OHandSetting Instruction Manual

V1.6

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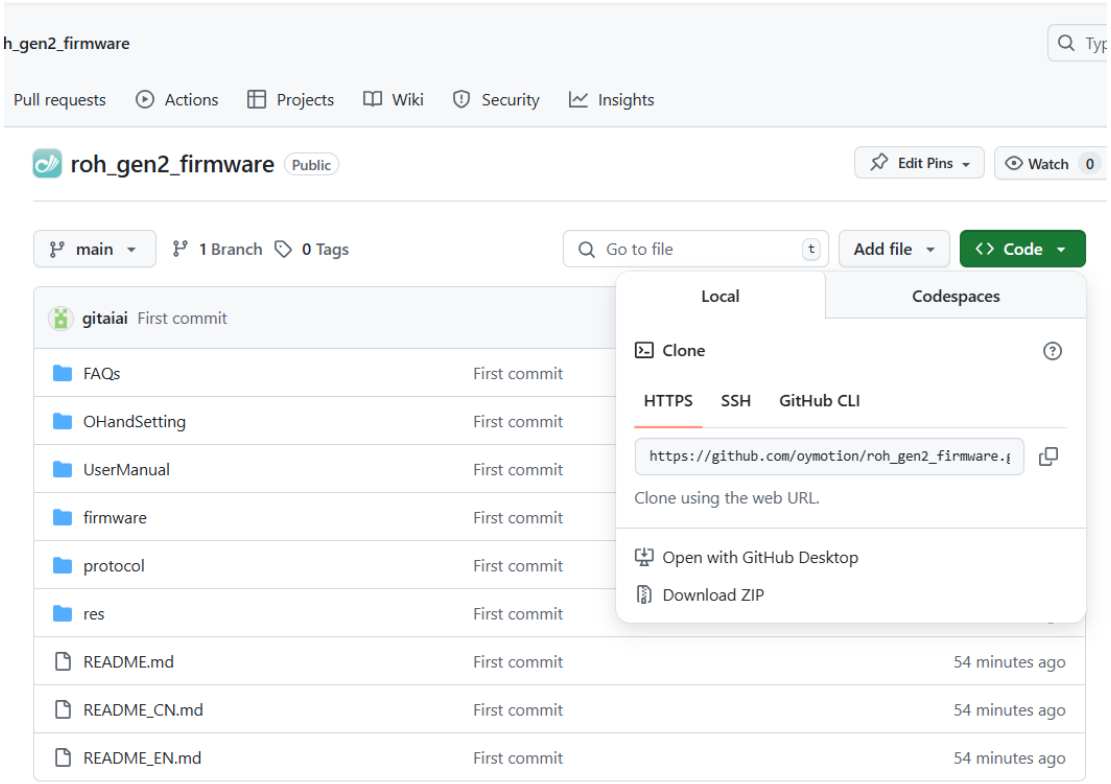
CONTENT

1. Software Usage and Installation

1.1 OHandSetting is a desktop tool designed for OYMotion's ROHand series dexterous hand products to complete firmware updates, position calibration, device ID settings, reading and writing limit current and PID parameters, setting and reading finger angles and speeds, and real-time display of motor current values, among other functions.

1.2 Installation: Open the website in the browser based on the dexterous hand model

1.3 **ROH-AP001 / ROH-AP002:**
https://github.com/oymotion/roh_gen2_firmware
ROH-LiteS001
https://github.com/oymotion/roh_lites_firmware
ROH-A001 / ROH-A002:
https://github.com/oymotion/roh_firmware
，click on the green "Code" button on the page, then click "Download ZIP" to download the compressed package; or copy the link and use the command "git clone https://github.com/oymotion/roh_gen2_firmware.git " in the command window to download (Git Bash must be installed).



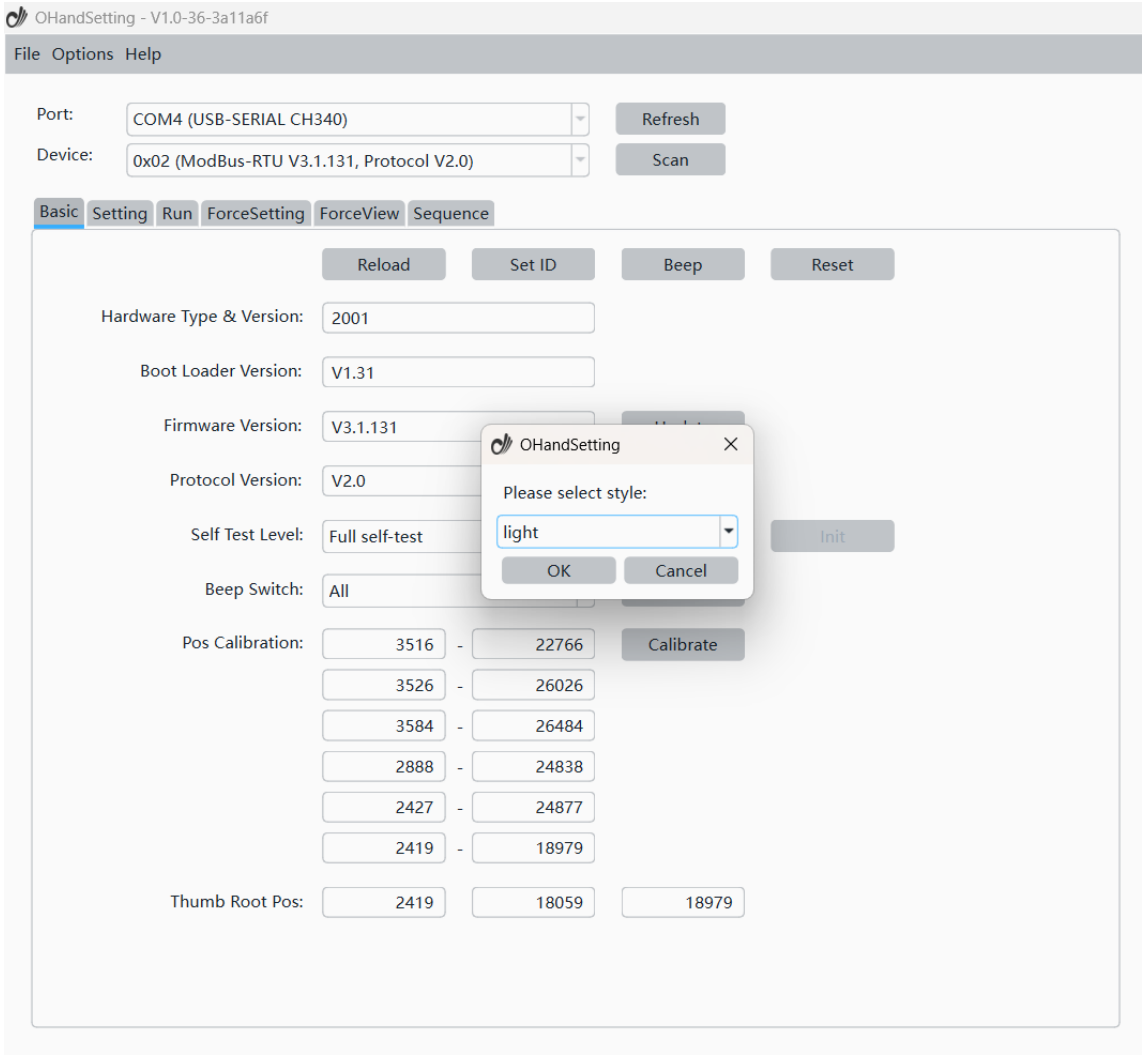
2. Run Software

2.1 According to the operating system, open the **OHandSetting** directory. **Windows**: Double click **OHandSeting.exe** to run directly. **Ubuntu**: After installing the environment according to the steps in the **compile-and-run on-ubuntu.md** file, enter the software root directory and add the execute permission 'sudo chmod+x' file name to OHandSetting in the **OHandSetting.sh** and bin folders. After completing everything, enter 'bash OHandSetting.sh' in the root console to start the software.

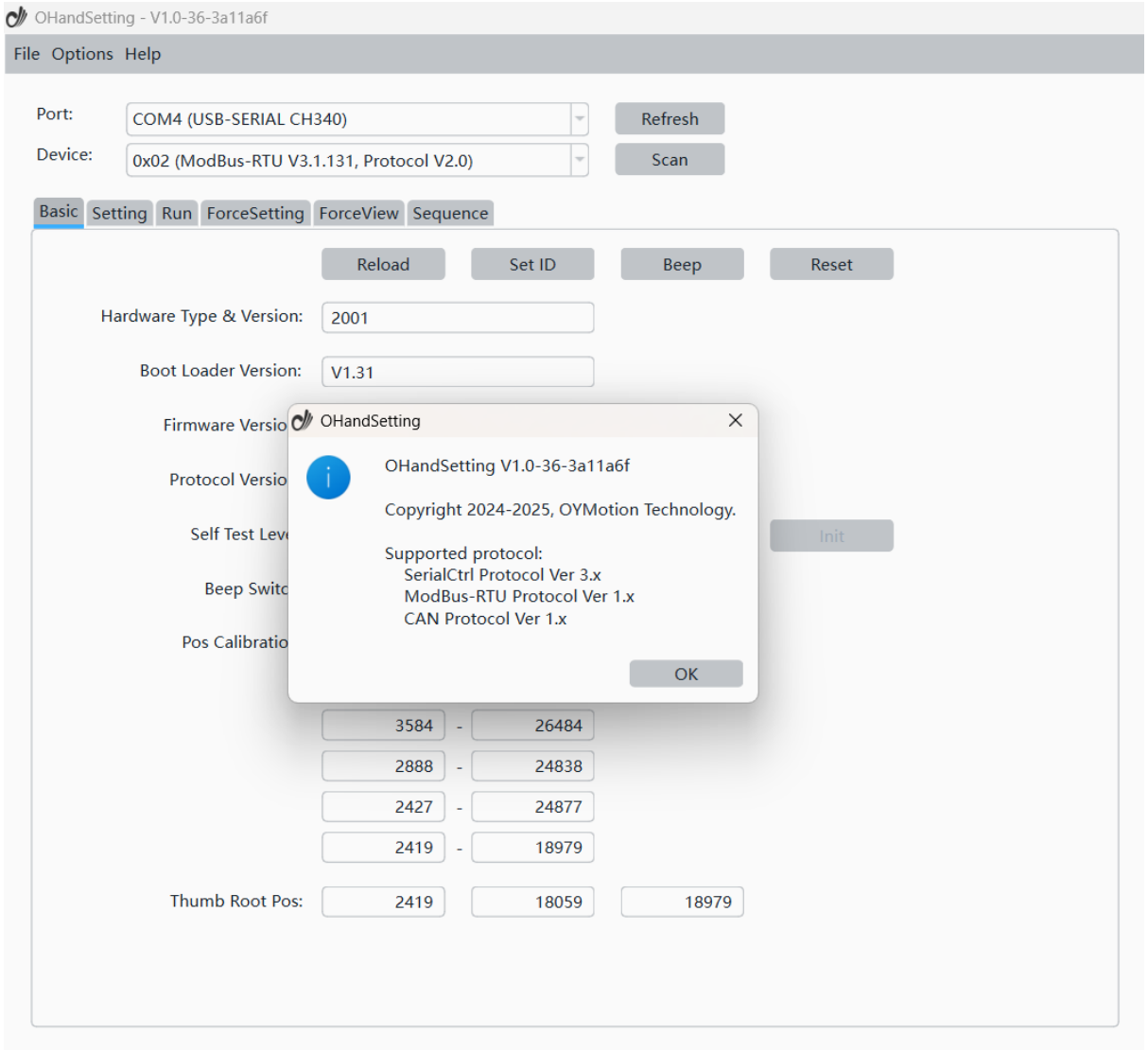
2.2 Connect the USB-RS485 module externally, make sure the CH340 driver has been installed on the computer, click '**Refresh**' button to recognize the port number.

2.3 Turn on the power of the ROHand, wait until the self-test is completed, click on the **'Scan'** button to identify the device, when the **'Device'** combo box appears in the device information, you can click on the **'Stop'** button to stop scanning. When the device information appears in the **'Device'** combo box, you can click **'Stop'** button to stop scanning.

2.4 Click **'Option – Theme'** to set the theme color of the interface, there are **'light'** and **'dark'** mode.

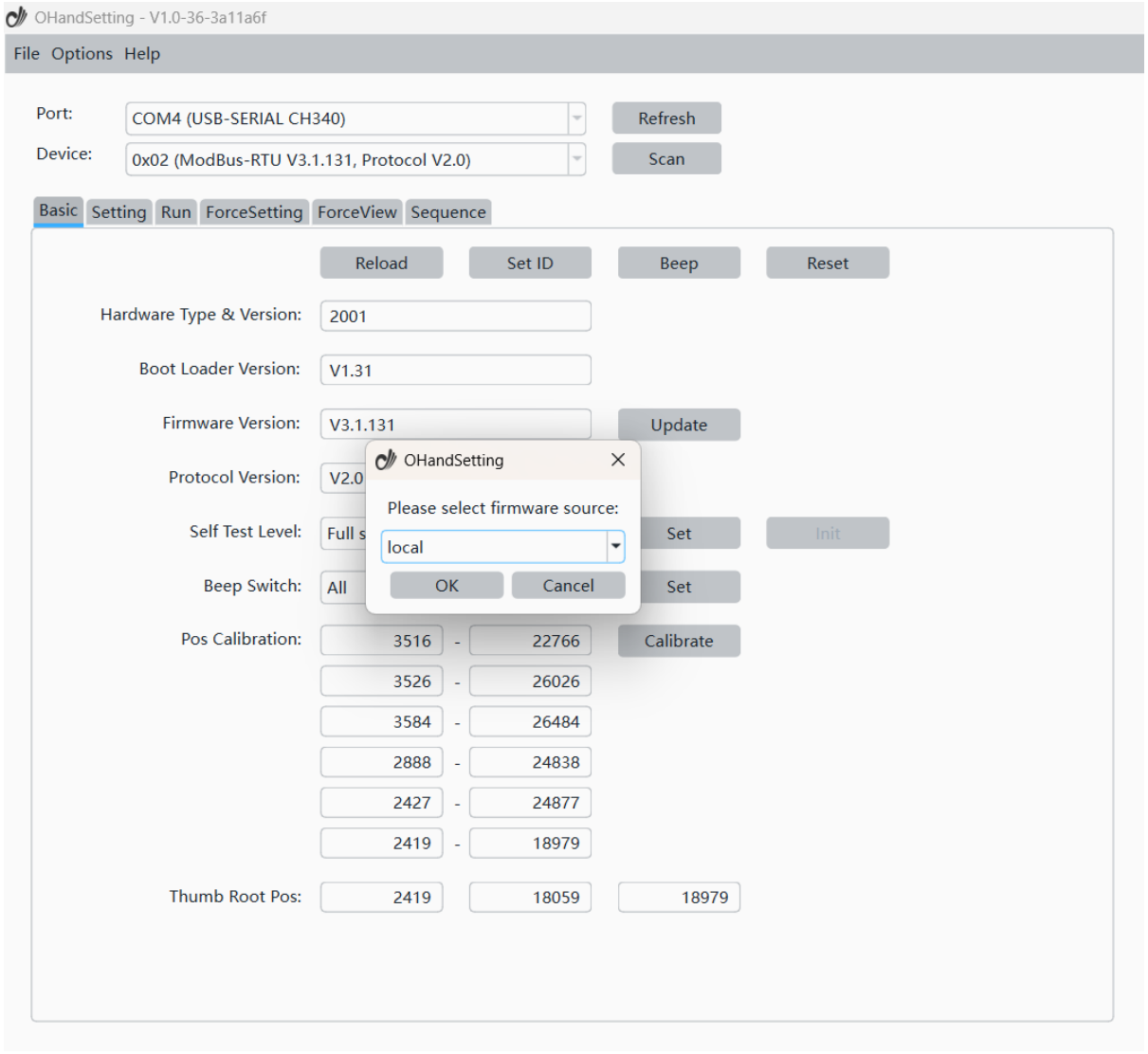


2.5 Click **'Help – About'** to view the software version information and supported protocol versions.

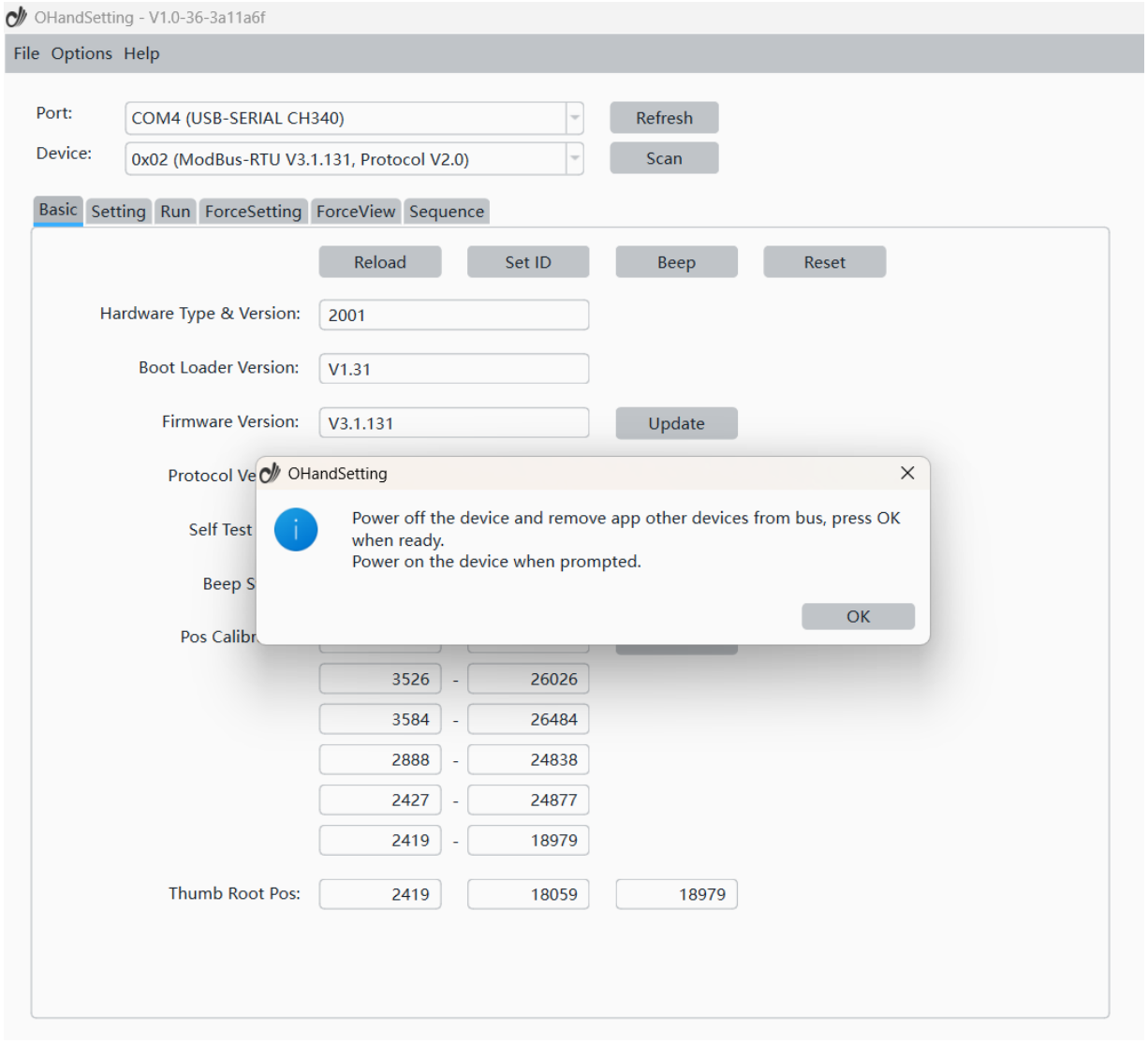


3. Update Firmware

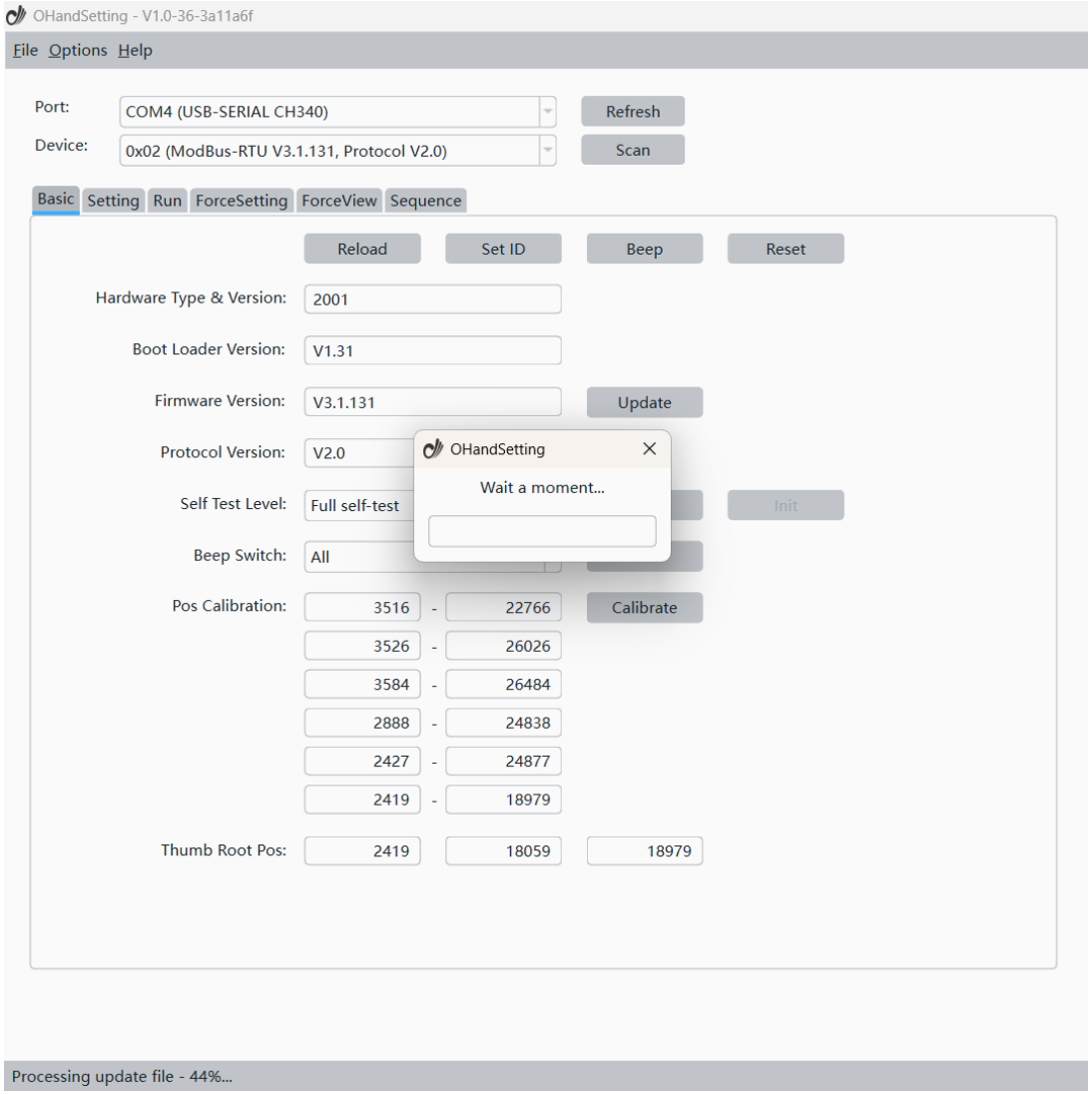
3.1 Enter **'Basic'** interface, click **'Update'** button, or select **'File - Force Upgrade'**, it will enter the firmware upgrade mode. Select the local file as the source of firmware, and choose the latest **upd** file in the firmware directory.



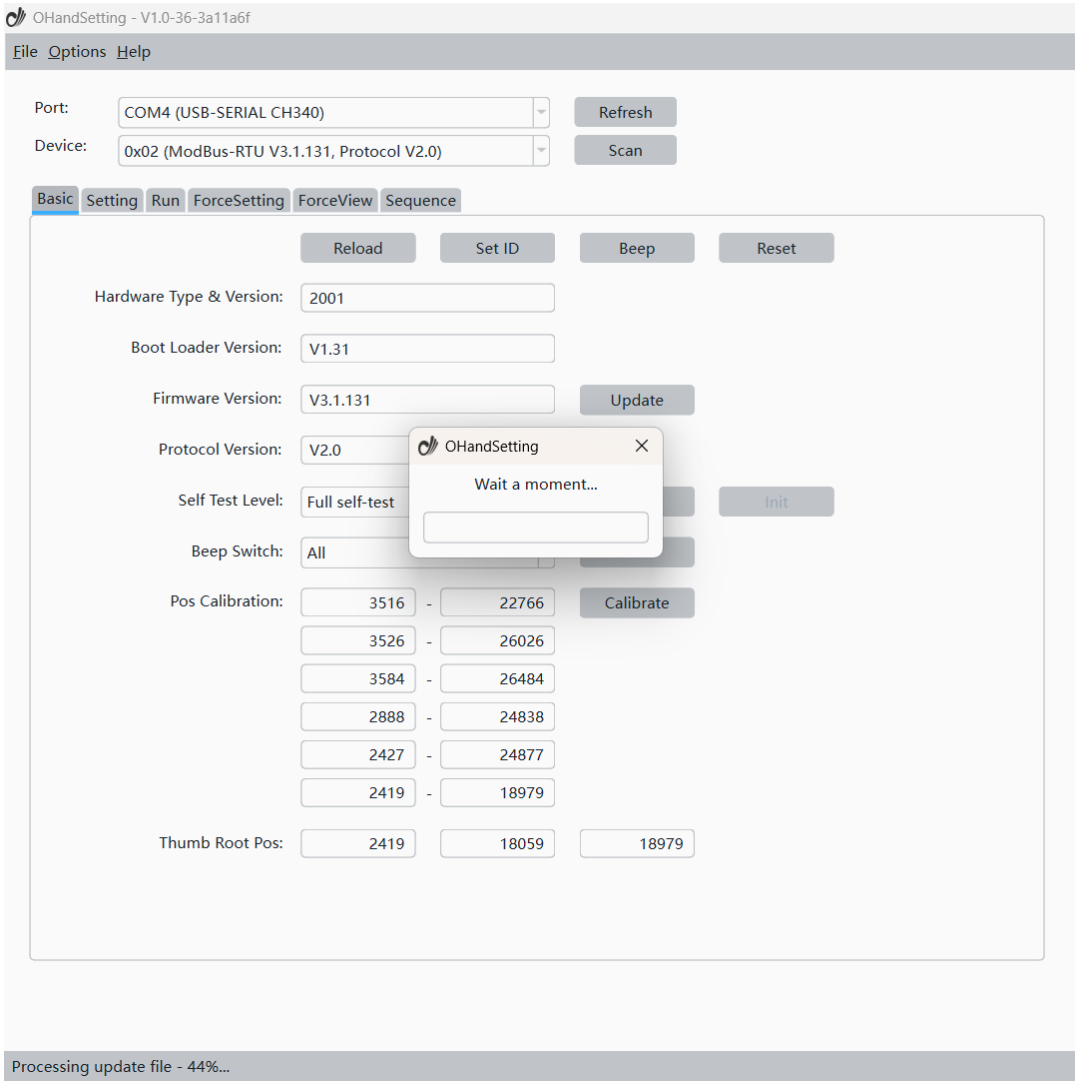
3.2 When prompted, turn off the power to the device and click **'OK'**.



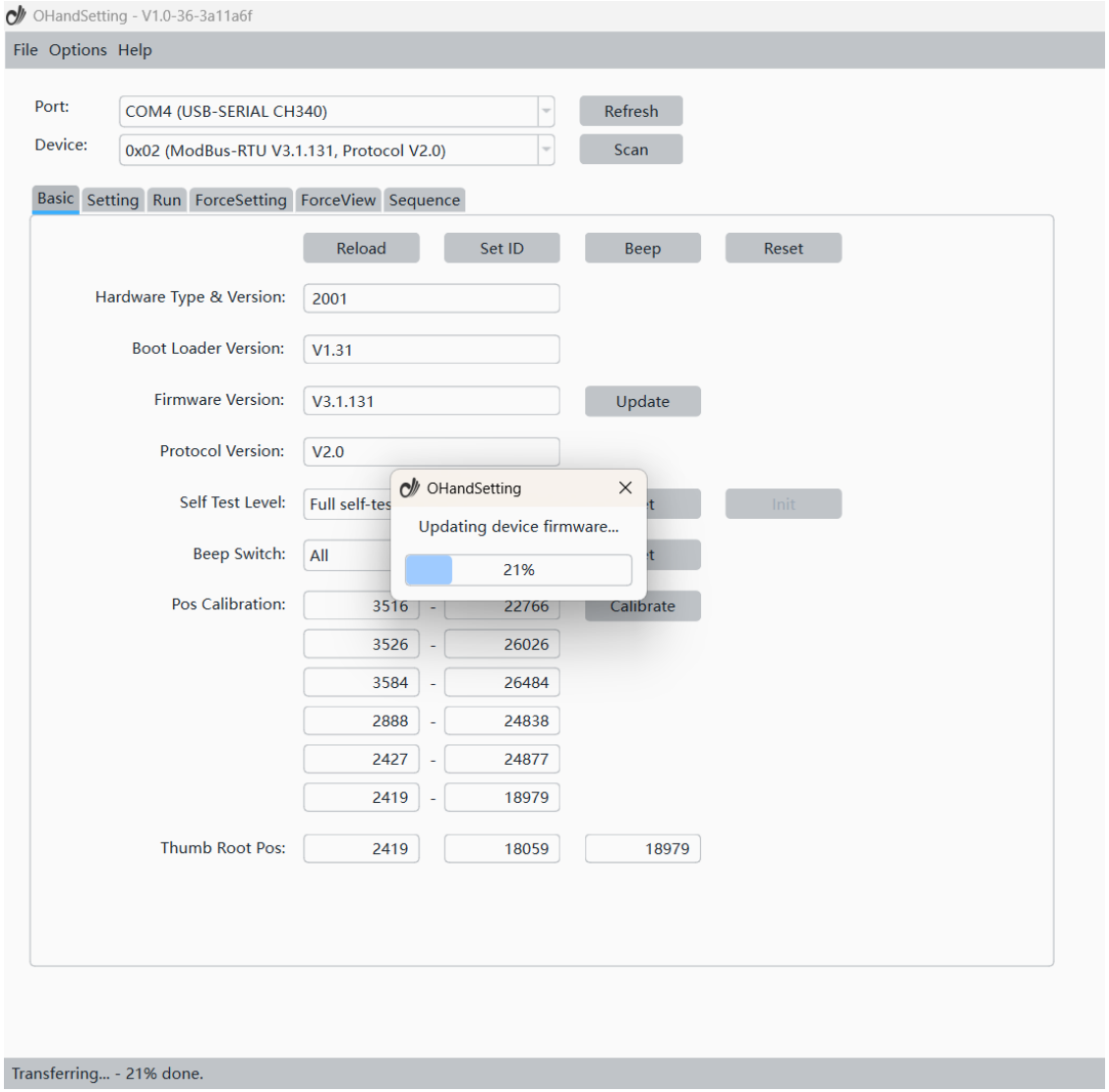
3.3 Wait for the software to process the upgrade file, at this time the progress will be shown in the status bar at the bottom left corner.



3.4 After the upgrade file is processed, you will be prompted to **'Power up the device now'**, and the status bar at the bottom left corner will show **'Waiting for device response, loop 0…'**, please power on the device before the **10th** loop, or the upgrade will be failed, and you must re-plug the USB cable and return to step 3.1 to restart the upgrade process.



3.5 Wait for the upgrade progress to reach 100% to complete the upgrade, after the upgrade is completed, device will reboot , at this time to **Scan** the device again, will reload the device information.



4. Basic Information Setting

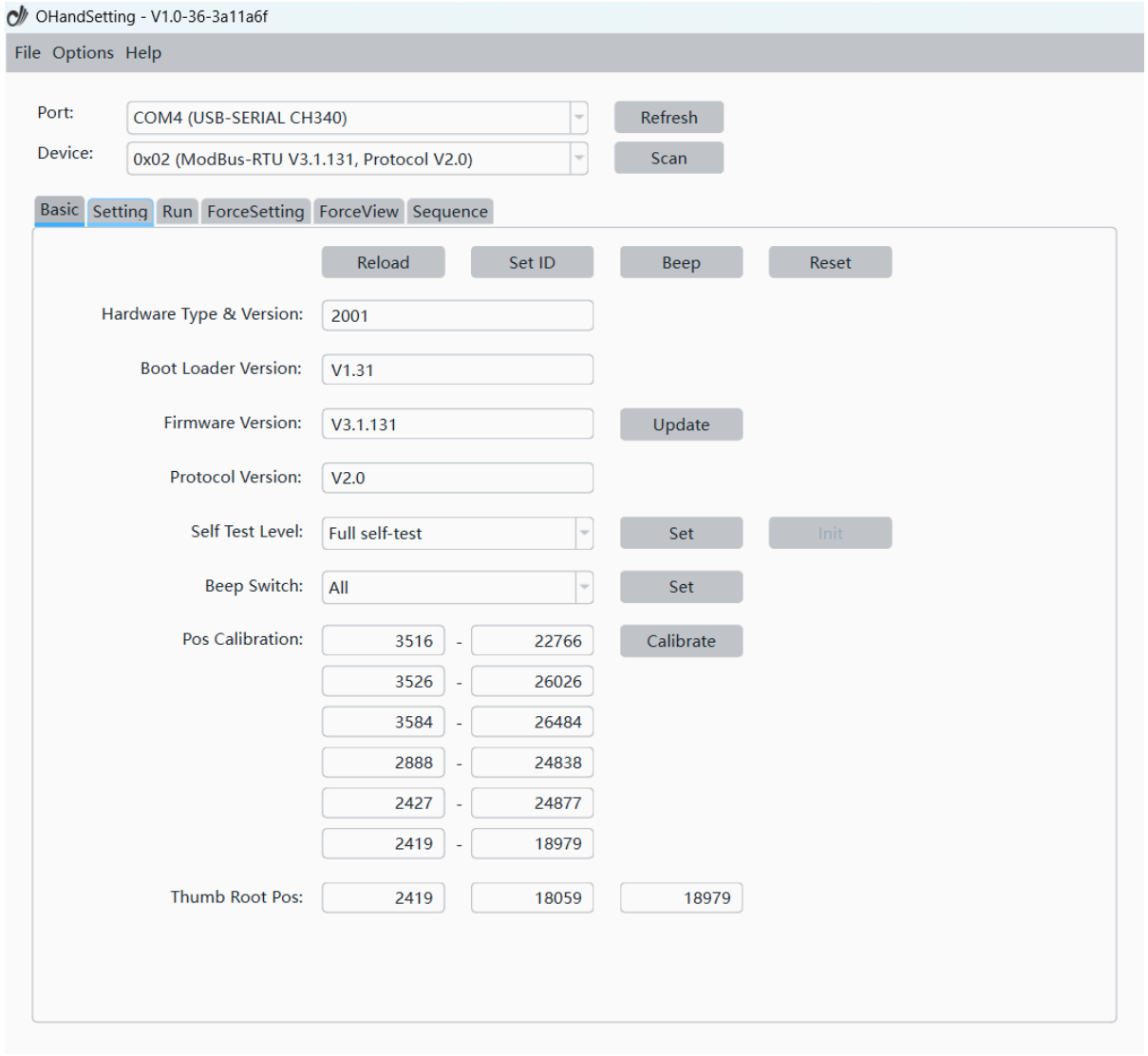
4.1 **Reload:** Reload and display device basic information.

4.2 **Set ID：** Set the device ID number, support from **0x02** to **0xF7** (**0x01** is the host), device will reboot after successful setting under ModBus protocol.

4.3 **Beep：** Buzzer sounds for a period of time.

4.4 **Reset：** Reboot device.

4.5 **Update：** Update firmware，reference to step 3.



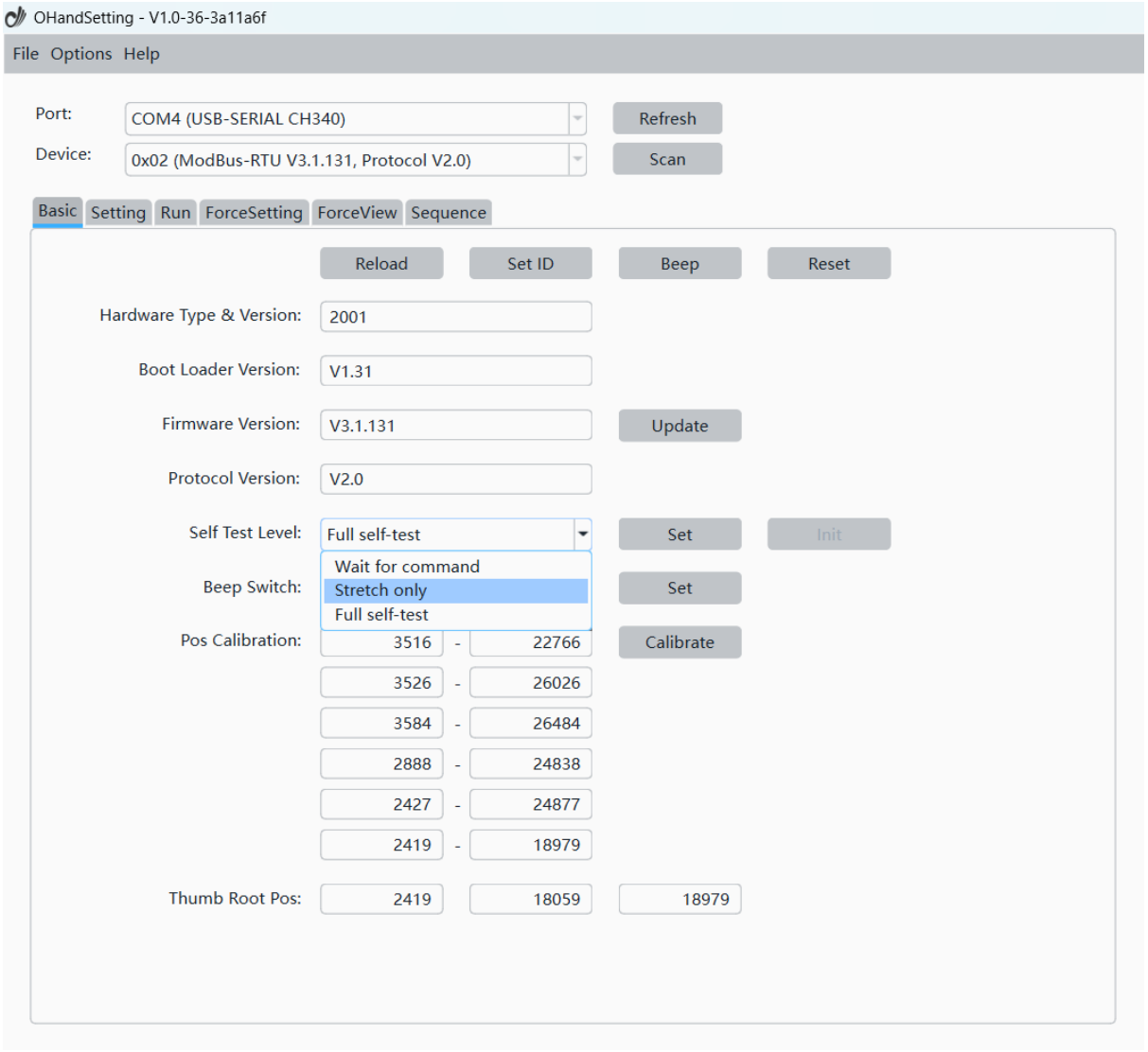
4.6 **Self Test Level:**

Full self-test — Fingers fully open and fully closed;

Stretch only — Finger fully open;

Wait for command — Wait for the command to start the self-test. Once successfully set, a buzzer sound will notify you upon the next restart. Click the "**Init**" button to activate the dexterous hand's self-test

After selecting it, click the **'Set'** button on the right side, **'Set self-test level succeed'** will be shown on the status bar at the bottom left corner, reboot the device or click **'Reset'** to check it.

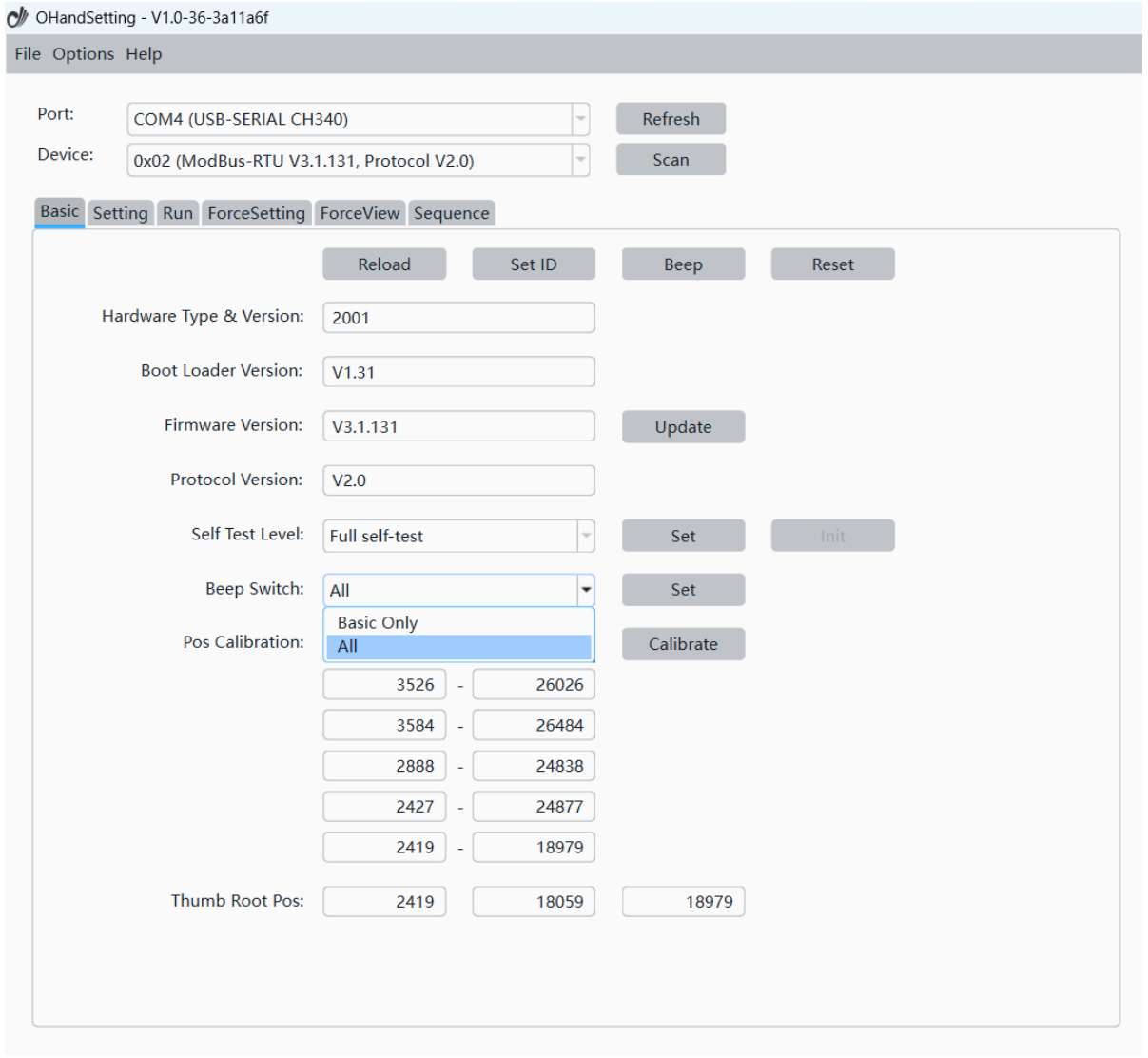


4.7 **Beep Switch：** The switch that sounds the buzzer is divided into：

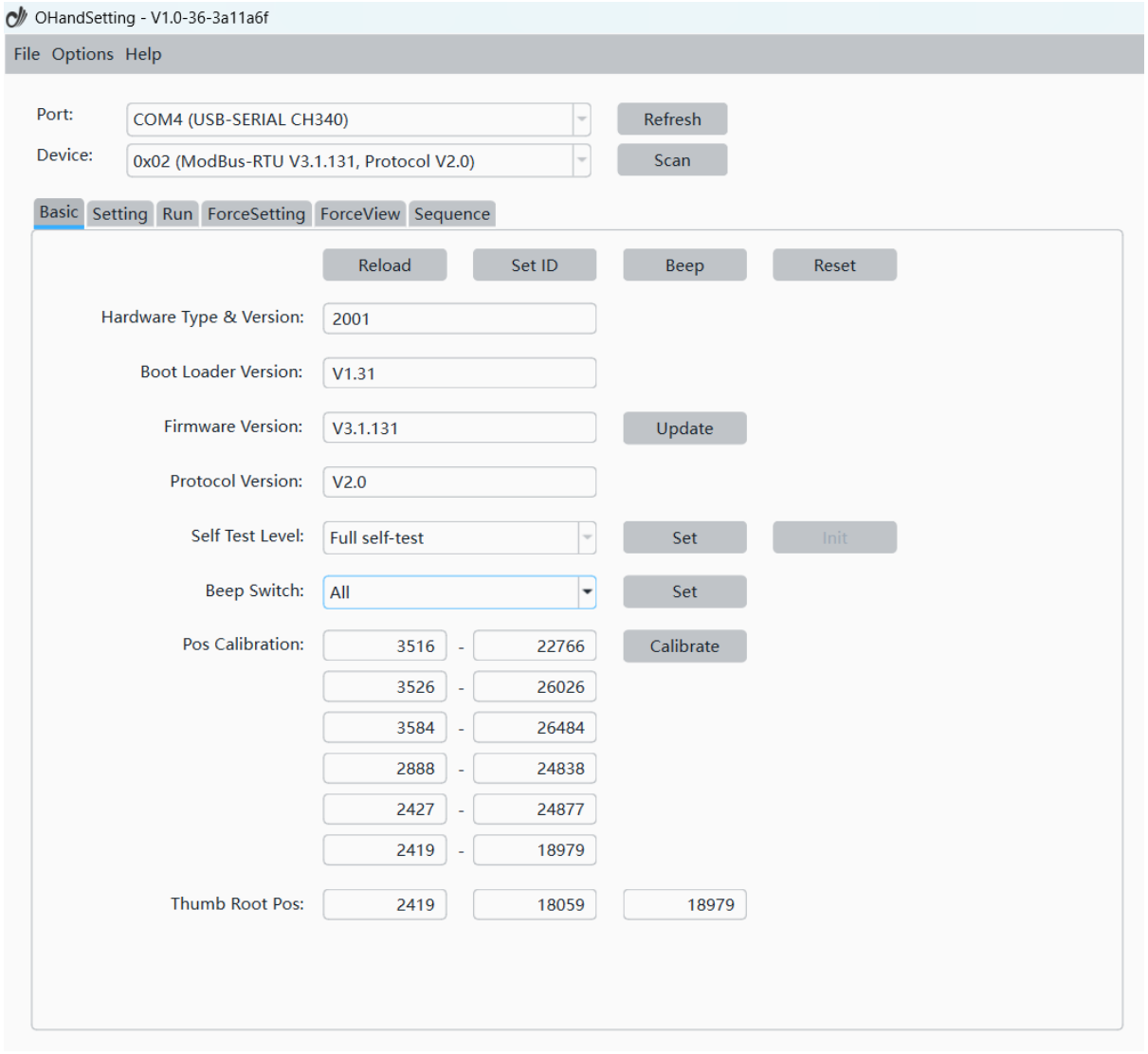
All — Normal sound；

Basic Only — The buzzer will sound under certain circumstances(except case **“Beep”**), otherwise it will not sound.

After selecting, click the **‘Set’** button on the right side, the status bar at the bottom left corner will show **‘Set beep switch succeeded’**, click the **‘Beep’** button to check.

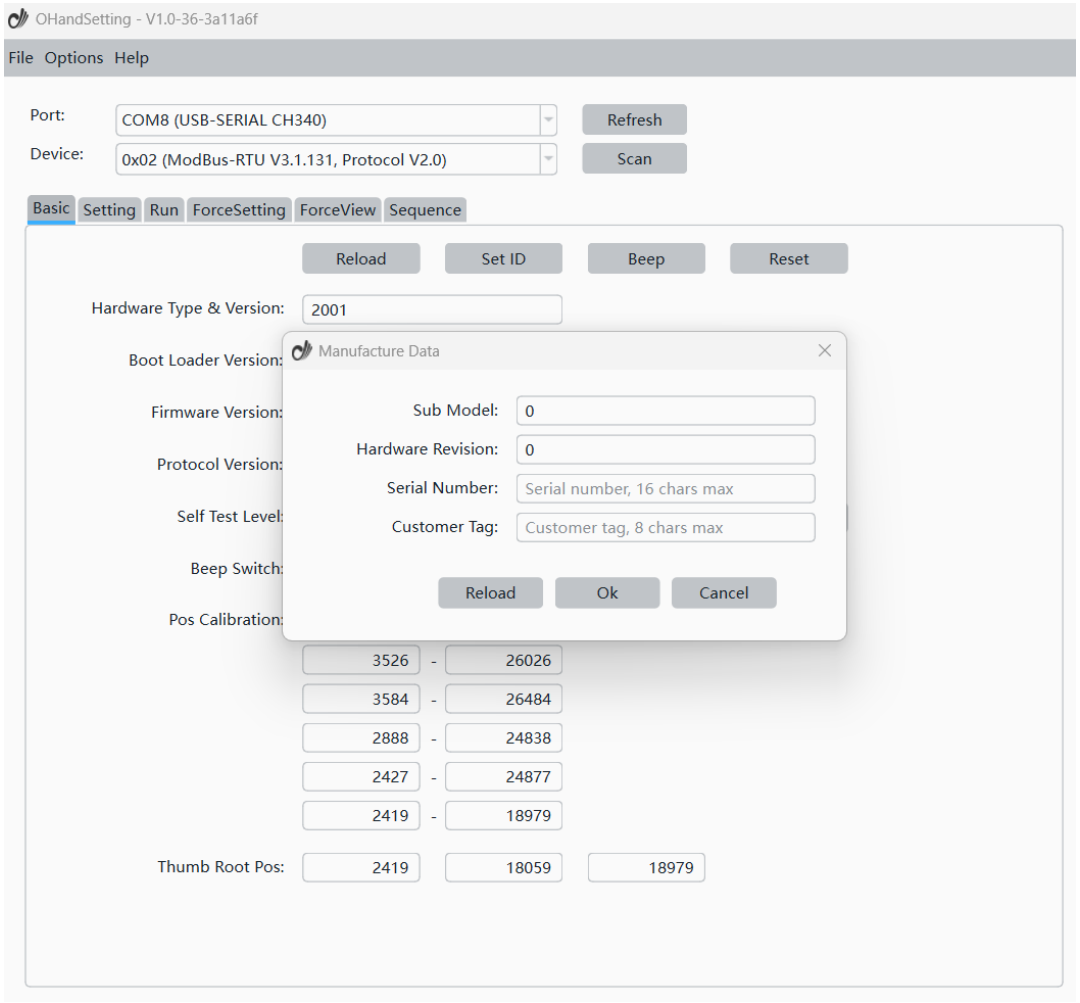


4.8 **Calibrate：** This function is a factory setting, not available to users at this time, and will display calibrate information in the edit box.



4.9 **Manufacture Data:** Click File - Manufacture Data to open the Manufacture Data page. On this page, you can read the sub model, hardware revision version, serial number, and customer tag information of the robotic hand.

Note: Users can only read this information and cannot write to it. Sub Model indicates different sensor types (0: ROH-AP001 dot matrix type; 1: 3D force ROH-AP002).



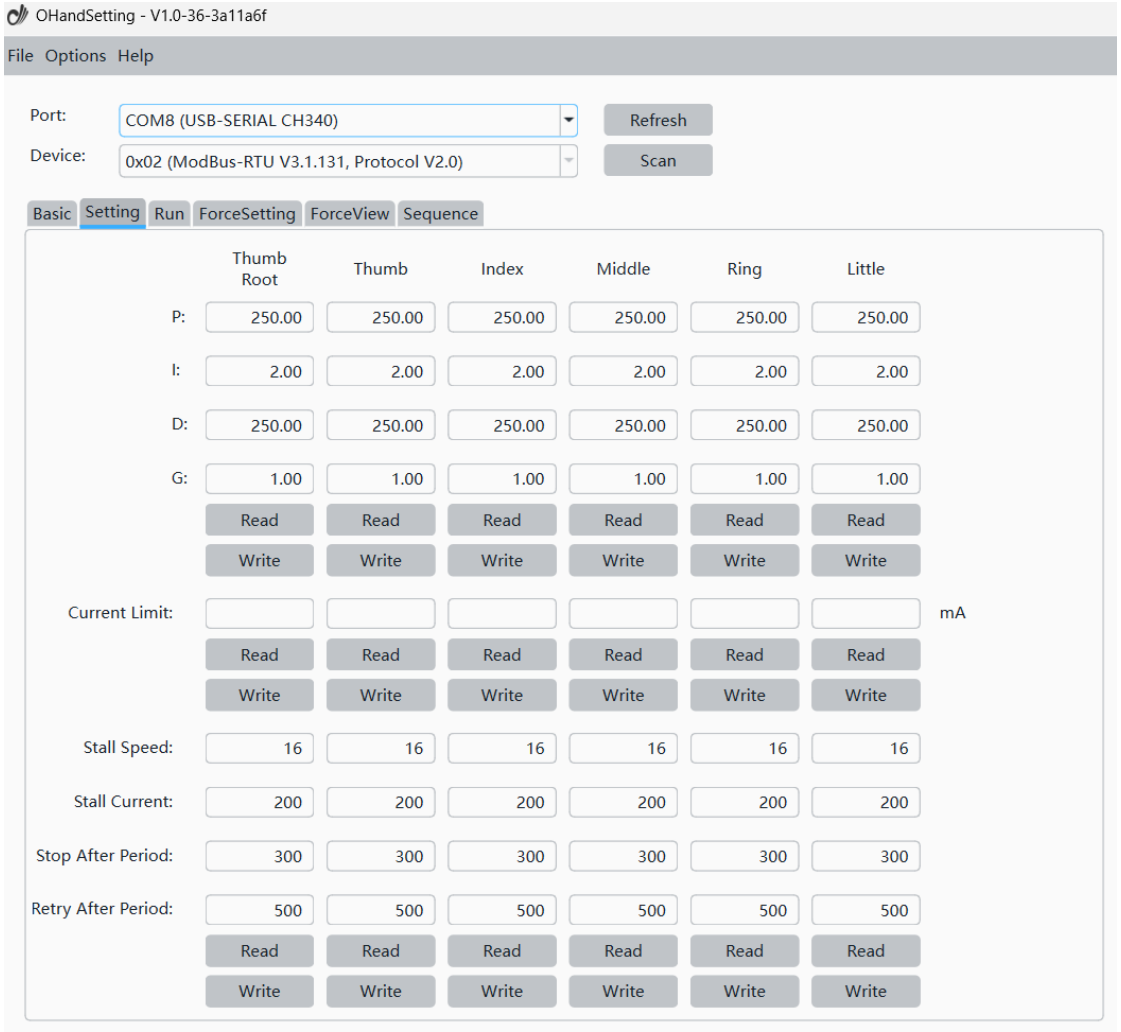
5. Motor Parameters Setting

5.1 **Position PID**: ROHand has a built-in PID algorithm, which allows you to select the position control PID on the setting interface. Click "**Read**" to read the gain parameters of each motor, and click "**Write**" to write the parameters. After successful writing, the written value will be displayed in the editing box, otherwise it will remain unchanged.

5.2 **Current Limit:** Set the maximum limit current of the motor. When the motor is locked and the current exceeds the limit, the motor will stop and wait for a new command before restarting. Click "**Read**" to read the limit value, click "**Write**" to write the limit value. After successful writing, the write value will be displayed in the editing box.

Note: This feature is currently not supported in the current versions

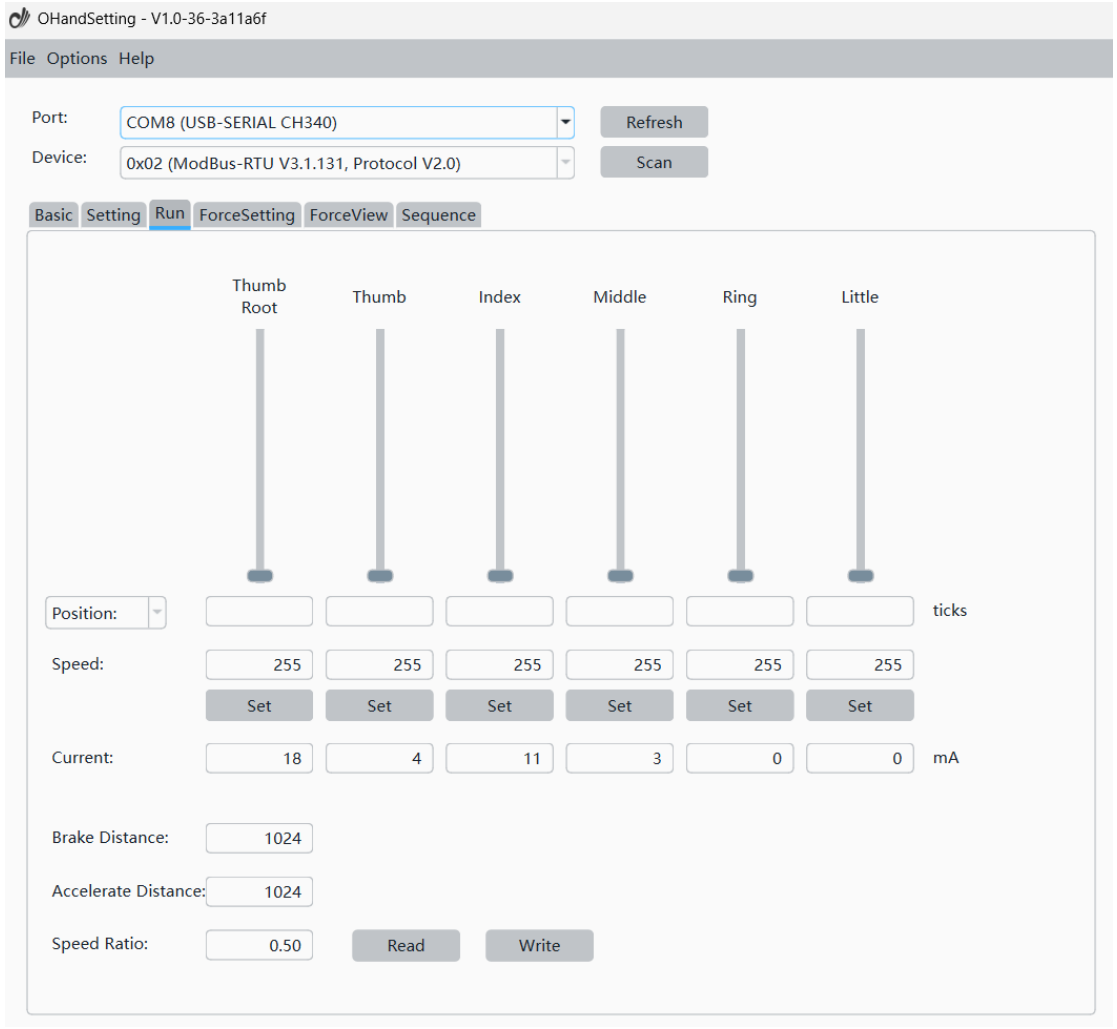
5.3 **Stall Setting: Stall Speed（0-65535）** indicates that when the motor's operating speed is below this set value, the motor enters stall protection mode; **Stall Current（0-65535）** indicates that when the motor's operating current exceeds this set value, the motor enters stall protection mode, measured in mA; **Stop After Period（0-65535）** indicates the duration of a



single attempt when the motor stalls, measured in ms; **Retry After Period** indicates the interval between two operation attempts when the motor stalls, measured in ms.Click "**Read**" to read the limit value, click "**Write**" to write the limit value. After successful writing, the write value will be displayed in the editing box.

6. ROHand Control

6.1 **Position control:** Select **'Position'** in the combo box, drag the vertical slider to display the corresponding position value in the edit box below, and the finger will run to the target position after releasing the slider, or write the value within 0 - 65535 (finger from open to closed) in the edit box, click **'Set'** and the finger will run to the target position.

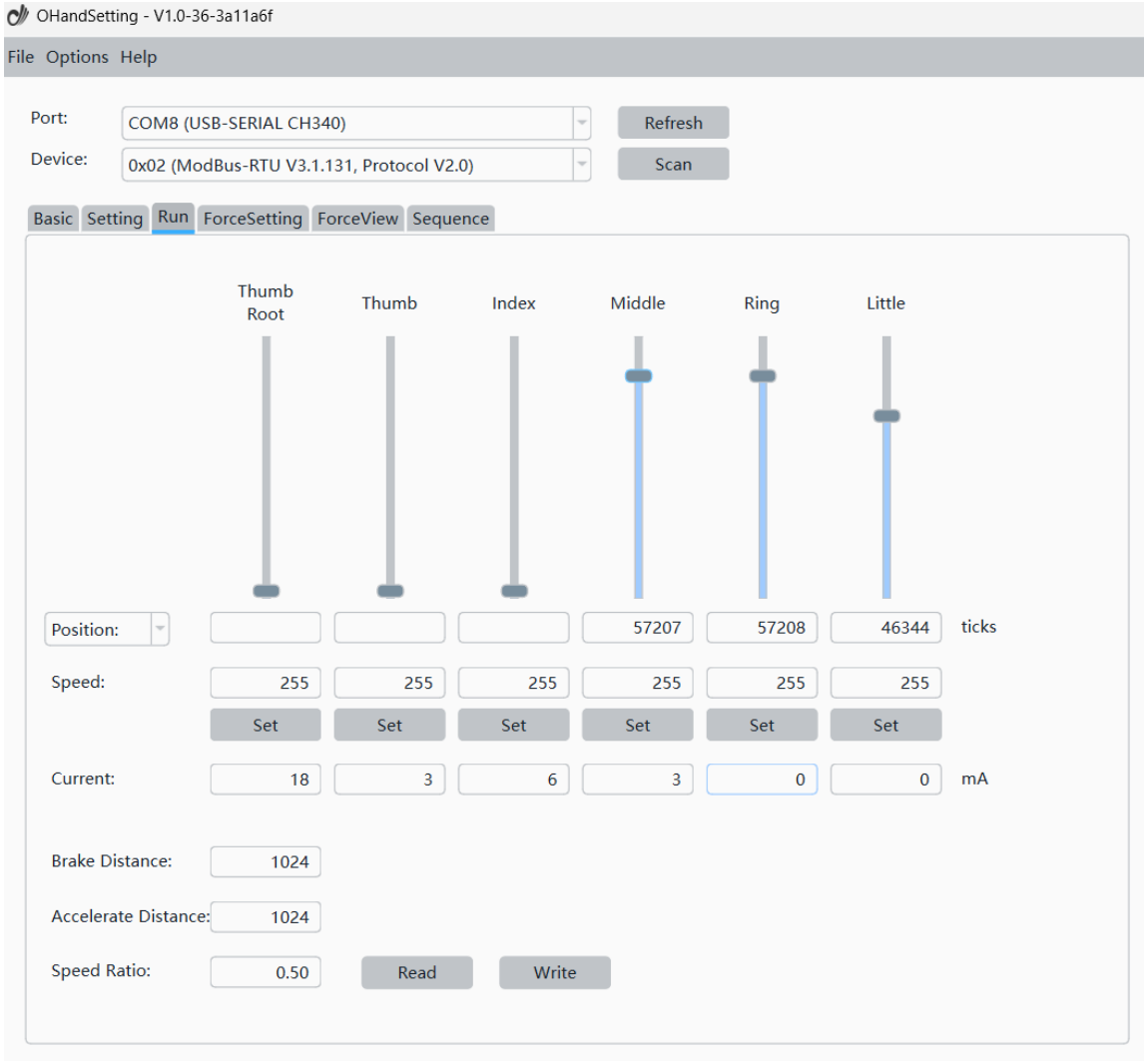


6.2 **Angle control：** Select **'Angle'** in the combo box, when you move the vertical slider, the corresponding angle value will be displayed in the edit box below, after releasing the slider, the finger will run to the target angle (when you move it to the maximum or minimum position, you can read the maximum or minimum value of the finger angle from the edit box); or write the target angle value in the edit box, click **'Set'** and then the finger will run to the target angle. For the definition of finger angle, please refer to protocol directory. OHandModBusRTUProtocol_EN.md OHandSerialProtocol_EN.md.

6.3 **Speed control：** The default value is 255 ticks/s, write the value within 0 - 255 in the edit box, you can observe the running speed of the finger by **position/angle** control.

6.4 **Current read：** After entering the **Run** widget or rescanning the device, the current value collected from the motor encoder will be displayed in real time in the edit box.

6.5 **Finger Movement Smoothness Parameters: Brake Distance** indicates that the finger begins to decelerate when it is only the set distance away from the target position, until it smoothly stops at the target; **Acceleration Distance** works similarly, indicating the segment of distance at the start of movement over



which the finger gradually accelerates to the maximum speed; **Speed Ratio** represents the acceleration coefficient.Click "**Read**" to read the limit value, click "**Write**" to write the limit value. After successful writing, the write value will be displayed in the editing box.

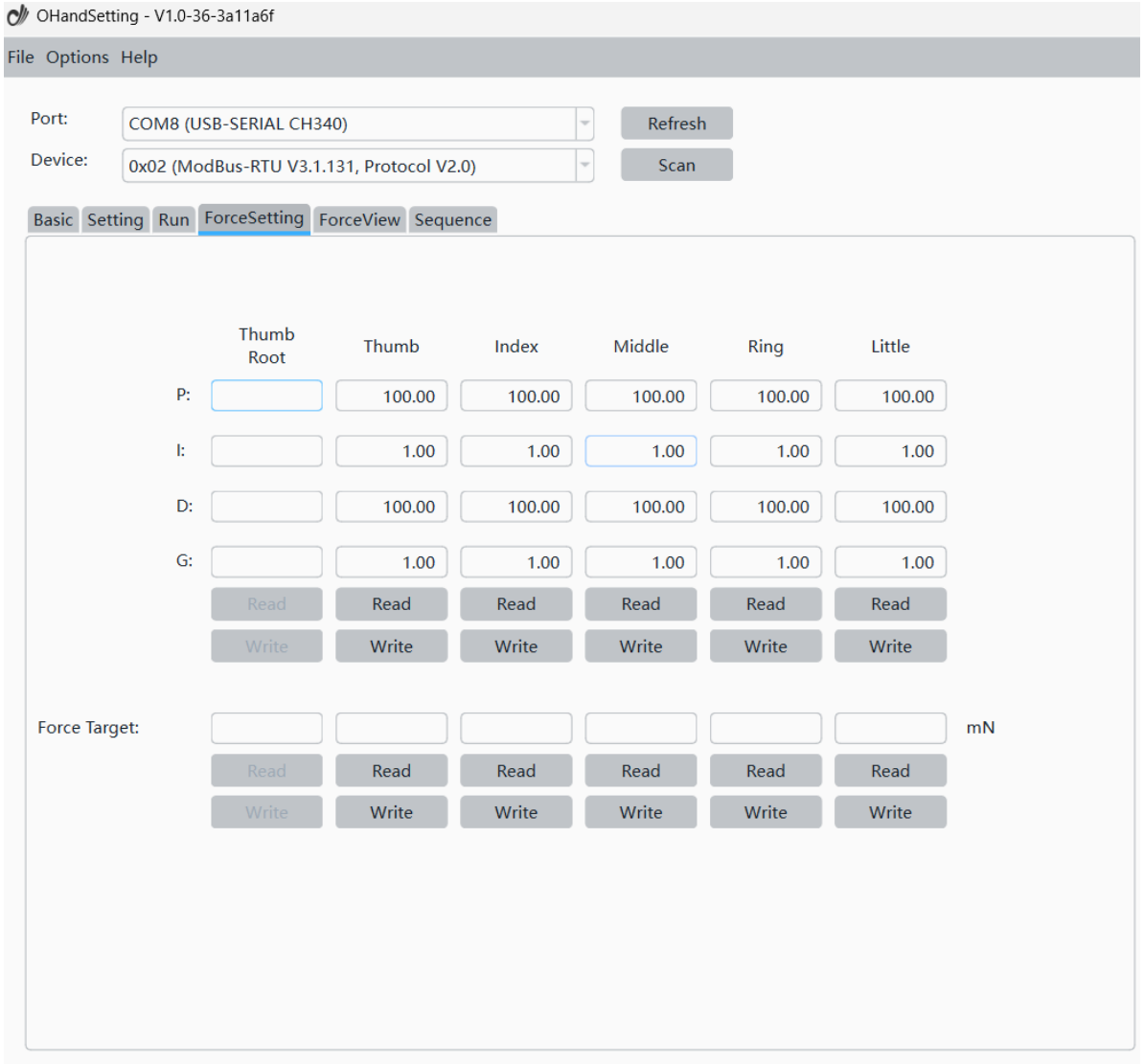
7. Force Setting

7.1 **Force PID:** The ROHand force feedback adopts the PID algorithm. You can select the force control PID in the setting interface, click "**Read**" to read the gain parameter of the force control, click "**Write**" to write the parameter. After successful writing, the written value will be displayed in the editing box, otherwise it will remain unchanged.

Note: Only the ROH-AP001/AP002 model dexterous hand supports this function, and the thumb rotation has no force control function

7.2 **Force Target:** Set the force target value for the dexterous fingertip, with a default value of 0 when turned on. Click "**Read**" to read the target value, and click "**Write**" to write the target value. After successful writing, the write value will be displayed in the editing box. After successful setting, the finger will be completely bent. When the force on the finger sensor is less than the target value, the finger will be able to contract, and when it is greater than the target value, it will retract to maintain the set force value.

Note: Only the ROH-AP001/AP002 model dexterous hand supports this function, and the thumb rotation has no force control function



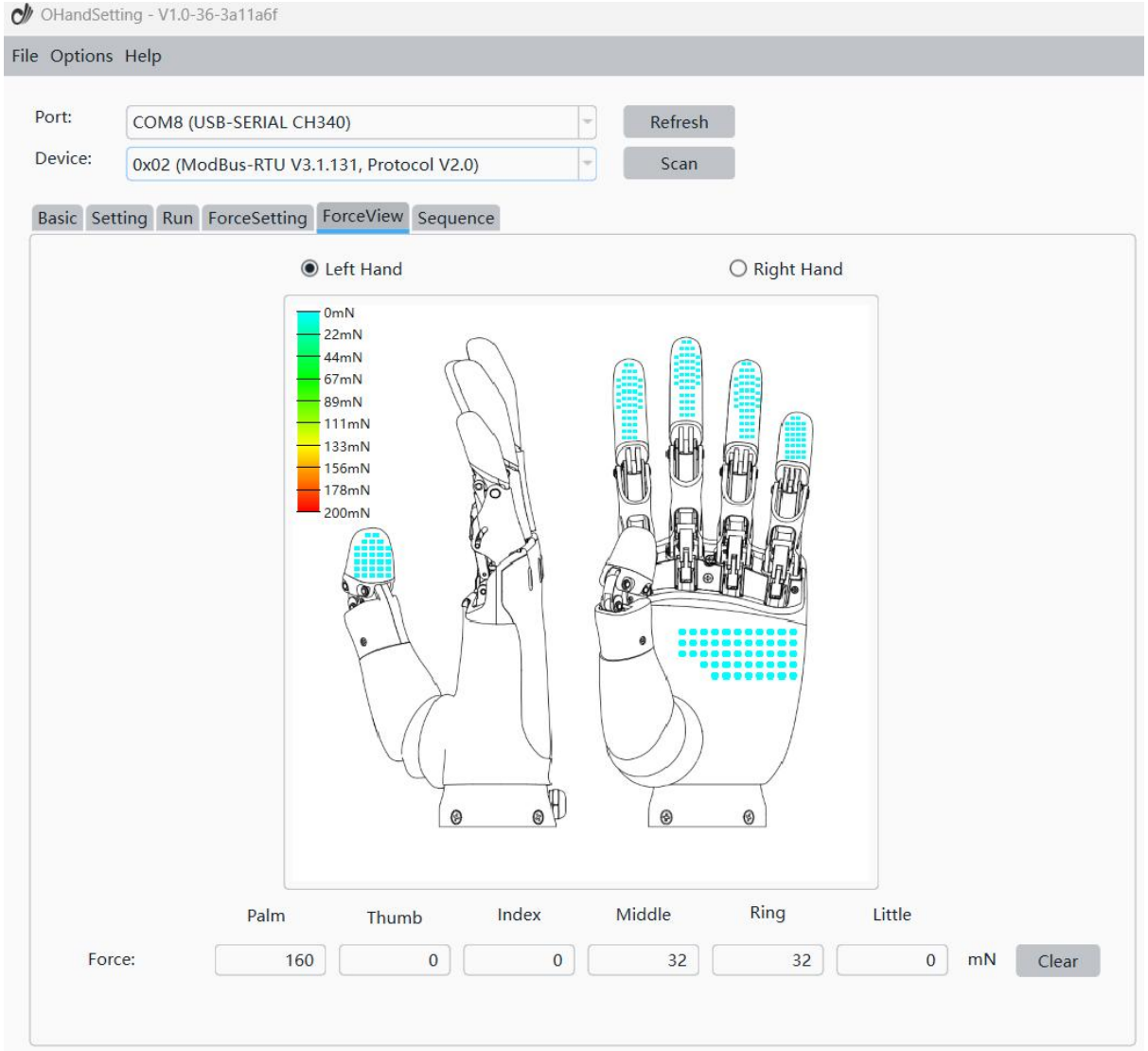
8. ForceView

8.1 **Choose a dexterous hand:** Based on the actual connected dexterous hand, choose either the Left Hand or Right Hand. Otherwise, when pressing the dexterous hand sensor, the force heatmap will not display correctly.

Note: Only the ROH-AP001/AP002 model dexterous hand supports this function

8.2 **Force**: Real time display of the resultant force of pressure on each point of the dexterous finger tip in mN. Clicking "**Reset**" can reset the sensor value to zero and eliminate stress.

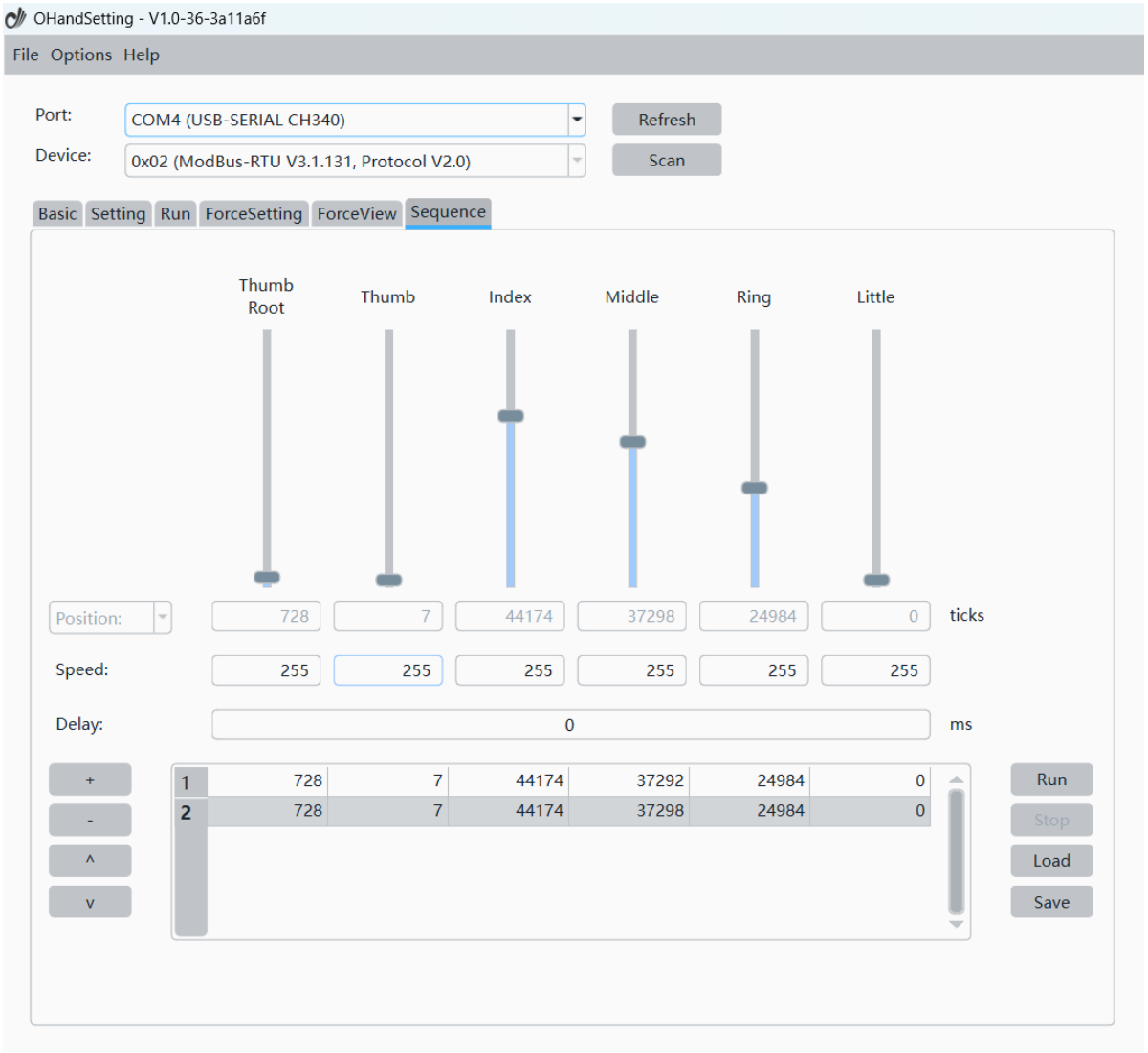
Note: Only the ROH-AP001/AP002 model dexterous hand supports this function



9. Action sequence

9.1 **Action set:** Same to the position control, you can move the vertical slider to control ROHand to a specific gestures. Then click button **'+'** to store the gesture and set the delay time before running the gesture. Also you can click button **'-'** to delete the existing data. Click button **'∧'** or '∨' to reorder the gestures.

9.2 **Load and run:** When all gestures are set, click the **'Run'** button and the device will perform the actions in the set order, and click **'Stop'** button to stop running. Click **'Save'** button to save the current action data, the file will be saved in json format. Click **'Load'** button will read the action sequence file and load the gesture data in the form.



10.FAQs

9.1 OHandSetting can control multiple dexterous hands through one USB to 485 module, only need dexterous hands to set different ID (e.g. 0x02 and 0x03), and switch the dexterous hands that need to be controlled in the device drop-down box.

9.2 If you can't control the dexterous hand after reconnecting the dexterous hand or restarting after power failure, please refresh the serial port first, and then rescan the device to refresh the device information.

9.3 If you can't scan the device information, please try to upgrade the firmware first and then scan it again, if there is no answer from the device during the upgrade process, please check the external line through and through, refer to the FAQs_EN.md document in the FAQs file directory, if you still can't solve the problem, please contact technical support faq@oymotion.com.

11.Contact Details

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Download: www.github.com/oymotion

12.Revision history

Modification date	Version	Revision content
2024.10.30	V1.0	Initial version.
2024.12.05	V1.1	Added action sequence; Modified revision history.
2025.6.24	V1.2	Modified the image; Added Ubuntu version instructions; Modified revision history.
2025.6.25	V1.3	Added force display; Modified revision history.
2025.9.4	V1.4	Added LiteS001 links; Modified revision history.
2025.10.9	V1.5	Added Manufacture Data、Stall Setting、Finger Movement Smoothness Setting； Modified revision history.
2025.12.17	V1.6	Modified description of Manufacture Data、Stall Setting、Finger Movement Smoothness Setting Modified revision history.