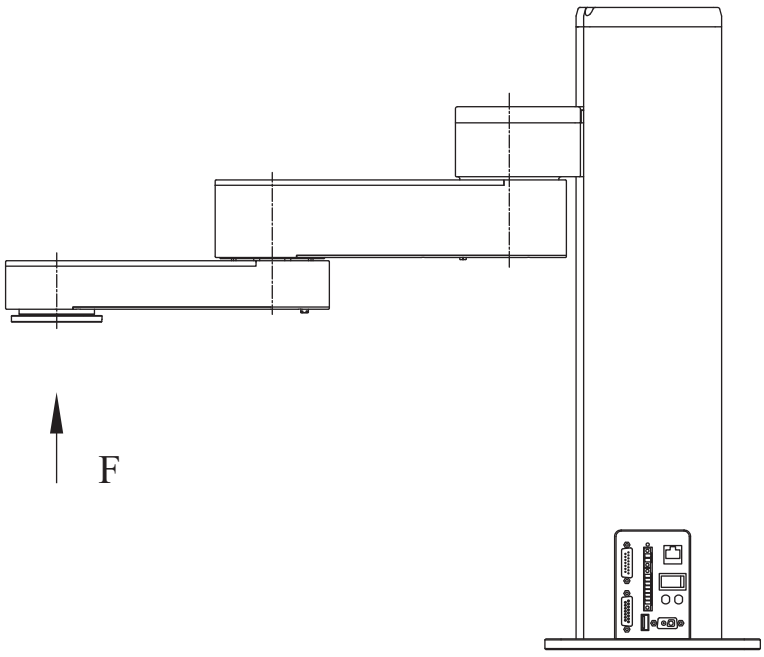
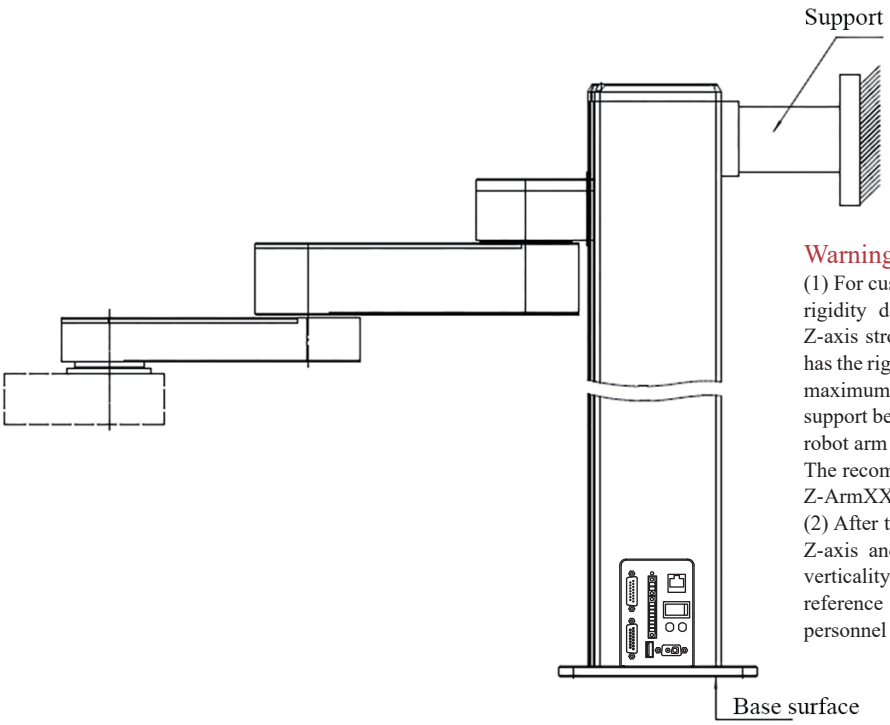


Figure 8

4. Notes for installation of customized Z axis, see Figure 9 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-ArmXX42 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 9

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 10).

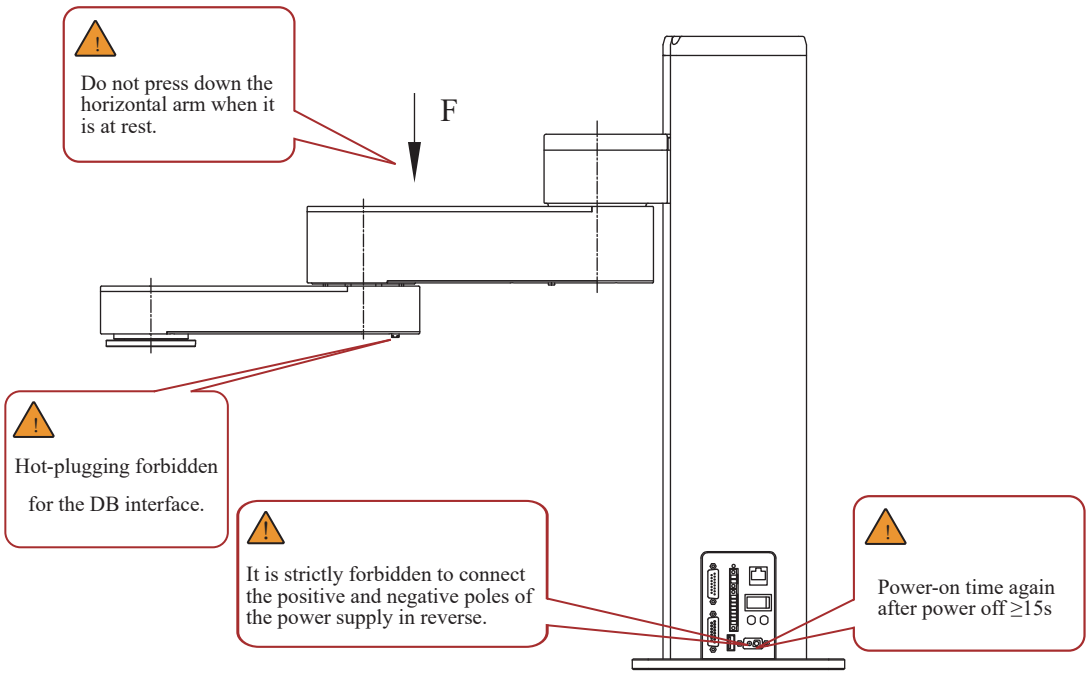


Figure 10

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 11)

Figure 11

Robot Arm Compatible Grippers Table

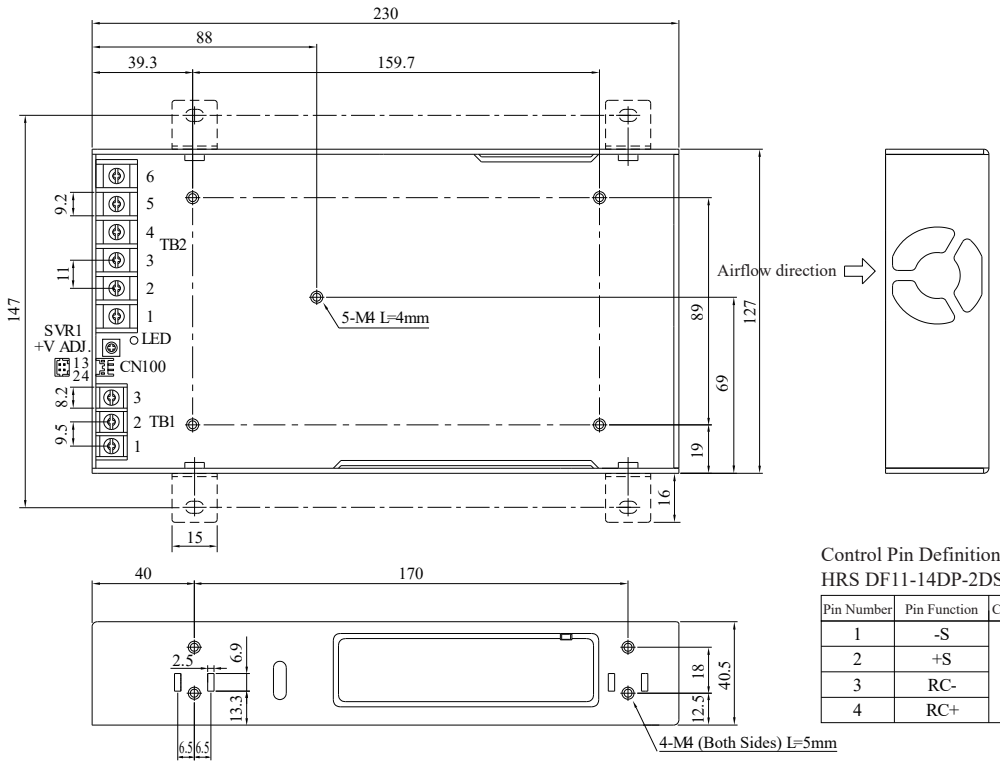
Robot arm Model No.	Compatible grippers
XX42	Z-EFG-8S/Z-EFG-12/Z-EFG-20/Z-EFG-20S/ Z-EFG-30/Z-EFG-50, the 5th axis, 3D printing

Power Adapter Installation Size Diagram

XX42 configuration 24V 500W RSP-500-SPEC-CN power supply

■ Robot arm body size

Machine case number: 226A Unit: mm



AC input terminal
Pin Definition (TB1)

Pin Number	Pin Function
1	AC/L
2	AC/N
3	FG ⏚

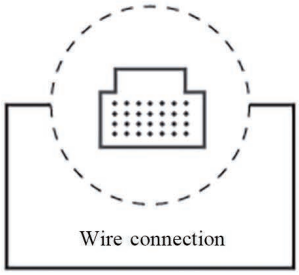
DC output terminal
Pin Definition (TB2)

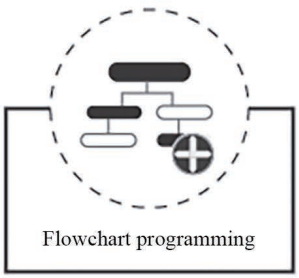
Pin Number	Pin Function
1~3	DC OUTPUT -V
4~6	DC OUTPUT +V

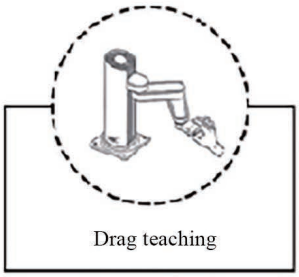
Control Pin Definition (CN100):
HRS DF11-14DP-2DS or equivalent model No.

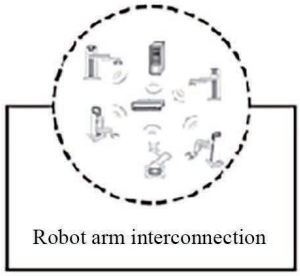
Pin Number	Pin Function	Corresponding Connector	Terminal
1	-S	HRS DF11-4DS or equivalent level	HRS DF11-**SC or equivalent level
2	+S		
3	RC-		
4	RC+		

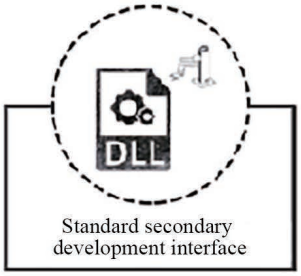
Instructions


Wire connection

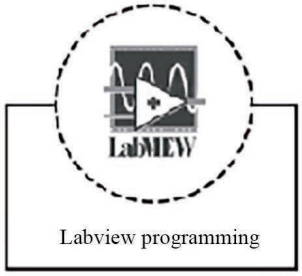

Flowchart programming


Drag teaching


Robot arm interconnection

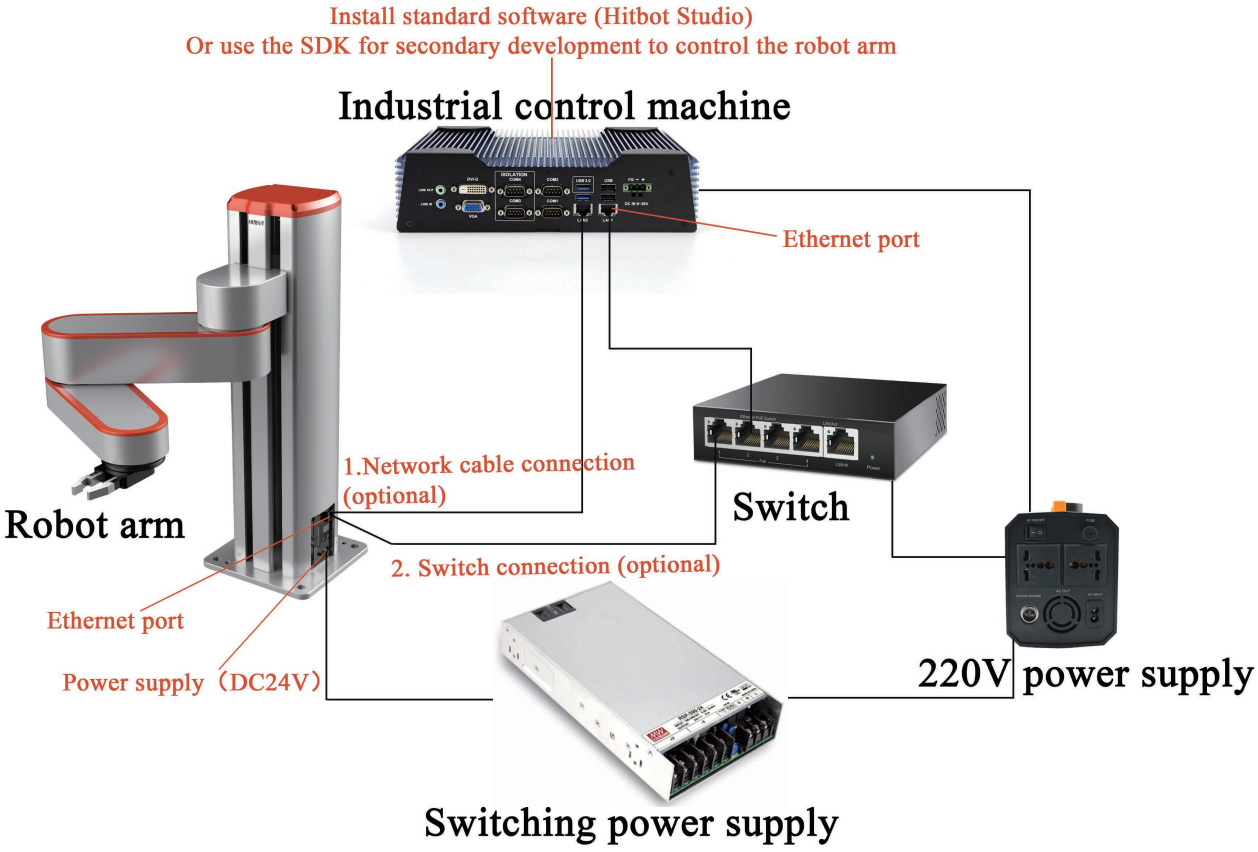


Standard secondary development interface



Labview programming

Diagram of the External Use Environment of the Robot Arm



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