User Guide for Manipulator

1. Introduction

This document provides an introduction to the hardware and software of the **Unitree Z1 Arm**. It is designed for roboticists who wish to use the manipulator, offering guidance and answers to common queries.

Cautions

SAFETY FIRST！！If the user find any 'cracked' sign of the arm, please ask for help.

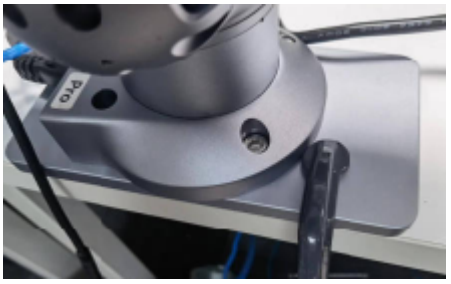
1. Install the robot arm and connect the cables according to the requirements.
2. Ensure that the robot arm does **not collide** with people or other objects within its range of activity.
3. The robot arm will generate heat during operation, so please do **not touch it** during operation or when it has just stopped
4. Be sure to **power off** when the robot arm is finished using
5. Be sure to **turn off the control** program after the robot arm is powered off

2. Overview

One could find all details of the camera in the following links.
Useful Links

1. Z1 website: https://support.unitree.com/home/zh/Z1_developer
2. Github repositories
    1. Z1 controller msg: https://github.com/unitreerobotics/z1_controller
    2. Z1 SDK: https://github.com/unitreerobotics/z1_sdk
    3. Z1 system msg: https://github.com/unitreerobotics/unitree_ros_to_real/tree/master/unitree_legged_msgs

Hardware Checklist

Name	Num	Img
manipulator	1	
ac/dc switching adaptor	1	
C-clamp	1	
fixed plate	1	
mobile plate	1	[**WIP**]

Manipulator Specification

Parameter	Specification
Degrees of Freedom	**6** axes
Weight	4.1kg
Payload	≥3kg
Maximum Reach	**740mm**
Repeatability & Precision	**~0.1mm**

Power Requirements	**Voltage 24V, Current >20A**
Interface	**Ethernet**
User Control System	Ubuntu
Power	Peak 500W
Force Feedback & Collision Detection	Yes
Interface Control	**Position + Force Control**

3. Unitree Z1 SDK

The use of manipulator consists of the following parts, all steps can be found in https://support.unitree.com/home/zh/Z1_developer/poweron

```
## Before Use
Step 1: setup the hardware correctly (zero position, connect the pc
Step 2: Power up the manipulator, set up the network configuration
## Use
Step 3: Install prerequisites (SDK, ROS2)
Step 4: Data sending and recording
```

4. Resources

1. URDF of z1: https://github.com/unitreerobotics/unitree_ros/tree/master/robots/z1_description
2. URDF of b2z1 (joint is set to fixed in purpose): https://github.com/cjt0313/unitree_rl_gym/tree/main/resources/robots/b2/urdf

5. FAQ

[WIP]