Tilburg Hand v1.0

Getting Started Guide

Setting up the Tilburg Hand

Unboxing the Tilburg Hand should be fairly straightforward. The robot hand only requires two connection cable: a micro-usb cable to connect to U2D2 interface board to a computer, and the power supply.

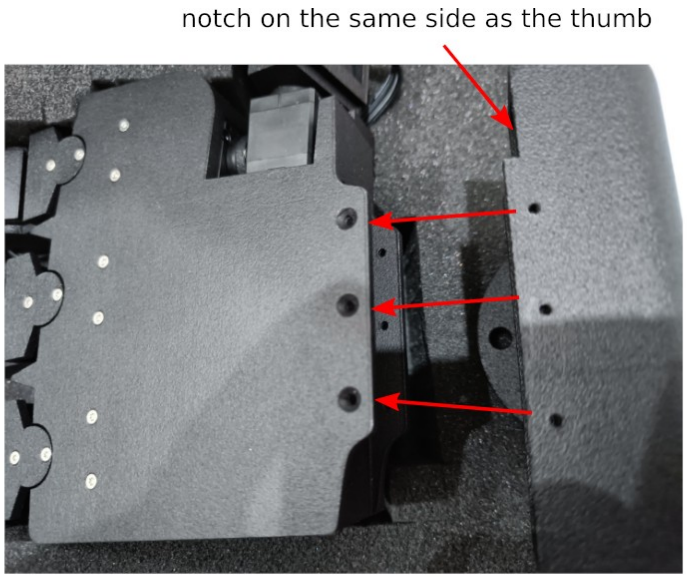
The Tilburg Hand has a flexible interface that can be used to connect it to a variety of (custom-made) flanges and stands. You can contact us at contact@tilburg-robotics.eu for technical drawings of the interface or for customized adapters.

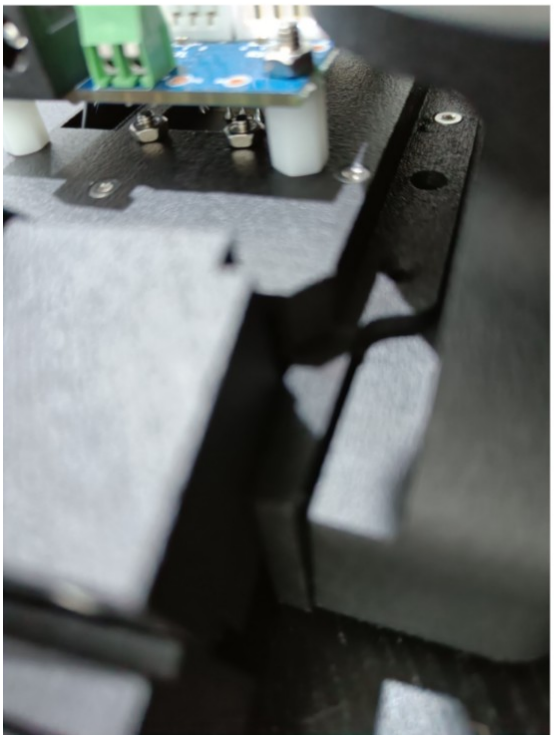
Wrist flange attachment

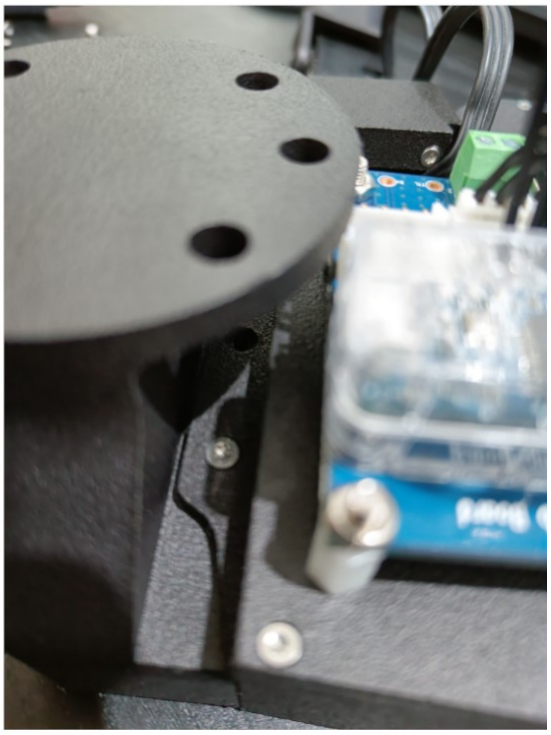
To connect the Tilburg Hand to a robot arm, it is advised to first install the chosen flange on the robot, and after attach the Tilburg Hand to it.

You should attach the flange to the robot arm using M6x10mm socket cap screws (included).
The Tilburg Hand is then attached to the flange using 6x Torx T8 screws of size M2.5x8mm (included).
For the 90-degrees angled wrist, it is sufficient to attach the 3 screws on the straight side, along with just 1 or 2 screws on the other side. The included 90-degrees flange is a prototype, and future versions will be made easier to install.

When connecting the Tilburg Hand to the flange, please align the notch on the flange with the notch on the hand (thumb side).







Motor GUI and generation of the configuration file

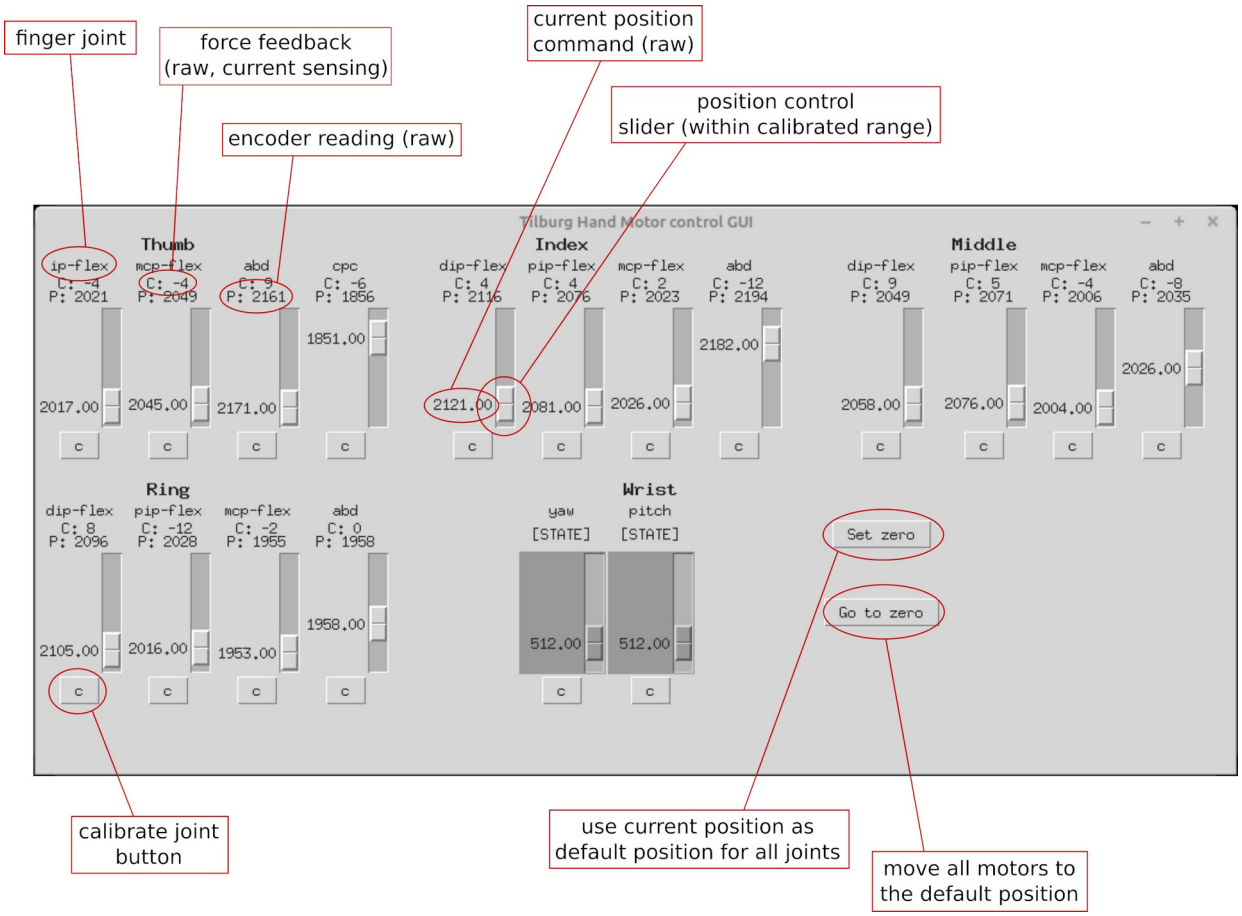
Before using the Tilburg Hand, you should generate a configuration file. A default configuration file (including the range of each joints and their zero position) is generated automatically using the included motor control GUI.

To start the GUI, install the Tilburg Hand Python package (instructions below), and then run it as

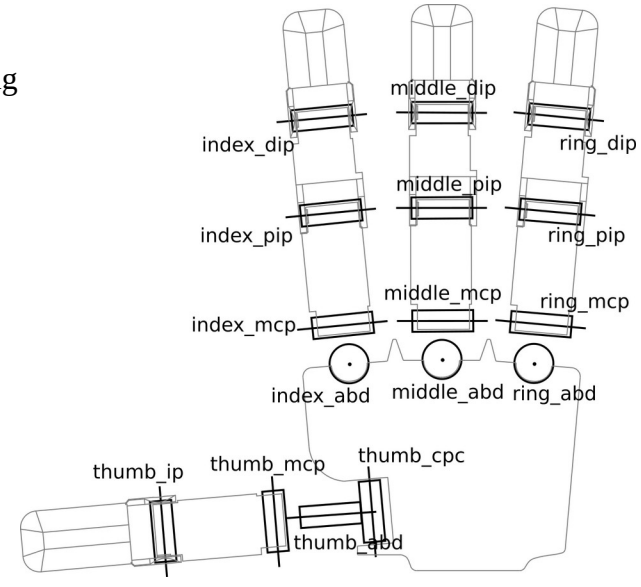
```
$ tilburg_hand_motorgui
```

The first time the GUI is opened, you will be asked to configure either a Left or Right Tilburg Hand. The default configuration file will be saved in your user folder. For example, on Linux it will be saved as $HOME/tilburg_hand/calibration.json .
This is the directory that the Tilburg Hand library will look for the configuration file in, by default.

The motor GUI, like the Tilburg Hand library, rely on a second config.json configuration file (included by default within the installed Python library, in the subfolder `tilburg_hand/motorgui/config.json'). The config.json file includes default names for the USB port to use and/or the VID/PID of the U2D2 interface board (for automatic detection of the USB port).



Both the motor GUI and the Python library use a default naming for each joint of the hand. The mapping of all joints to their corresponding name is shown in the Figure below.



Code repositories, documentation, and demos

The software library used to control the Tilburg Hand, together with examples, the motor GUI and documentation, is available at the following GitHub repository:
https://github.com/TilburgRobotics/tilburg-hand

After downloading the library, you can install it as a typical Python library. For example, if you want to install it in the same path as placed after download, you can type:

```
$ python -m pip install -e .
```

Alternatively, the library can be installed via PyPI as:

```
$ python -m pip install tilburg-hand
```

Please note that on Linux you should add your username to the `dialout' user group, to avoid the need for root privileges when accessing USB ports:

```
$ sudo usermod -a -G dialout $USER
```

Additional materials and demos (including a motion-tracking from camera demo) can be found at:
https://github.com/TilburgRobotics/tilburg-hand-contrib