HITBOT

Interface panel of Z-Arm 2140

Instructions

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I. Introduction of interfaces

The interfaces of the Z-Arm 2140 mechanical arm are at two places. One is the side edge of the arm's pedestal (A) and the other is the undersurface of the bottom arm (B). On the interface panel of A, there are Ethernet interface (J1), 24V power interface (J2), users' IO input interface DB9 (J3), users' IO output interface DB9 (J4), and WIFI extended interface (J5). On the interface panel of B, there are IO input and output interfaces DB9 (J6) and IO interface DB9 for the motor-driven controlling gripper (J7).

II. Diagram of the interfaces and instructions

1. Diagram of the interfaces at the base of A

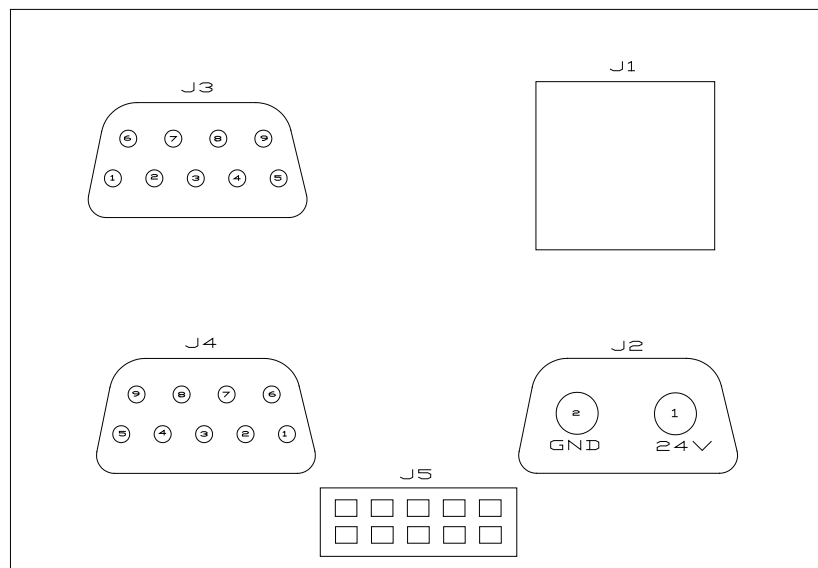

Figure 1

2. Definition of interfaces in Figure 1

①. J1 is an Ethernet interface and is used for the communication control between the mechanical arm and the PC host computer interface

②. J2 is the power input interface, with 24V DC voltage input.

③. J3 are the IO input interfaces for users, inside of which there are three sets of optocoupler isolated inputs.

④. J4 is the IO output interface, inside of which there are three sets of optocoupler Isolated NPN outputs.

⑤. J5 is the WIFI extended interface, which aims for communication control of APPs on cellphones with WIFI modules developed by our company.

3. Internal circuit design of J3 and J4 interfaces in Figure 1

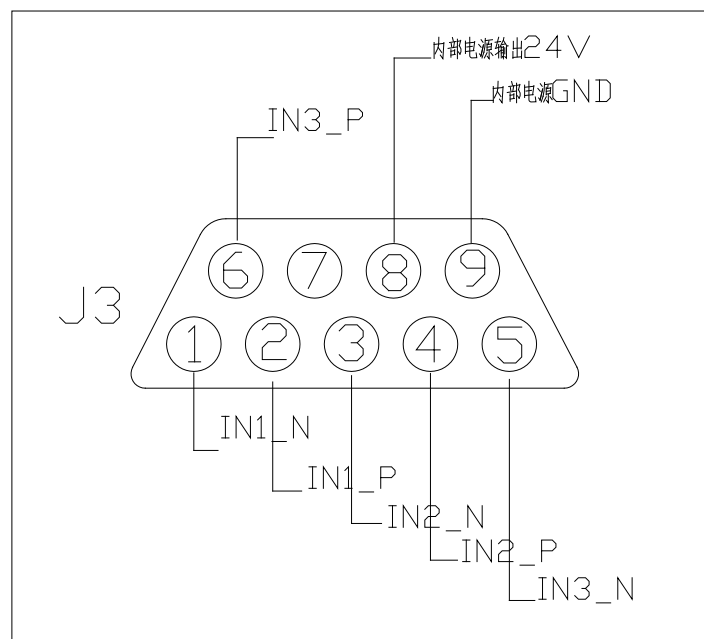①. Definition of main pin of J3 interface DB9

Figure 2

②. The simplified circuit design of J3 IO input interface

There are built-in optocouplers in Z-Arm arm IO input interface in order to achieve the electrical isolation. It has strong anti-interference ability. The working current is recommended to be around 10ma because if the current is too small, the driving performance will be affected. The typical input voltage should be 24V.
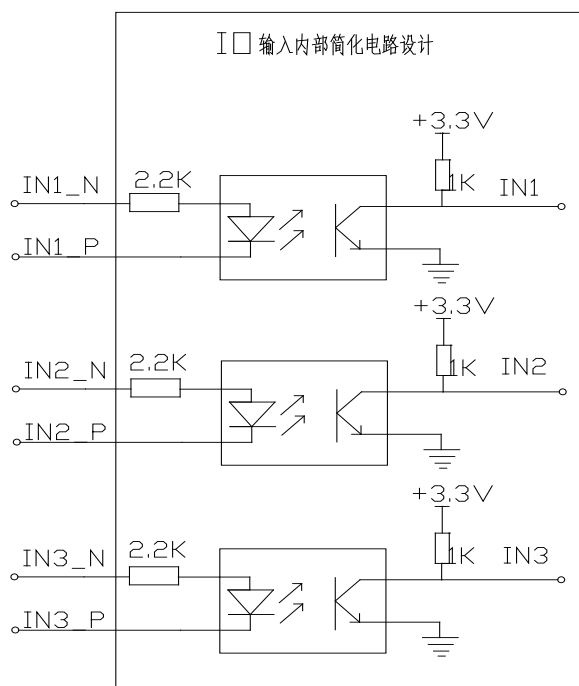
Figure 3

③. Definition of needle-holded connector pin of J4 interface DB9
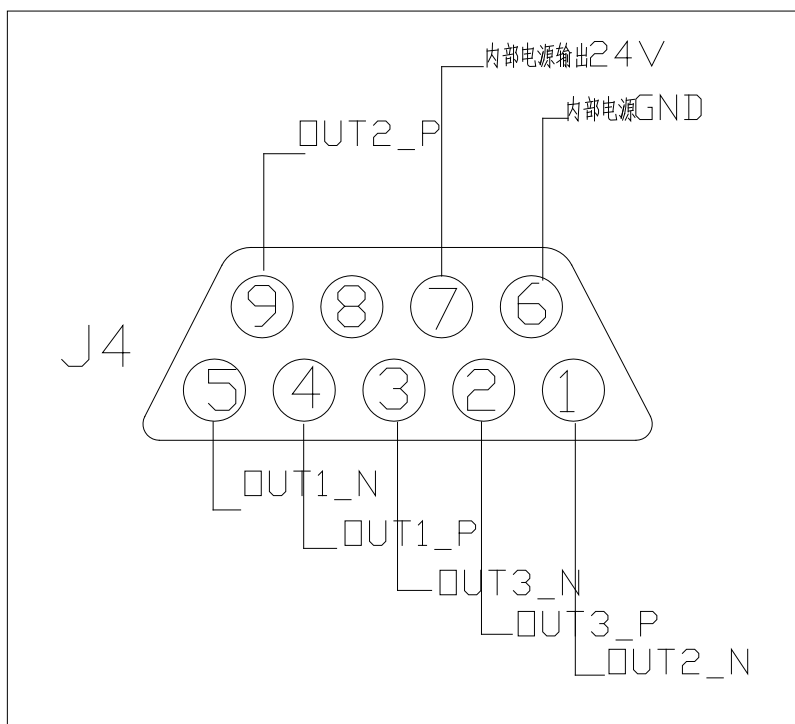

Figure 4

④. Simplified internal circuit design of J4 IO output interface

There is a built-in ordinary optocoupler and an open-drain output in the IO output interface. Users

need to connect the pull-up or pull-down resistor based on the power requirements when using it.
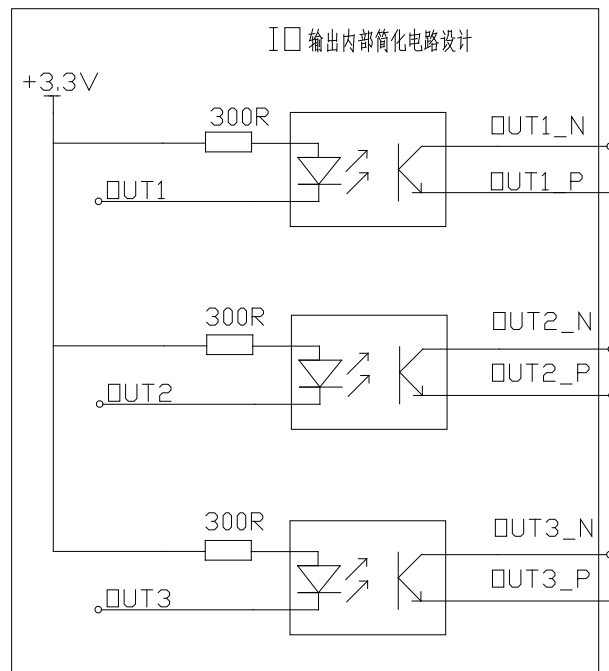

Figure 5

4. Diagram of the IO interface panel at B

Figure 6

5. Definition of interfaces at B

①　J6 are the IO input and output interfaces. The end of mechanical arm provides simple IO control to users.

②　J7 are the interfaces for motor-driven controlling grippers. The end of mechanical arm provides the motor-driven controlling gripper to users.

6. Internal circuit design of J6 and J7 interfaces

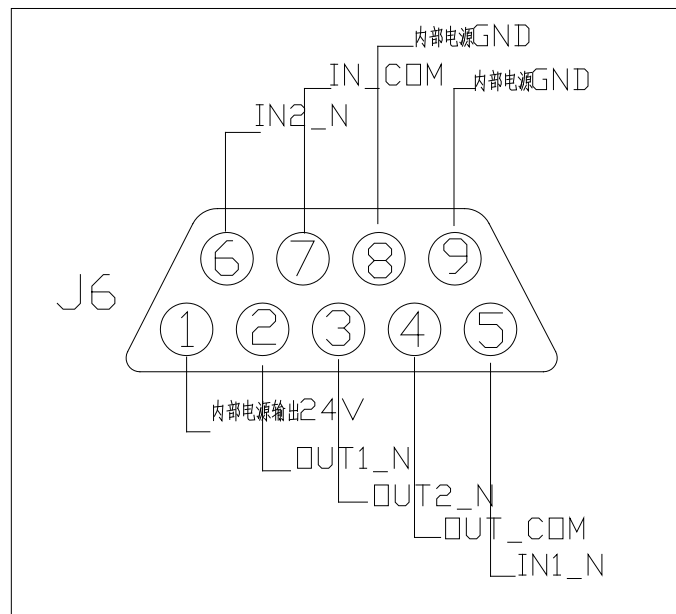① Definition of main pin of J6 interface DB9

Figure 7

7. Simplified internal circuit design of J6

The IO interface of Z-Arm mechanical arm has a built-in common optocoupler, thus it can achieve electrical isolation and strong anti-jamming capability. The recommended working current is about 10mA. If the current is too small, the driving performance will be affected. The typical input voltage is 24V. IO output and open-drain output of. When using it, users need to connect pull-up based on their own power supply requirements. For example, a 24V supply pull-up should match 4.7K resistor application.
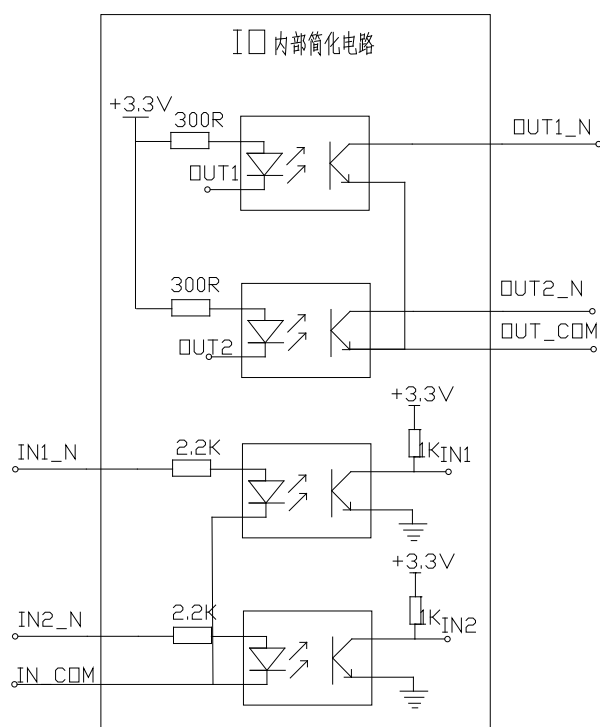
Figure 8

8. Definition of needle-holded connector pin of J7 interface DB9
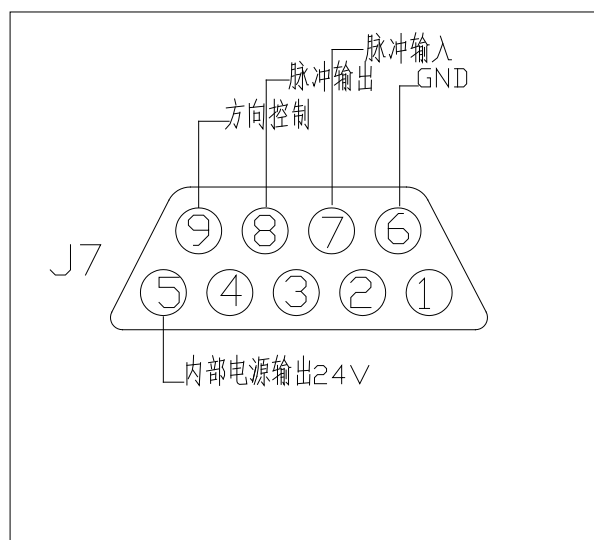

Figure 9

EFG-8 and EFG-20 motor-driven grippers are on this interface (J7). The wiring is as follows.

EFG-8

Red Internal power 24V output (pin5)

Black (thick one) GND (pin6)

Black (thin one) Pulse input (pin7)

Green Direction control (pin9)

EFG-20

Aviation plug pin1 (direction) - Direction control

Aviation plug pin2 (+24v) - Internal power output 24v

Aviation plug pin3 (input pulse) - Pulse output (pin8)

Aviation plug pin4 (feedback pulse) - Pulse input (pin7)

Aviation plug pin5 (GND) - GND