Desktop 6 Axis Robot Arm AR4 Intro

1. Overview

The AR4 robotic arm is a desktop 6-axis robot that is small, powerful and cost-effective. With an end load of 1.9kg, a 629mm arm span, and a global accuracy of 1mm, AR4 integrates the robotic arm, electrical system, and robot motion control into a single unit, and can communicate with other devices through a microUSB serial port for receiving coordinates and motion commands to perform actions, making it simple to operate and easy to get started.

It can be used in the education industry, light industry, service industry and other scenarios. Common applications include automated gripping, automated machining, mounting, welding, painting, grinding, inspection, remote TCP, etc.

2. Features

2.1. Solid & Durable Structure. The body of the robotic arm is composed of CNC aluminum alloy, and the shell is made of 3D printed PLA.

2.2. Open Source Control Software. Provide a set of open source robotic arm control software, which can be developed twice.

2.3. ROS System Communication. Build a complete moveit operation and control program to facilitate R&D (motion planning, obstacle avoidance, visual grasping algorithms, etc.) and applications.

2.4. Multiple Operation Modes. Programmable, teachable and joystick control of the robot arm.

2.5. Complete Forward & Reverse Kinematics. Motion control is done by Teensy 4.1 board, which can be optimized according to the needs through arduino IDE.

* The electrical connector of the robotic arm is DC5.5 socket, the power supply voltage is 19.6~25.2V, the maximum current of the device is 10A, the rated current is 6A.Requirements: stable power supply, basic over-current, short-circuit, charge/discharge protection.

3. Specs

Machinery			
Packaging Dimensions	W500×D500×H500mm	**Packaging weight**	16kg
Robot Dimensions	W350×D240×H430mm	**Robot weight**	14kg
Front Extension Arm Spread	629mm	**End Load**	2kg
Global Accuracy	1mm	**Repeatability**	2mm
Power	198W		
Electronic			
Control Card	Teensy4.1 Control of robotic arm movement	**Auxiliary control**	Arduino Nano 8-channel relay control peripheral
Driver Power Supply	220V Input 19.6~25.2V Output	**Drive motors**	Closed Loop Stepper Motor 5rpm
Software			
Control	AR4（Windows)	**Third Party**	ROS（Ubuntu)

4. Standard & Optional

4.1. Standard Equipment List

No.	Name	Description	Quantity
1	Robotic Arm Body	/	1 PCS
2	Six-axis control system	/	1 PCS
3	Motor Drive System	/	1 PCS
4	MicoUSB communication cable	1 meter	2 PCS
5	Power adapter	24V 10A DC Power Supply	1 PCS
6	Remote control teach pendant	XBOX Gamepad	1 PCS
7	Interface application software (with source code)	/	1 PCS
8	AR4 Embedded System Program Source Code	teensy4.1+Arduino Nano source code	1 PCS
9	ROS Control Program Source Code	Control, simulation, etc.	1 PCS
10	Robotic arm operation tutorial	Operation manual + operation video	1 PCS
11	Parameter description of robotic arm	Product fixing holes, actuator flange, installation drawings, etc	1 PCS
12	Control command description	/	1 PCS
13	Simplified Solid Model	/	1 PCS

4.2. Options and upgrades

No.	Name	Description	Quantity
1	Electric jaws	1204 &1604	3 PCS
2	Pneumatic jaws	Same power 800W 65mm diameter	1 PCS
3	Suction Pump	2~8mm full set	10 PCS
4	3D Camera	50-75mm clamping range	1 PCS
5	2D camera	0~100mm clamping range	1 PCS
6	Vacuum chucks		
7	Motorized slides		

5. Structure

Electrical Composition

The electrical system of the robot arm consists of a power conversion and controller, a FOC motor driver, a high-precision magnetic encoder, and connecting cables;
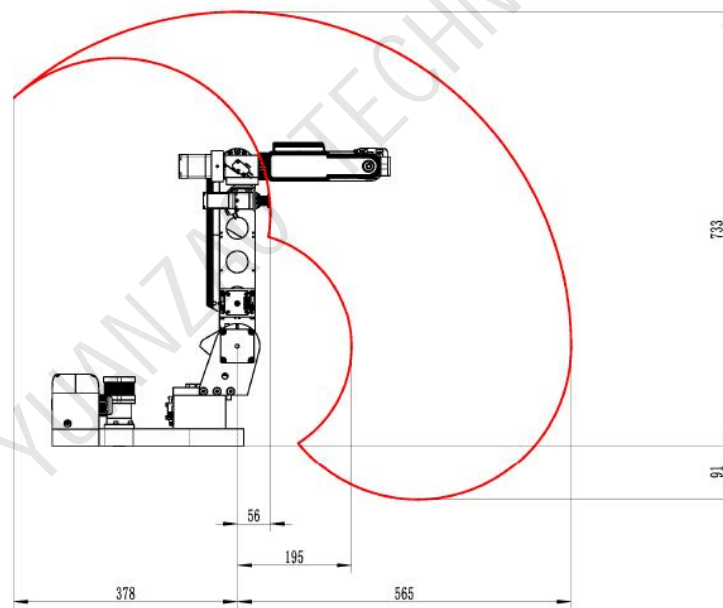

Figure 1: Range of motion of robotic arm

6. Details

7. Installation dimensions

7.1. Arm fixing hole: Please fix the arm base before use to avoid the arm tipping over due to gravity.
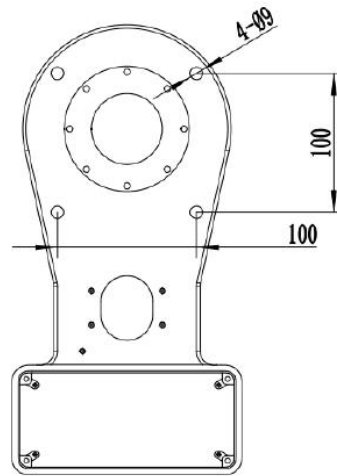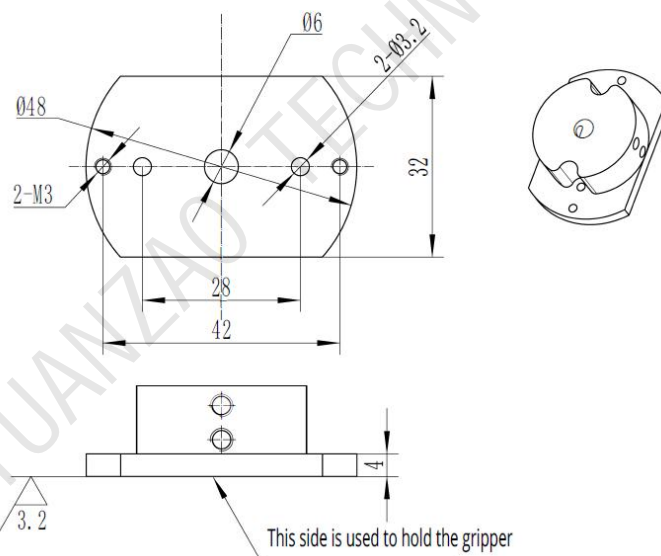

Fig. 2 Arm fixing holes : 8M×35

7.2. Mounting flange for robotic arm gripper

8. Warranty

No warranty for damage caused by human misuse, failure to follow instructions or private disassembly.

Warranty for 1 year for quality problems not caused by human factors.

Warranty program for free accessories remote guidance for replacement, such as the need to return to the factory for repair and return freight borne by the customer.

After exceeding the warranty period, we will provide replacement parts at cost.