X-Hand 1 User Quick Start Instructions

V1.0	2024/09/05

CONTENTS

Welcome

Hello! Welcome to XHand, the dexterous hand of RobotEra.In this manual, you can learn about the initial setup and basic functions of XHand, as well as must-know safety precautions.

The functions described in this manual are up-to-date as of the time of publication. If the description does not match the reality due to changes in software, hardware specifications, etc., please refer to the actual product.

Version Overview

releases	dates	revised record
V1.0	2024/09/05	first edition
V1.1	2024/10/25	Correction of the description of the software installation and software startup of the host computer

Product Appearance

Joint Sequence

Basic Operations

Environmental Description

Operating system: Ubuntu 20.04

CPU: Intel i5-12400 and above

Memory: 8GB and above

Hard Disk: 128GB SSD and above

software installation

1. First download the XHand.deb installer;

   https://di6kz6gamrw.feishu.cn/drive/folder/WGyhflqb1lRu9ddtc0scjDhwngg?from=from_qr_code

2. Install the predecessor dependencies:

   a. Installation of jdk, need to be greater than or equal to 8, recommended jdk between 8-17

   b. Install pip3

```
Bash
 sudo apt-get update
 sudo apt-get install -y openjdk-8-jdk
 sudo apt-get install -y python3-pip
 sudo apt install libboost-filesystem-dev
```

3. Installation results calibration

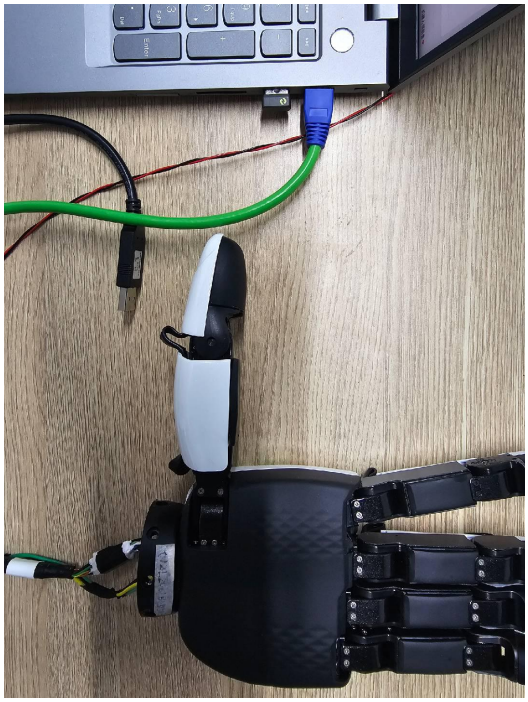
```
Bash
 $ java -version
 openjdk version "1.8.0_422"
OpenJDK Runtime Environment (build 1.8.0_422-8u422-b05-
1~20.04-b05)
OpenJDK 64-Bit Server VM (build 25.422-b05, mixed mode
)
 OpenJDK 64-Bit Server VM (build 25.422-b05, mixed mode)

 $ python3 --version
Python 3.8.10

 $ pip3 --version
pip 20.0.2 from /usr/lib/python3/dist-packages/pip (python
3.8)

 $ dpkg -l | grep libboost-filesystem-dev // pending
verification
ii libboost-filesystem-dev:amd64 1.71.0.0ubuntu2 amd64
filesystem operations (portable paths, iteration over
directories
, etc)
iteration over directories, etc) in C++ (default version)
```

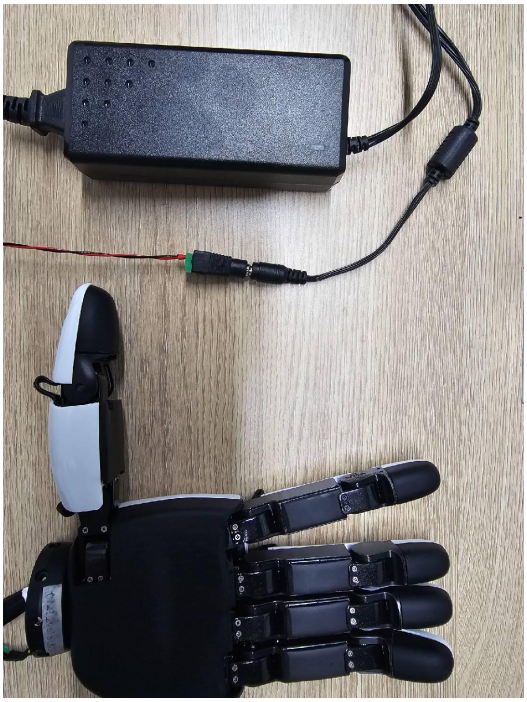
4. Install xhand.deb via terminal

```
Bash
 # Uninstall
 sudo dpkg -r xhand
# Installation
 sudo dpkg -i xhand.deb
```

device connection

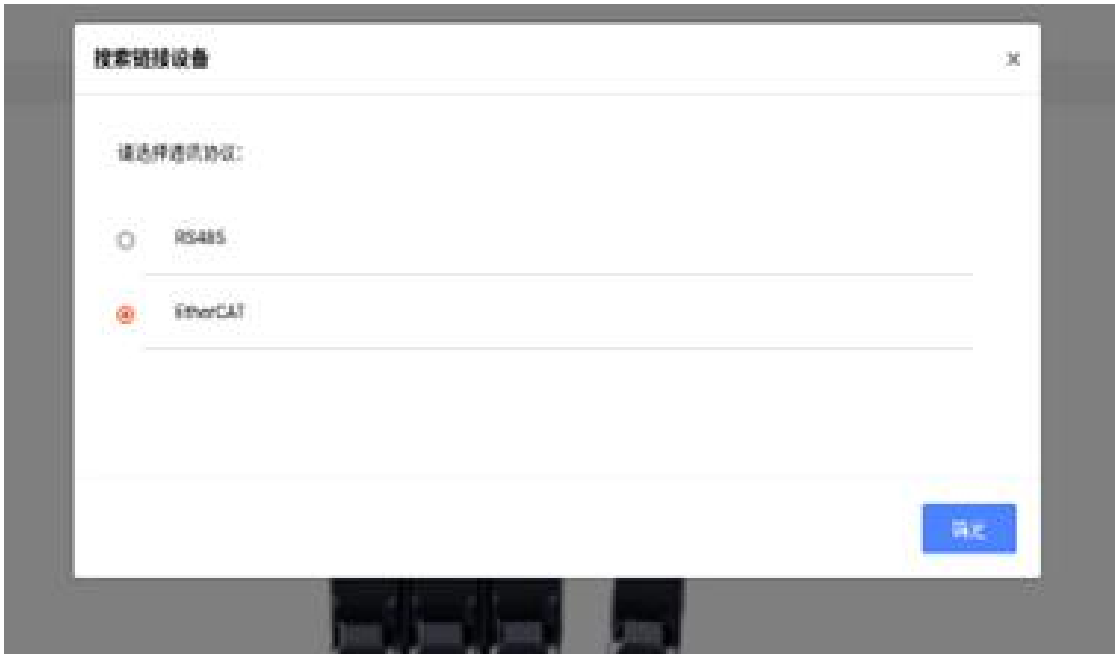
1. Connect the dexterous hand to the computer via the XH04 communication debugging cable (please use the RJ45 connector for EtherCAT protocol); the power adapter is connected to the power port;





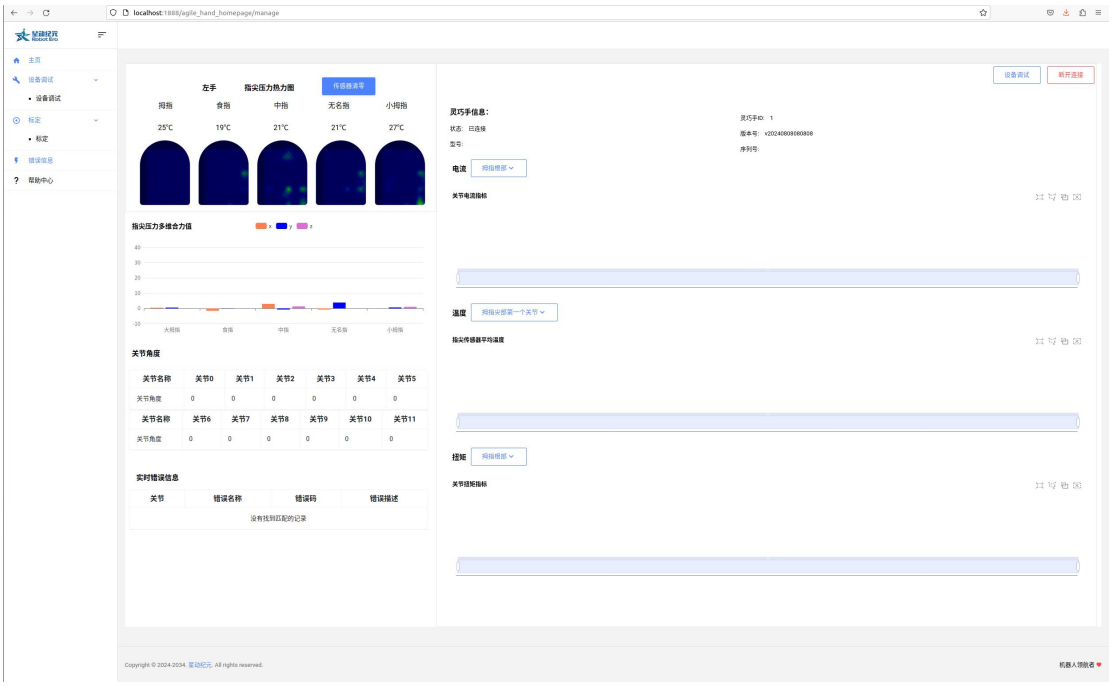
2. Double-click the [XHAND] application, wait for 10s pop-up window to enter the password, after entering the password, the browser will automatically pop-up window XOS host interface. Open the web page Localhost:1888.

3. Connect the Dexterous Hand device to the computer, click [Search Connection] to start trying to search for a connected device, select [EtherCAT] communication protocol, click [OK]; select the device ID (automatically read), click [OK] to enter the



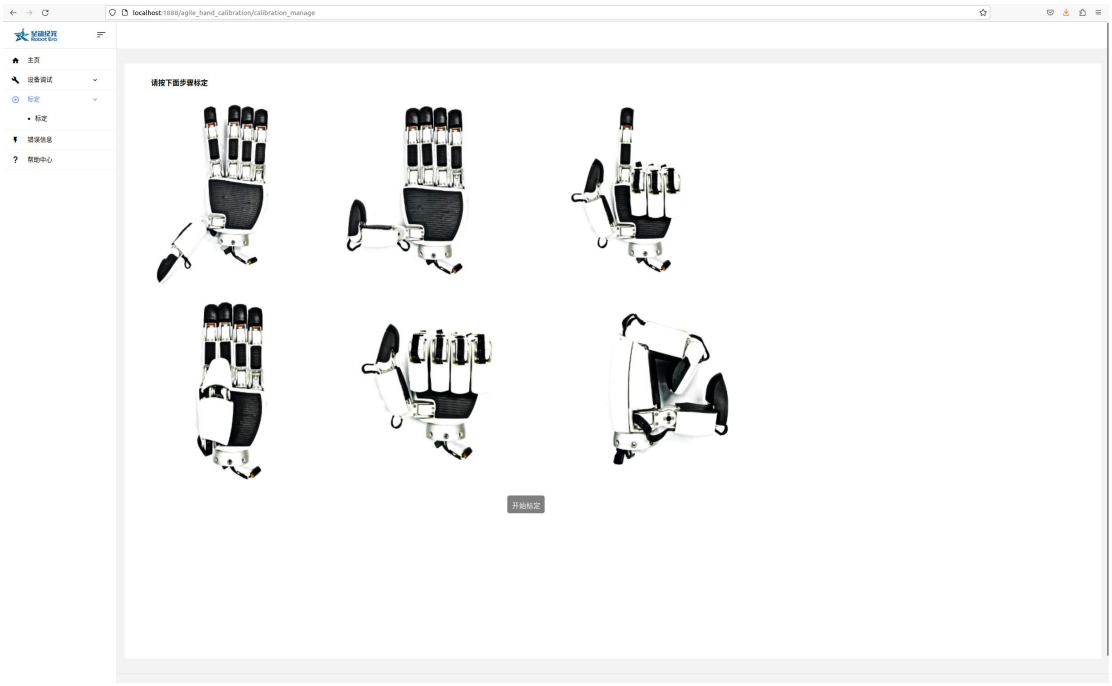
next step, as shown below:

4. Enter the main XOS interface after successful connection



Equipment calibration

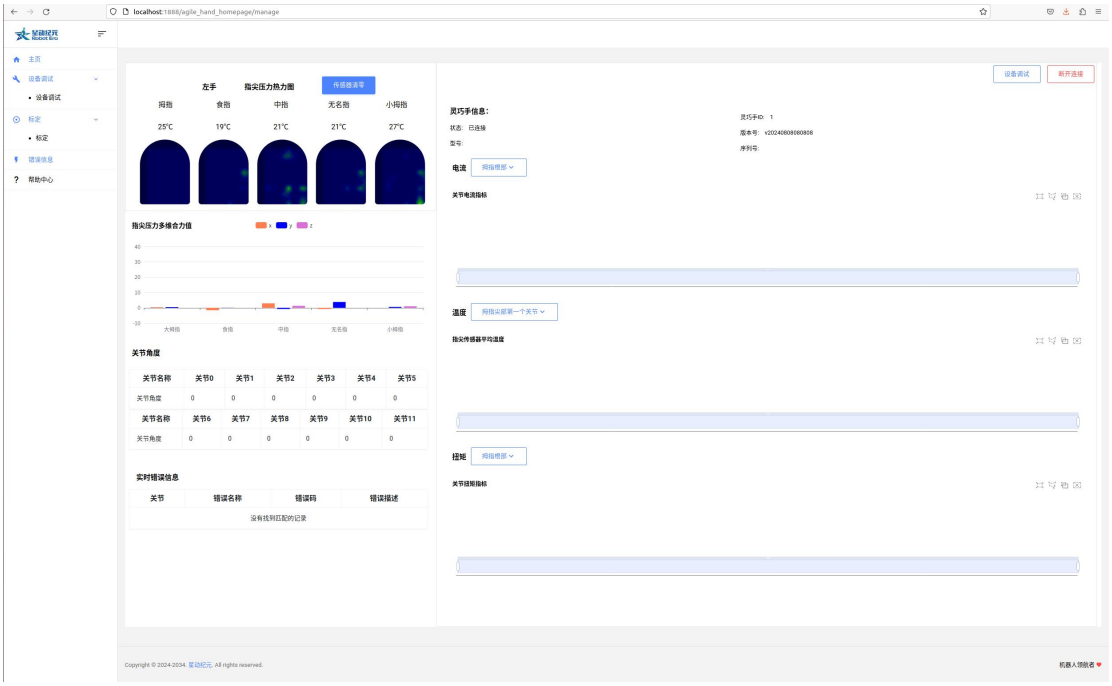
1. When the device is successfully connected and the user uses the dexterous hand device for the first time, the user needs to calibrate the dexterous hand device as shown below, click on the calibration button and perform each step of the calibration action according to the legend action.



2. XOS automatically jumps back to the main display after calibration is complete

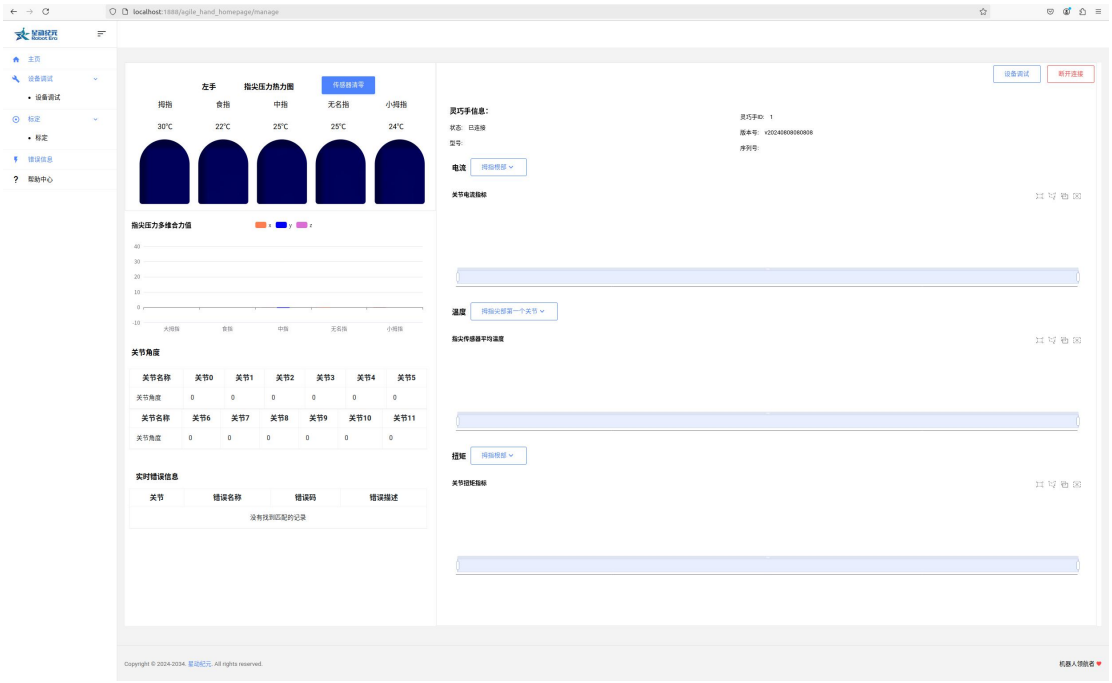
Home Showcase

1. Operation steps: After completing the calibration task, enter the Dexterous Hand homepage to display the basic information of the Dexterous Hand device, current, torque, joint angle, and fingertip tactile combined force value information.



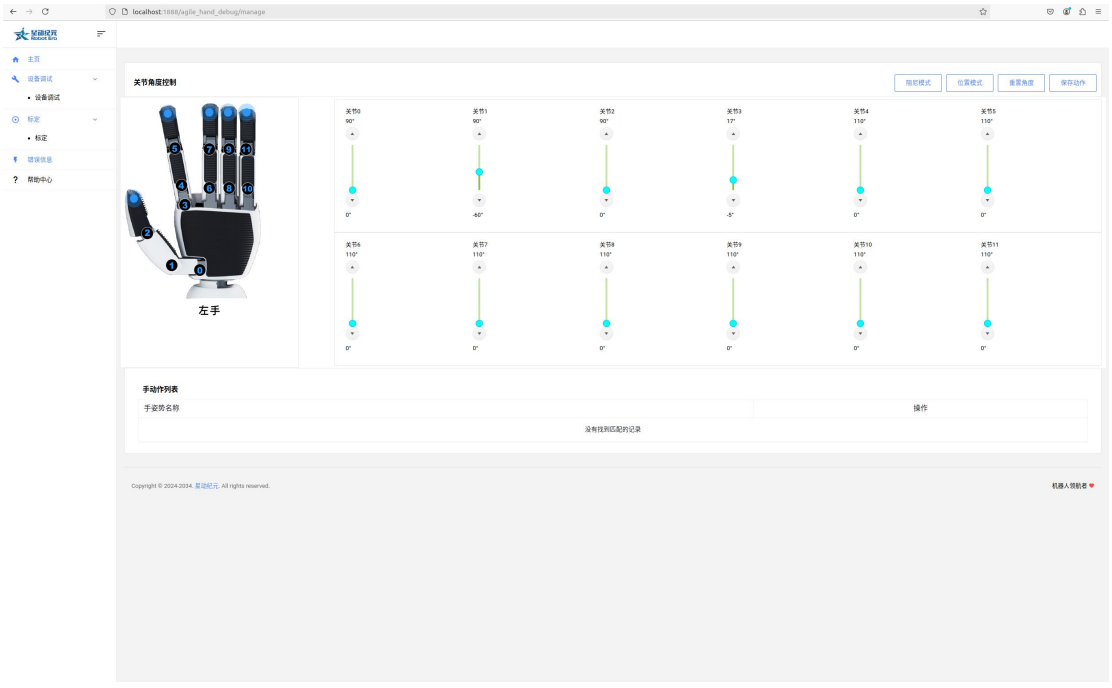
2. When using the dexterous hand to grasp the object, the home page displays the

information such as the value of the fingertip tactile synergy, when the dexterous hand device releases the object, the synergy value still displays the data, click on the [Sensor Zero] button to do the synergy value to zero operation. The following figure;



Equipment Commissioning

1. Click [Debug Device] to test whether the dexterous hand is in the linkage state, as shown below;



2. Toggle [Position Mode] to drag the slider to see the change in the angle of each knuckle of the dexterous hand, and check if the dexterous hand can move normally;

Maintenance system

Official website link: www.robotera.com

Help support: support@robotera.com