

# Perception Neuron 3 User Manual

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## Hardware Setup

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### 1. Overview

Manufacturer: Beijing Noitom Technology Ltd.

Address: 502, Tower A, 28 Xijiekouwai Blvd, Beijing, China

#### 1.1 Main Hardware list

PN3 gloves version:

Item	Unit	QTY
PN3 Sensor	PC	30
PN3 Transceiver	PC	1
Body Straps	Set	1
PN3 Gloves	pari	1
Charging Case	PC	5
Suitcase	PC	1
Wibu dongle	PC	1

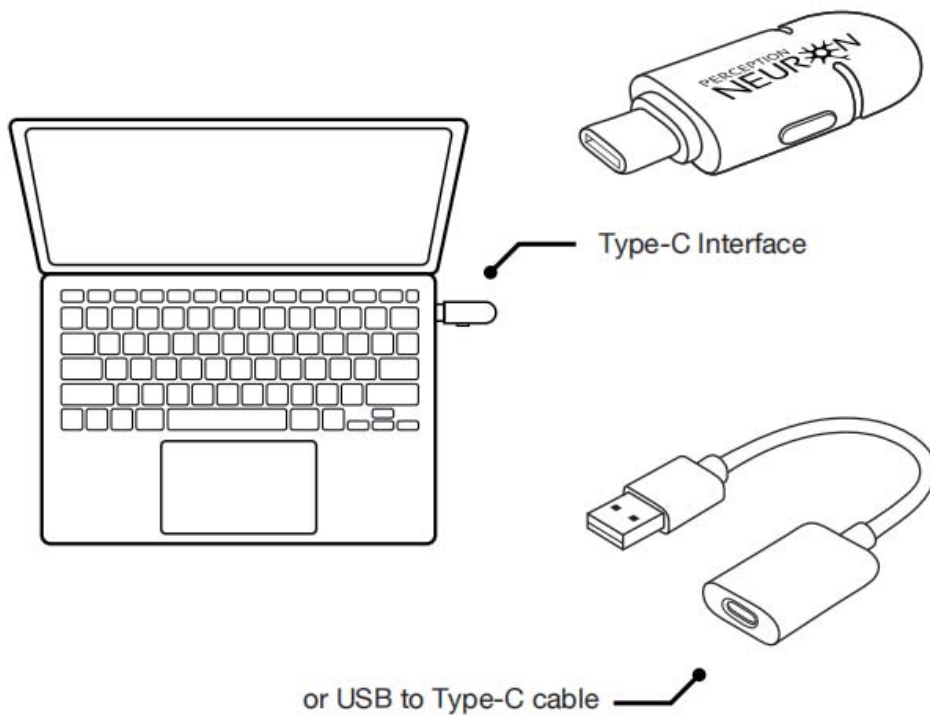
without pn3 gloves version:

Item	Unit	QTY
PN3 Sensor	PC	18
PN3 Transceiver	PC	1
Body Straps	Set	1
Charging Case	PC	3
Suitcase	PC	1

#### 1.2 Computer Requirements

Recommended
OS: Windows 10
Direct X9
OpenGL 4.4
CPU: 3.0 GHz i5 processor
RAM: 4GB of memory

### 1.3 Topological Diagram



## 2. Hardware information

### 2.1 PN3 Sensor

Wireless MEMS inertial sensor. Gyroscope, accelerometer and magnetometer integrated.



## Turn on the PN3 Sensors

### >>Automatically

After pull off the charging cable, the sensor will automatically turn on. If they are not be connected with Axis Studio, they will automatically turn off after 5min.

### >>Manually

Even if we can automatically turn on the PN3 Sensors, we still can manually control it. Press the sensor button on the top for about 2s to turn on the sensor; Press the button for about 5s to turn off the sensor. The indicator light of the sensor will display the status. ( Refer to the PN3 Sensor Indicator Instruction below)

## Light Instruction

Light status	Description
Slow Blink	Sensor in standby mode to save the power
Fast Blink	Sensor in working mode, calculating the transferring the data
Solid light	There is magnetic interference environment around the sensor
Red light	Sensor low battery/charging
Green light	Sensor in channel 1
Blue light	Sensor in channel 2
Purple light	Sensor in channel 3

## Detailed parameters

Item	parameters	Item	parameters
size	27.9 x 16.2 x 11.6 mm	Battery capacity	42mAh
weight	4.1g	Working hours	6h
Range of gyroscope	±2000dps	Data calculation frame rate	600Hz
Accelerometer range	±8g	Data output frame rate	60Hz
Minimum resolution	0.02degrees	time delay	< 20ms
Static attitude accuracy	Roll / Pitch 0.5°, Yaw 1.5°	Waterproof grade	IP66
Dynamic attitude accuracy	Roll /Pitch 1.0°, Yaw 2.0°	working temperature	-10° C - 60° C
working voltage	3.7V	Charging time	1hr

## Charging

Insert the PN3 sensor into the charging box for charging.



## 2.2 PN3 Transceiver



The data transceiver is mainly used for instruction sending and data receiving.  
 Command sending: the data transceiver receives the command from axis studio and sends it to each sensor through 2.4GHz wireless network.  
 Data receiving: the data transceiver receives the data from the sensor in real time through the 2.4GHz wireless network, synchronizes the time of the data, and transmits the data to the axis Studio software.

### Light Instruction

Light status	Description
Red solid light	Wait for DHCP assignment
Green light	Transceiver in channel 1
Blue light	Transceiver in channel 2
Purple light	Transceiver in channel 3
Yellow light	Stop broadcasting

### Detailed parameters

Item	Parameters	Item	Parameters
size	38.5 x 17.2 x 6.7 mm	Interface type	USB Type-C
weight	2.8g	transmission distance	8m

## 2.3 PN3 gloves

Use PN3 gloves for finger tracking.



### Install Sensors

Insert the pn3 sensors into the gloves.



## 2.4 Charging Case

Case for charging and storing sensors. It's also an essential part for calibration.



### Detailed parameters

Item	Parameters
length	146.23mm
width	37.29mm
height	24.30mm
Number of sockets	6个
Interface type	Type C

## 2.5 Suitcase

We provide two kinds of suitcase

Item	Size
Handy suitcase	310×260×110mm
High strength safety box	415×335×180mm

Handy suitcase:





High strength safety box:



## 2.6 Body Straps



Use the appropriate length of strap that fits the performer for each segment. Attach the straps according to the diagram below.

### Detailed parameters

Item	Size
Shoulder and back bandage	3.8cm×35cm, 3.8cm×47cm
Waist strap	10cm×115cm
Thigh strap	5cm×70cm
Head strap	5cm×70cm
Upper arm bandage	5cm×55cm
Leg bandage	5cm×55cm
Small arm strap	5cm×40cm
Foot bandage	5cm×40cm
Hand bandage	5cm×27.5cm

## 2.7 Wibu dongle



Used for software activation and payment function unlocking.

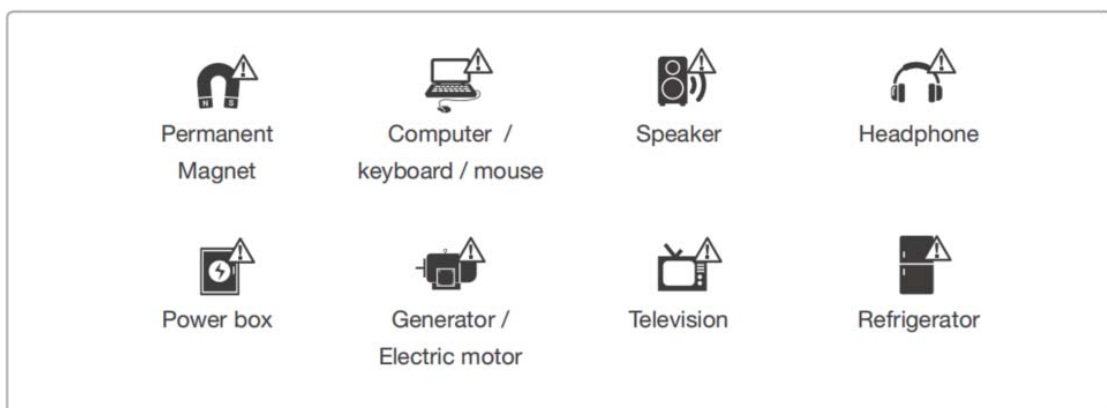
### 3.Preparing the Capture Area

Axis Studio contains magnetometers, magnetometer sensors can be affected by strong magnetic environment. Users must operate the sensors in an environment with the least amount of magnetic interference.

If you choose to use Perception Neuron Studio Inertial System in a location with strong magnetic interference, utilize our "Anti-mag mode" found in our software.



Keep 10-100 cm (depending on the strength of the source)  
away from magnetic sources.

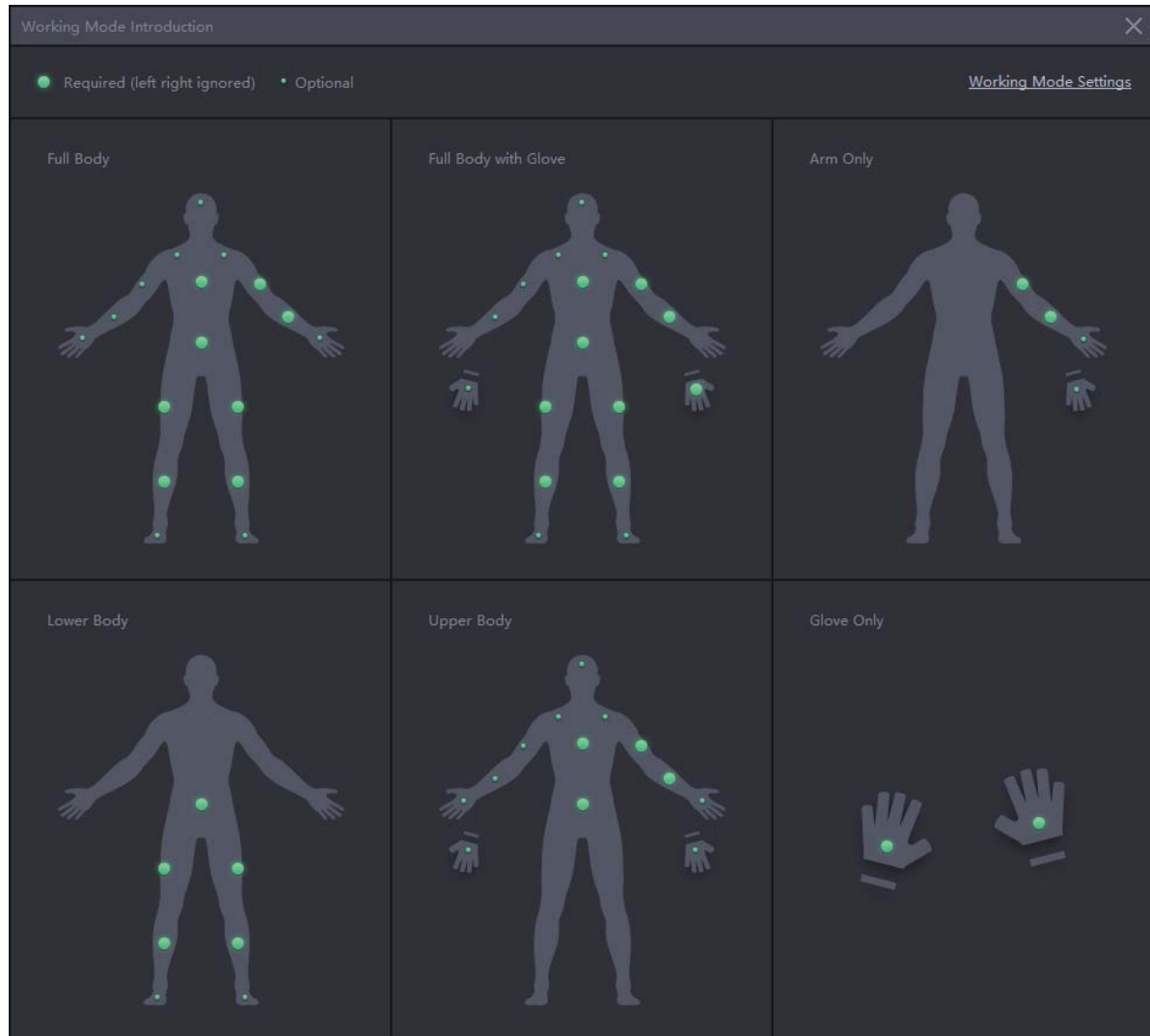


Maximum working temperature of equipment: 60 °C

Maximum humidity: 80% (no condensation)

## 4. Working mode introduction

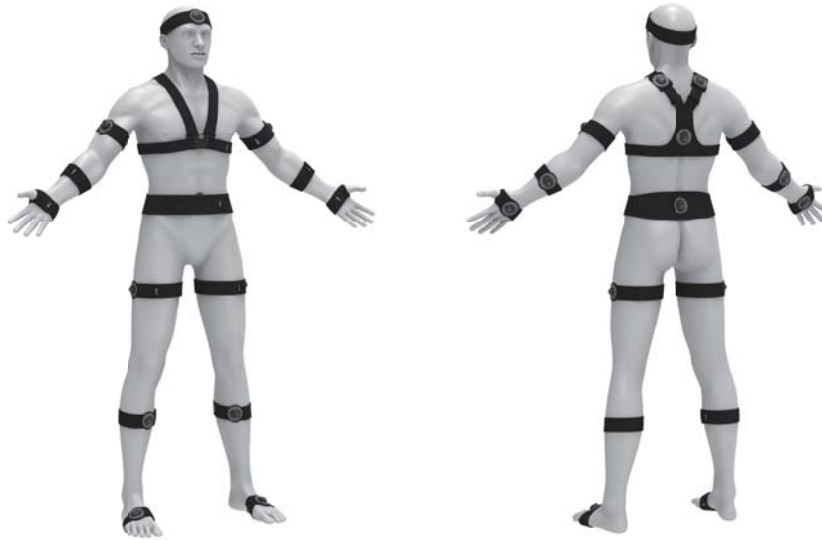
There are six different wearing modes. You can wear the corresponding straps and sensors according to different needs. For example, if you only need to capture hand movements or upper body movements, you do not need to wear a full set of devices.



### 4.1 Wear straps

Choose the appropriate length of bandage to fit all parts of the human body, and wear the bandage according to the position in the figure below. Because the PN3 sensor measures the movement of bones, it is necessary to eliminate the interference of muscle stretching and shaking as much as possible. The wearable position needs to choose the position with the least amount of muscle, which can capture the data better.

The posture calibration in the future will recalculate the wearing position. Even if there is a little error between the wearing position and the picture, it can be used normally.



## 4.2 Insert sensors

Insert the PN3 sensor into the base of the strap to ensure that it will not fall off due to movement.



## Software Setup

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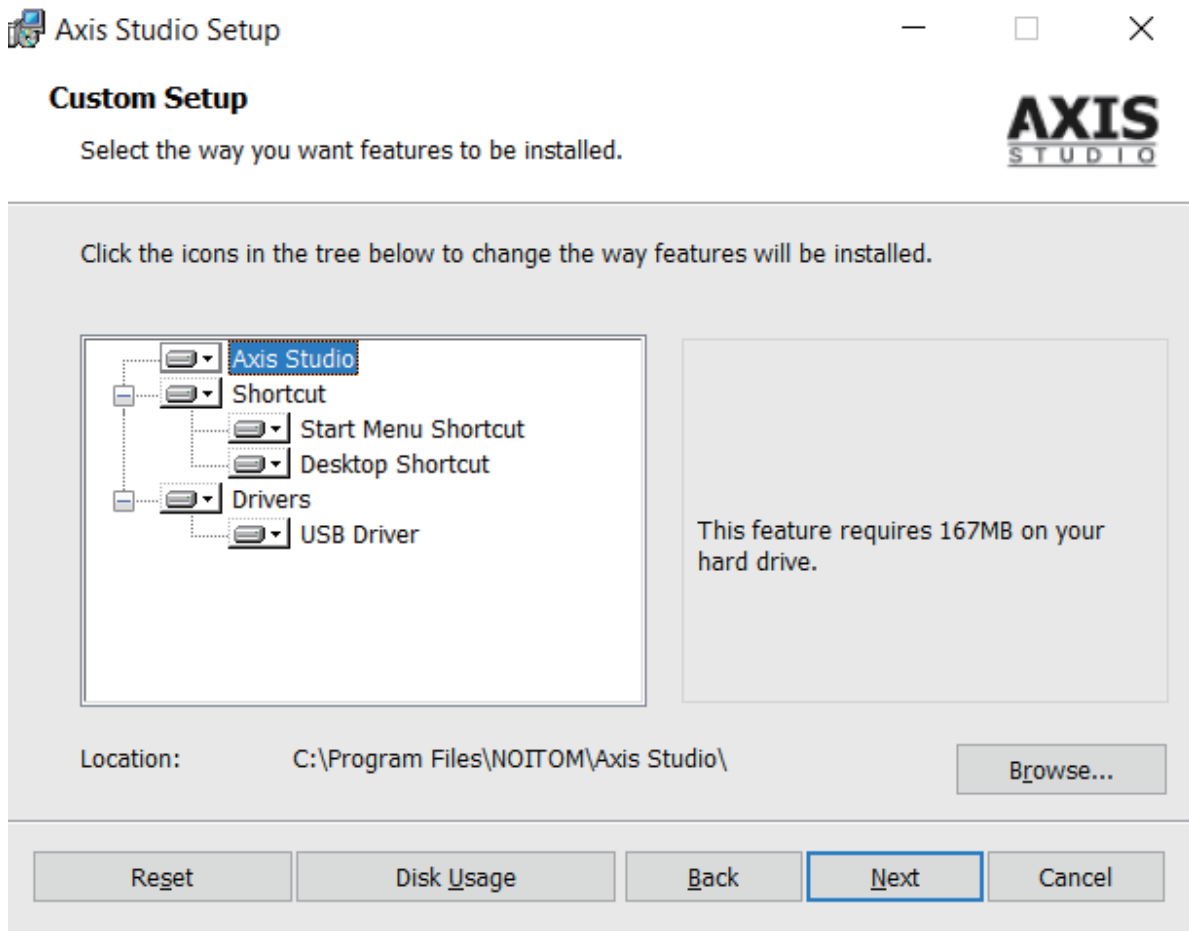
### 1. Overview

#### 1.1 Version list

Software	Version
Windows(Microsoft)	Microsoft Windows 10
Axis Studio(Noitom)	Axis_Studio_x64_2_4

## 1.2 Installation

Run the installer to initiate the installation process. Follow the installation prompts and install Axis Studio. We recommend installing the software in the default directory.

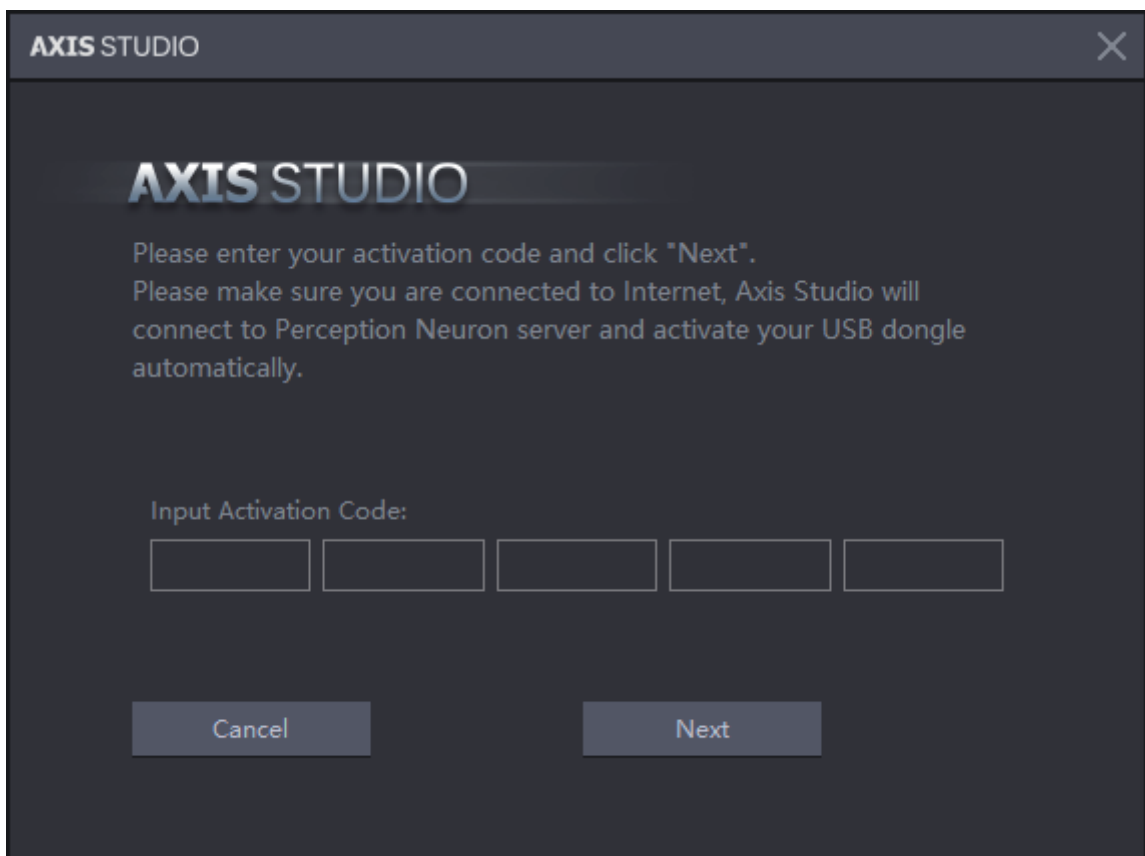


## 1.3 Activate

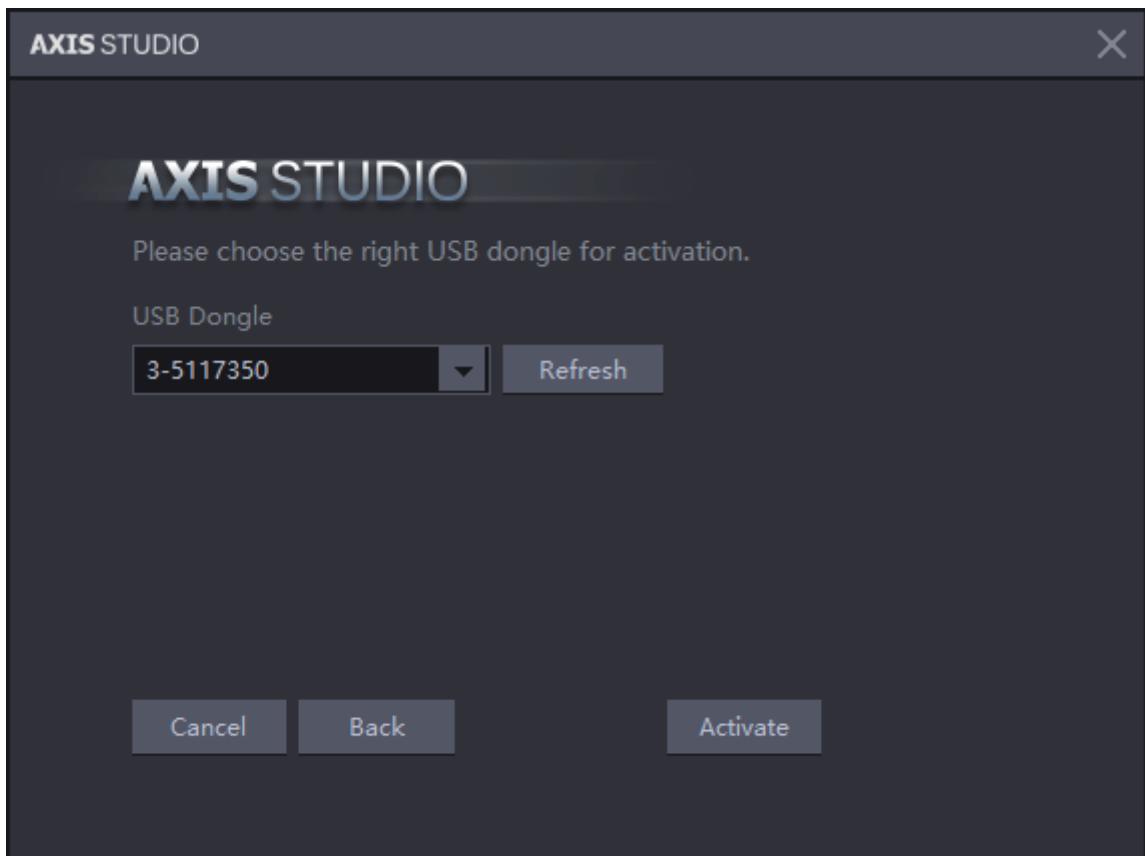
Plug in the Wibu dongle.



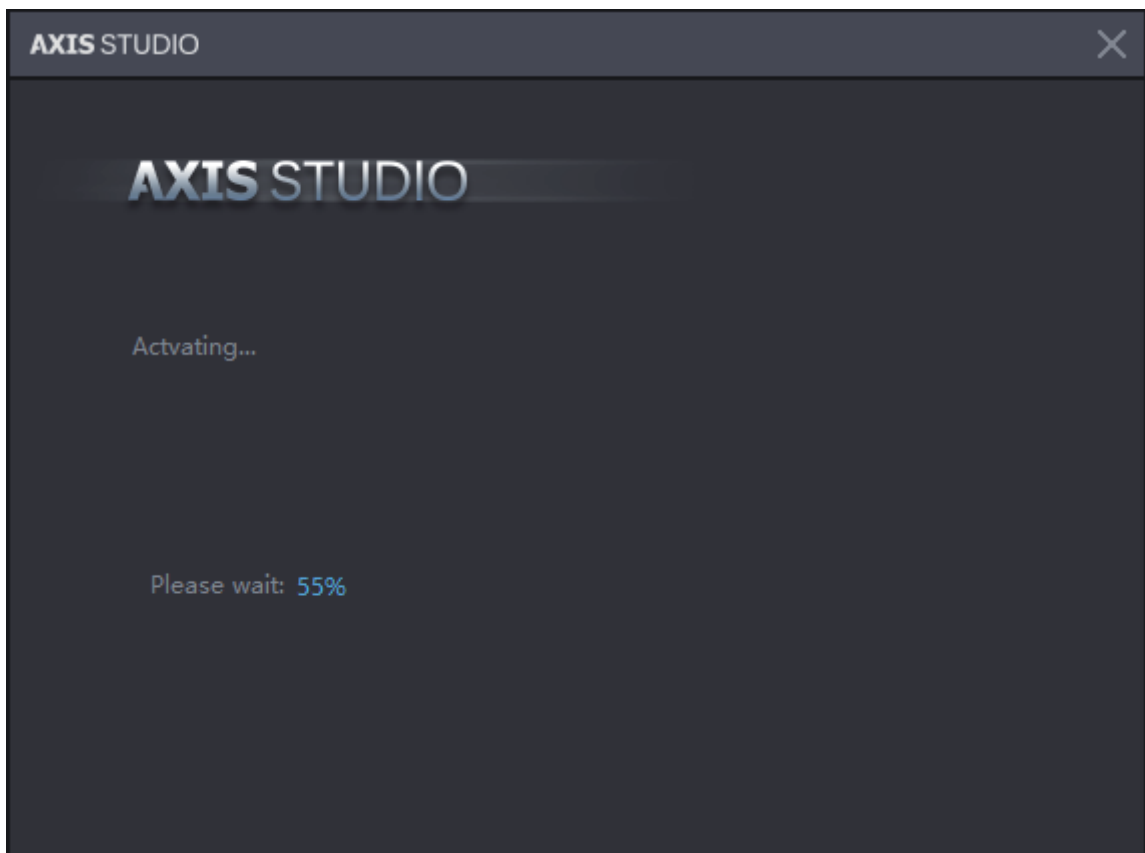
Click activate, input activation code and click next.



If there are more than 2 wibu dongles in your computer, please choose the right USB dongle for activation.

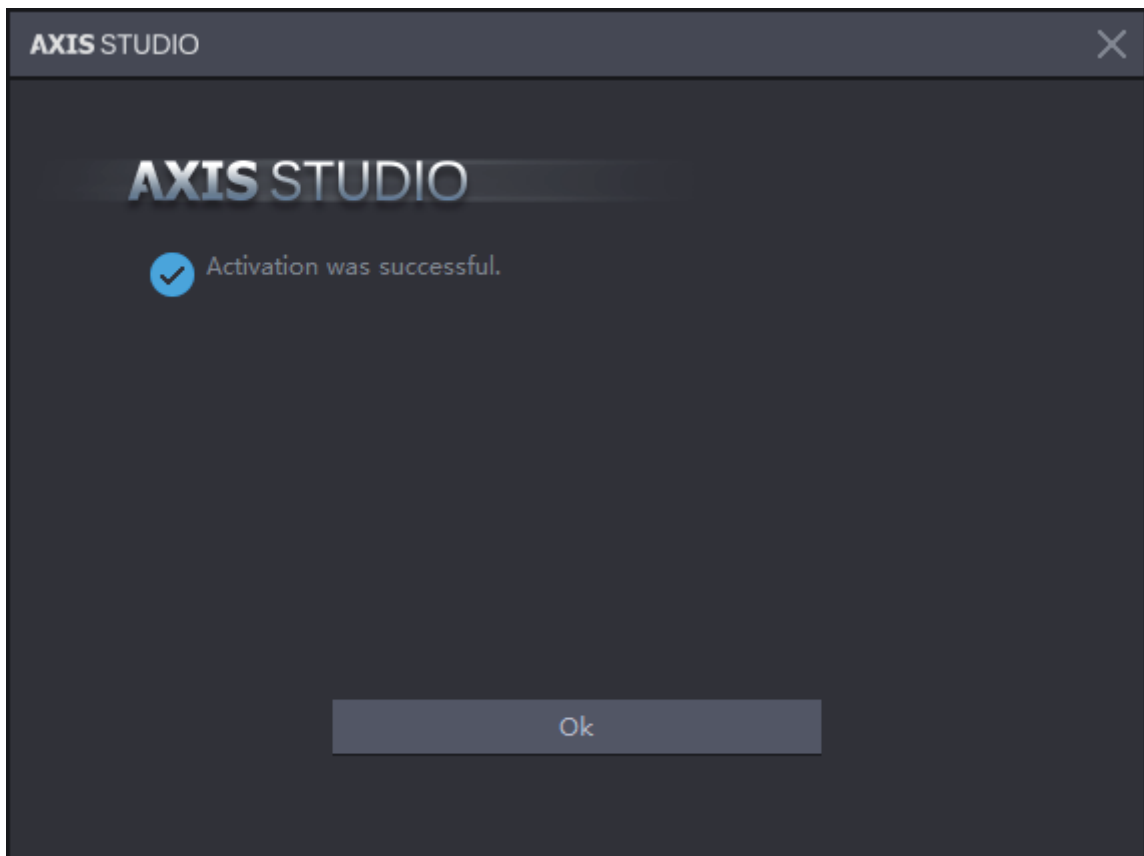


Click activate



Click ok to run the Axis Studio software.





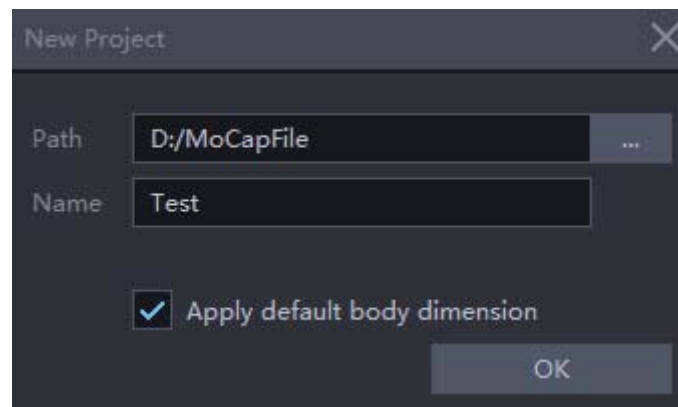
## 2. First launch

You can create or open project. Use Projects to manage all the files associated with motion capture sessions.

### 2.1 Project management

#### Create project

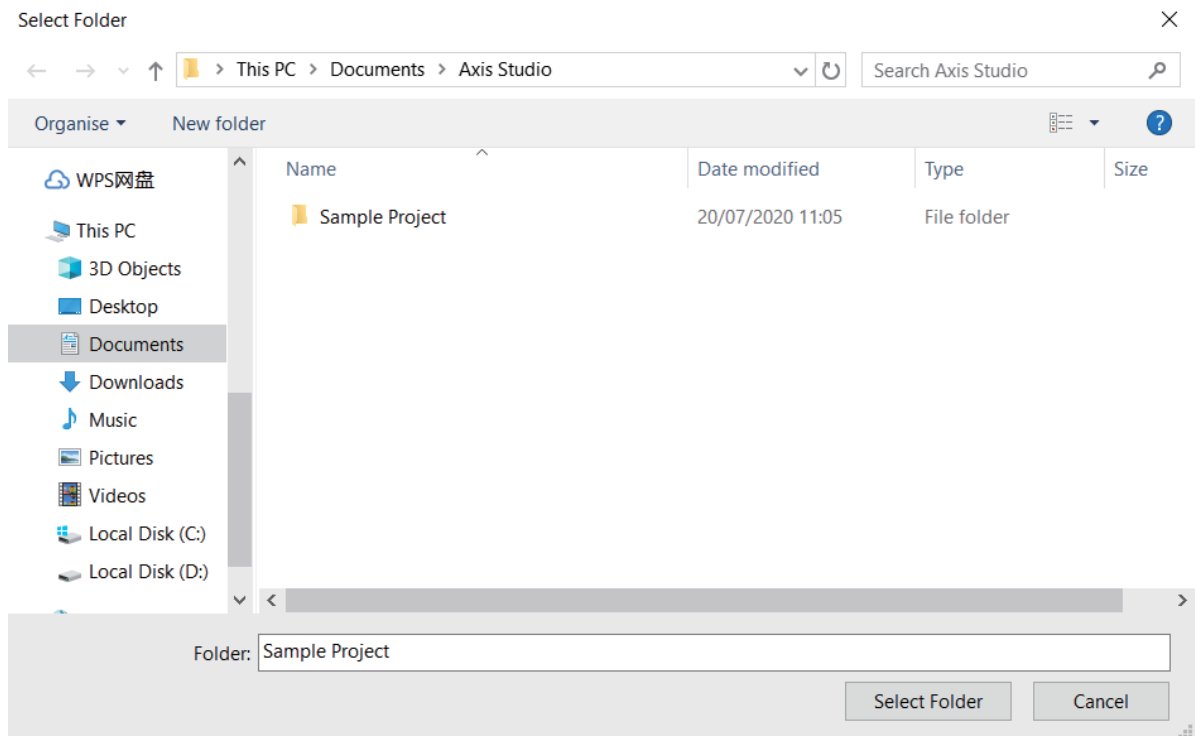
- Click New Project.
- Enter the project name and choose the location of the project.
- Selecting Add default body size will include body size preset into your project.



## Open Project

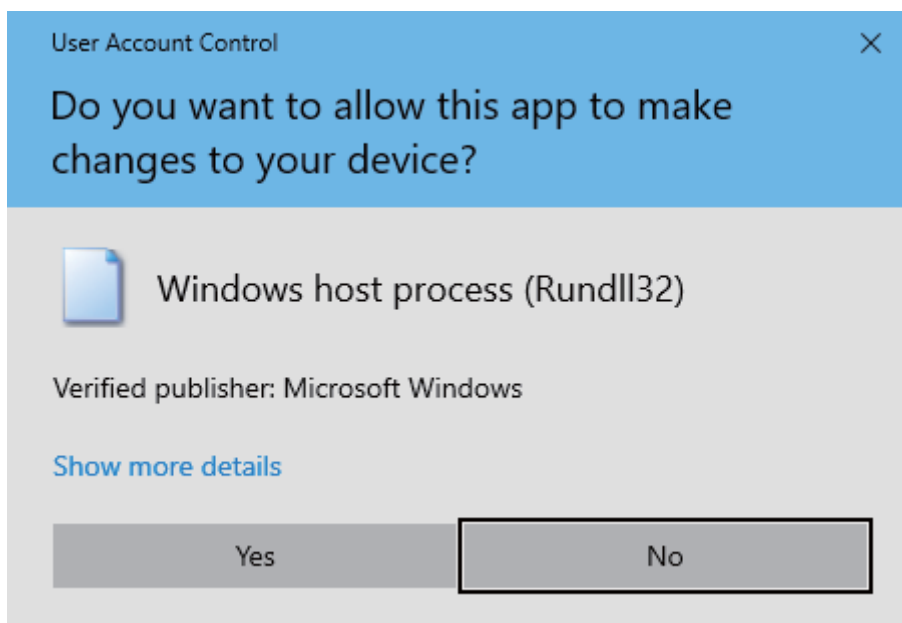
Opening a project opens an already created project, and we provide a sample project data for reference.

- Click Open Project.
- Select Sample Project folder.



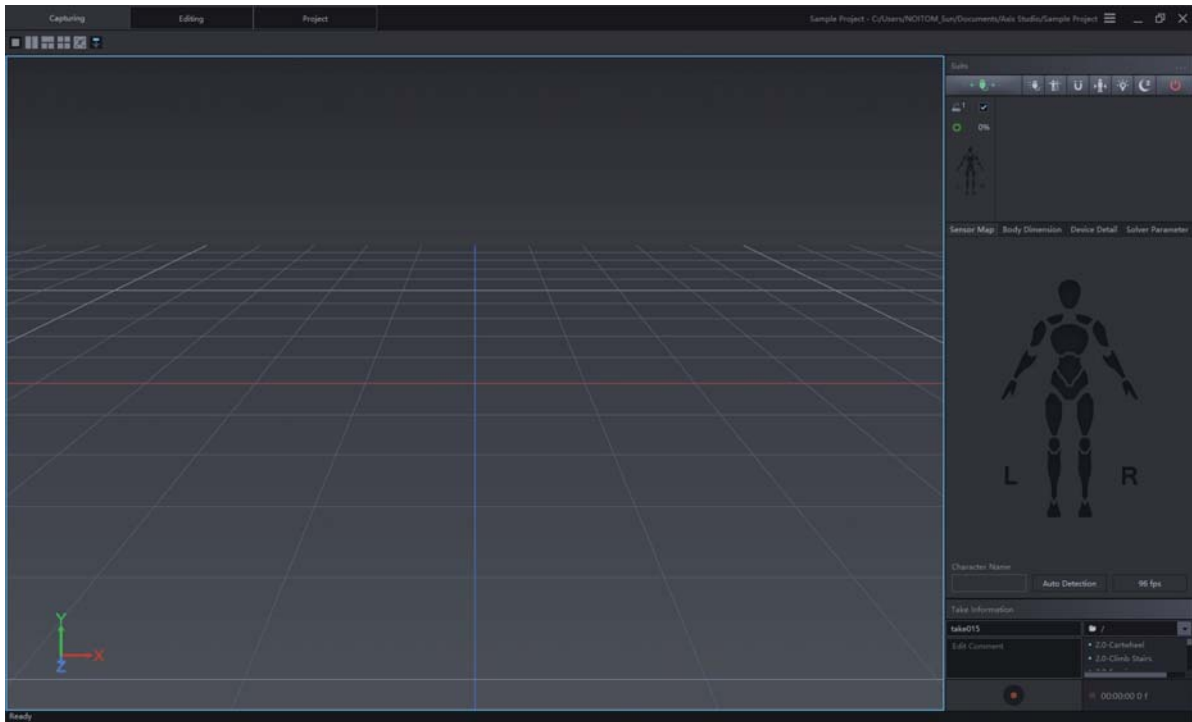
## 2.2 Connect PN3 hardware

- When connecting the transceiver for the first time, the following interface will pop up, please click Yes. This step allows Axis Studio software to automatically identify the transceiver without manual setup. (USB mode)



- If you use Ethernet mode, this interface will not pop up, you don't need to set any IP address, just wait for a moment, the transceiver will automatically be connected.

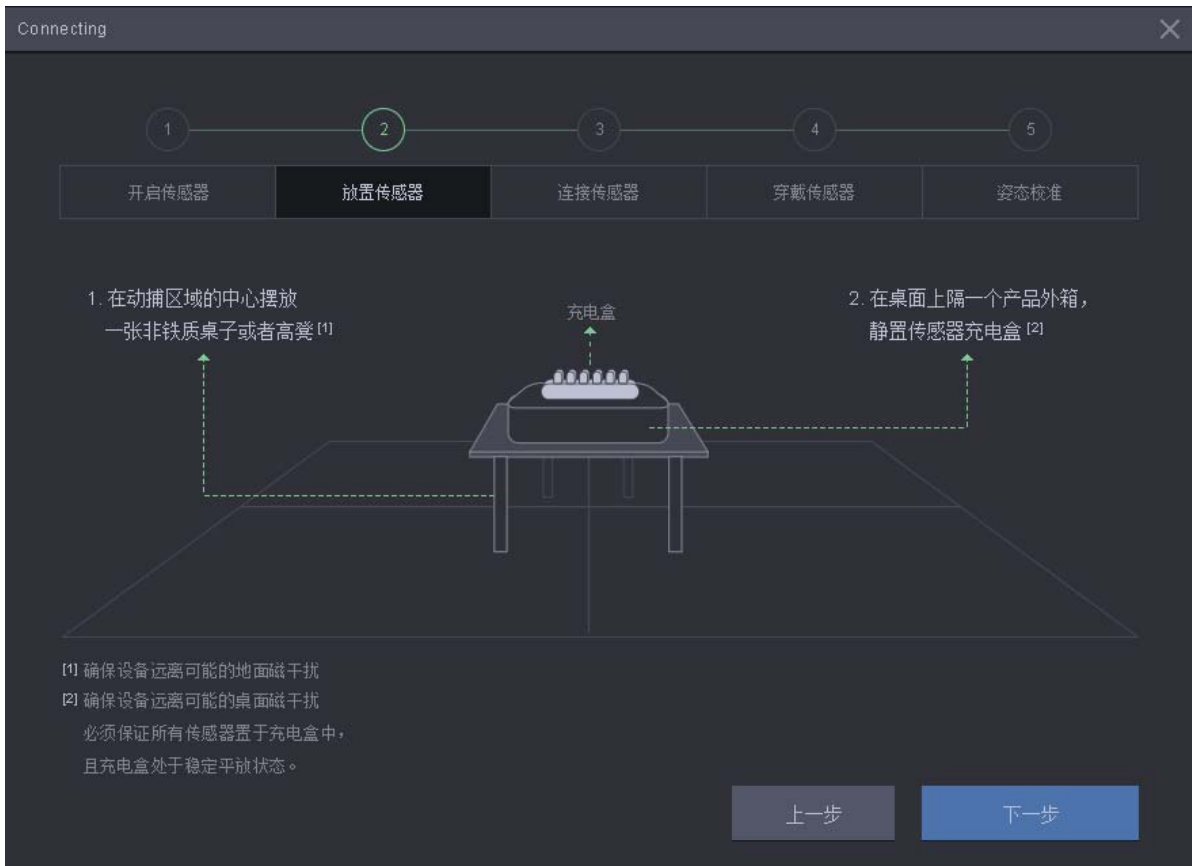
- If the hardware part has been deployed, the interface should be as shown in the figure. Click the green connection button to enter the wizard mode.



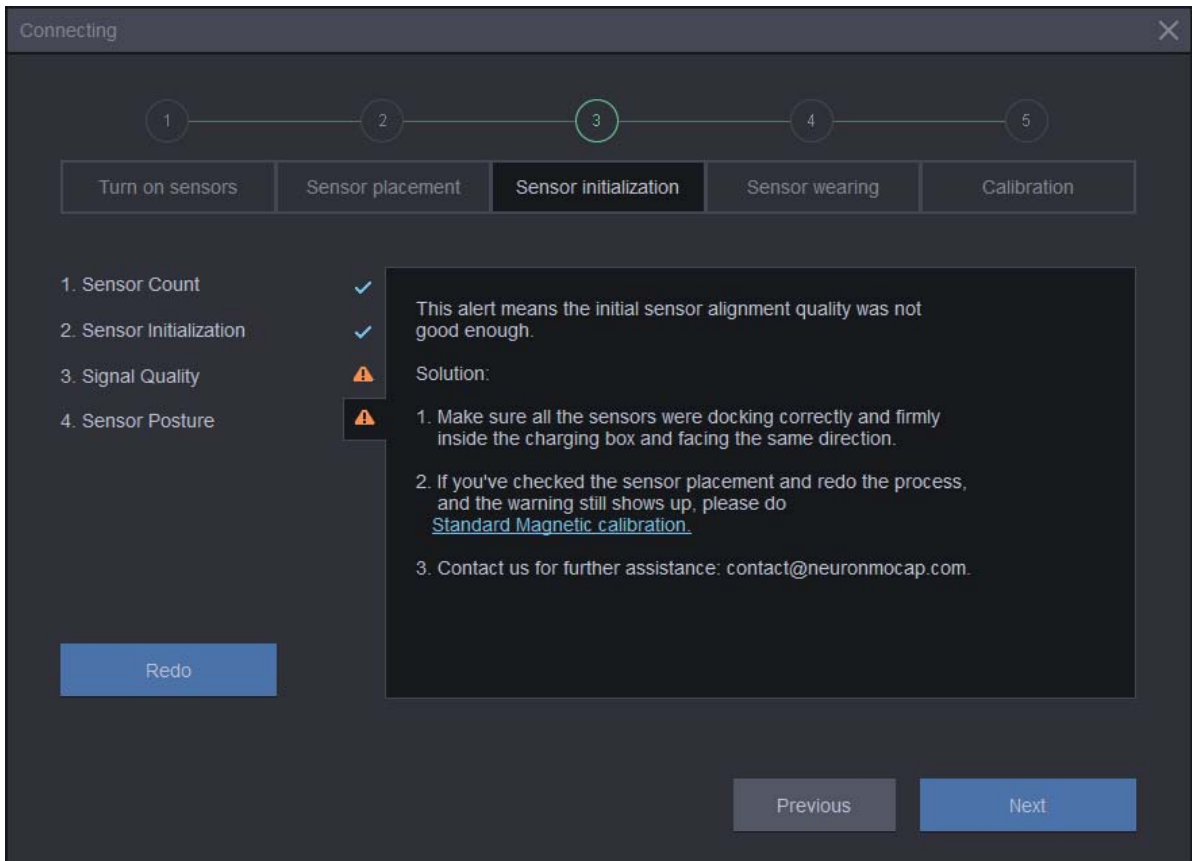
- Plug and unplug the charging box and the PNS sensor will automatically turn on. Press the side switch of PNS gloves for about 2S to open the gloves. Click next after opening.



- Place a non-iron table or high stool in the center of the moving capture area, stack the antimagnetic suitcase on the table, and put the sensor charging case and gloves on the suitcase. Click Next when you're done.

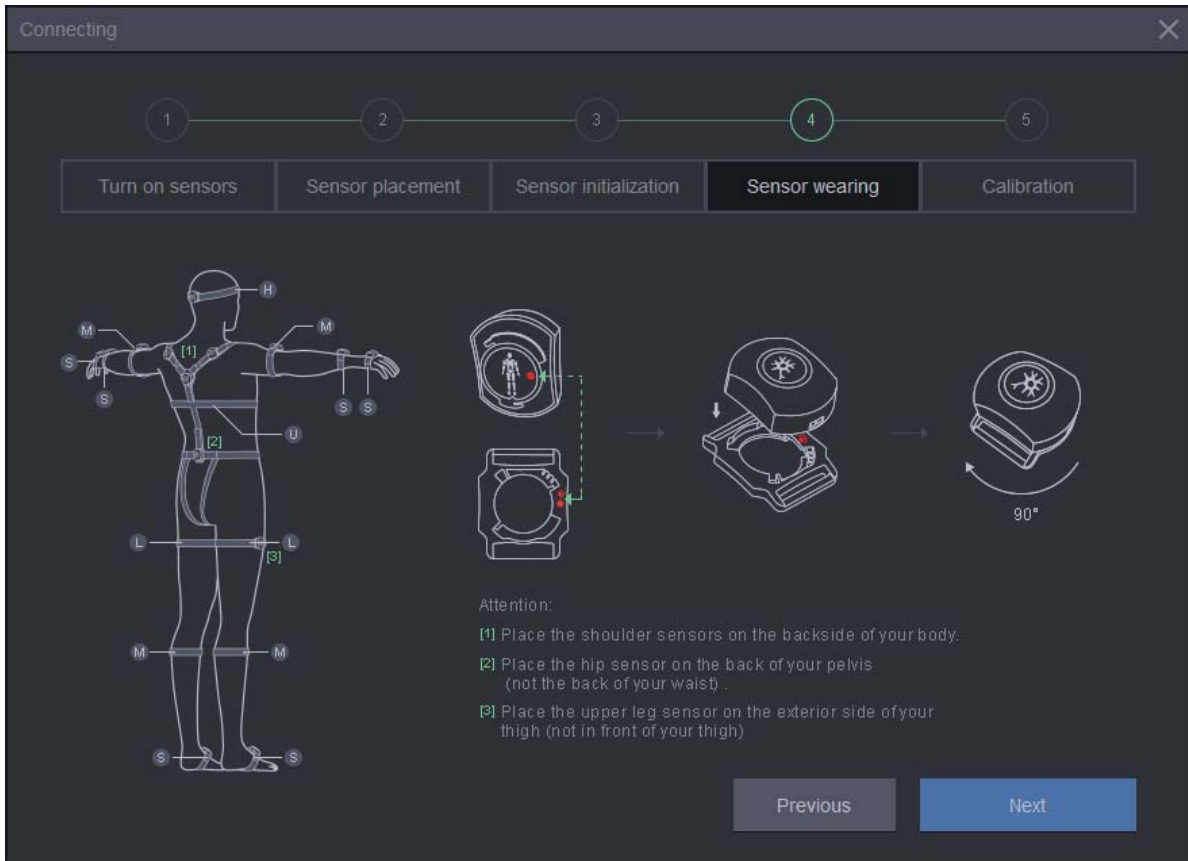


- This step will carry out four checks. If the orange exclamation mark as shown in the figure appears, clicking the exclamation mark will show the cause of the error. Please check the device according to the solution on the picture, and click the next step until all the four items are correct.

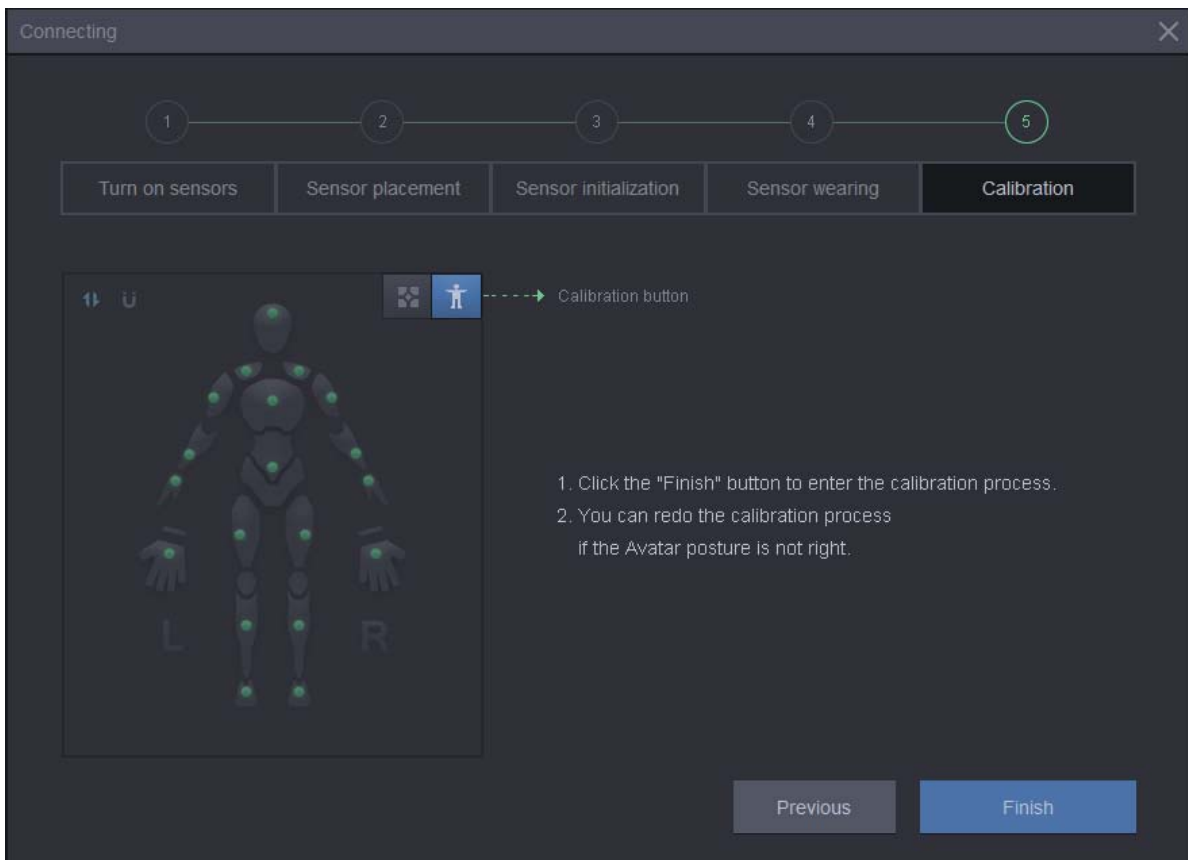


- Please refer to the wearing part in the hardware setting for wearing. Each sensor has a unique part of the human body, and the wrong position can lead to a posture error. If you

have properly worn the body straps and installed the PNS sensor, click next to enter calibration.



- Enter this part, click finish button will enter calibration interface.



## 2.3 Posture Calibration

Posture calibration can be divided into A, S, T, B, P pose, different working mode match different calibration pose.

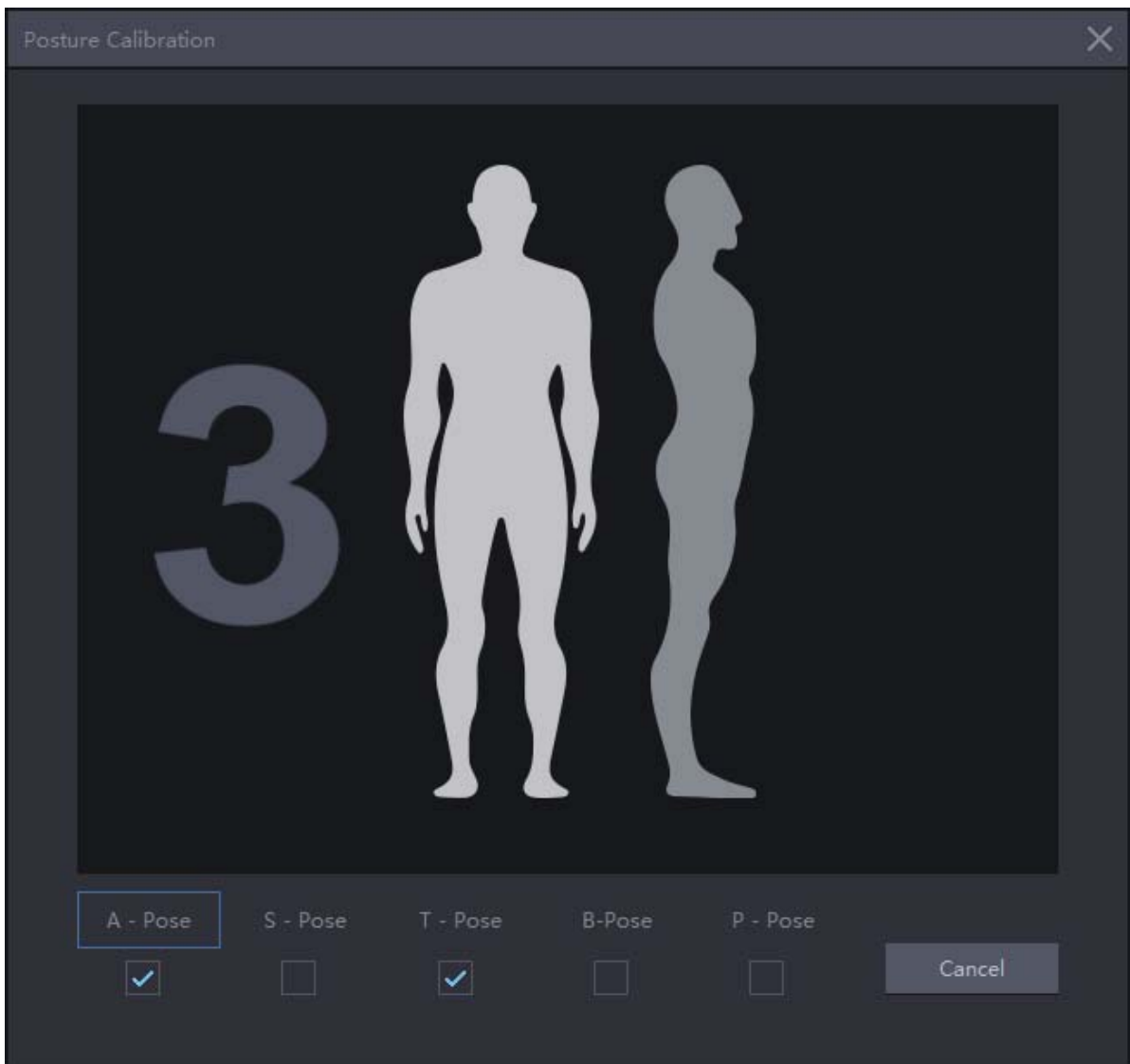
Working mode	Calibration pose
Full body	AT
Full body with glove	ATBP
Arm only	AT
Lower body	AS
Upper body	AT
Glove only	ATBP

When the working mode is automatic identification, the system will automatically identify different working modes and automatically check the corresponding calibration attitude, which cannot be manually checked.

### Details

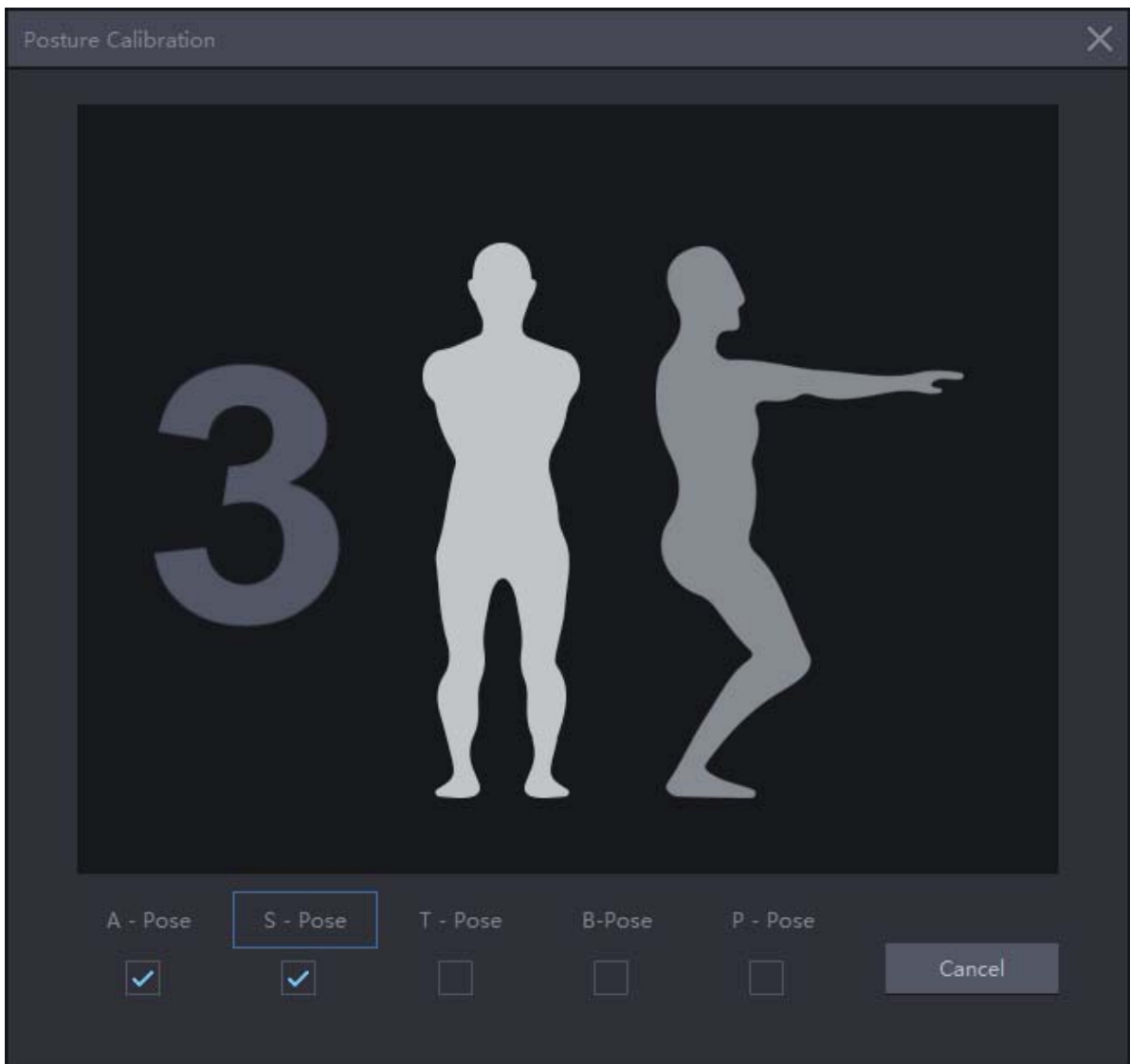
- A Pose:

Stand straight, arms facing down with palms facing your body. Position feet distance approximately the same distance of your hip width and maintain feet parallel to each other.



- S Pose:

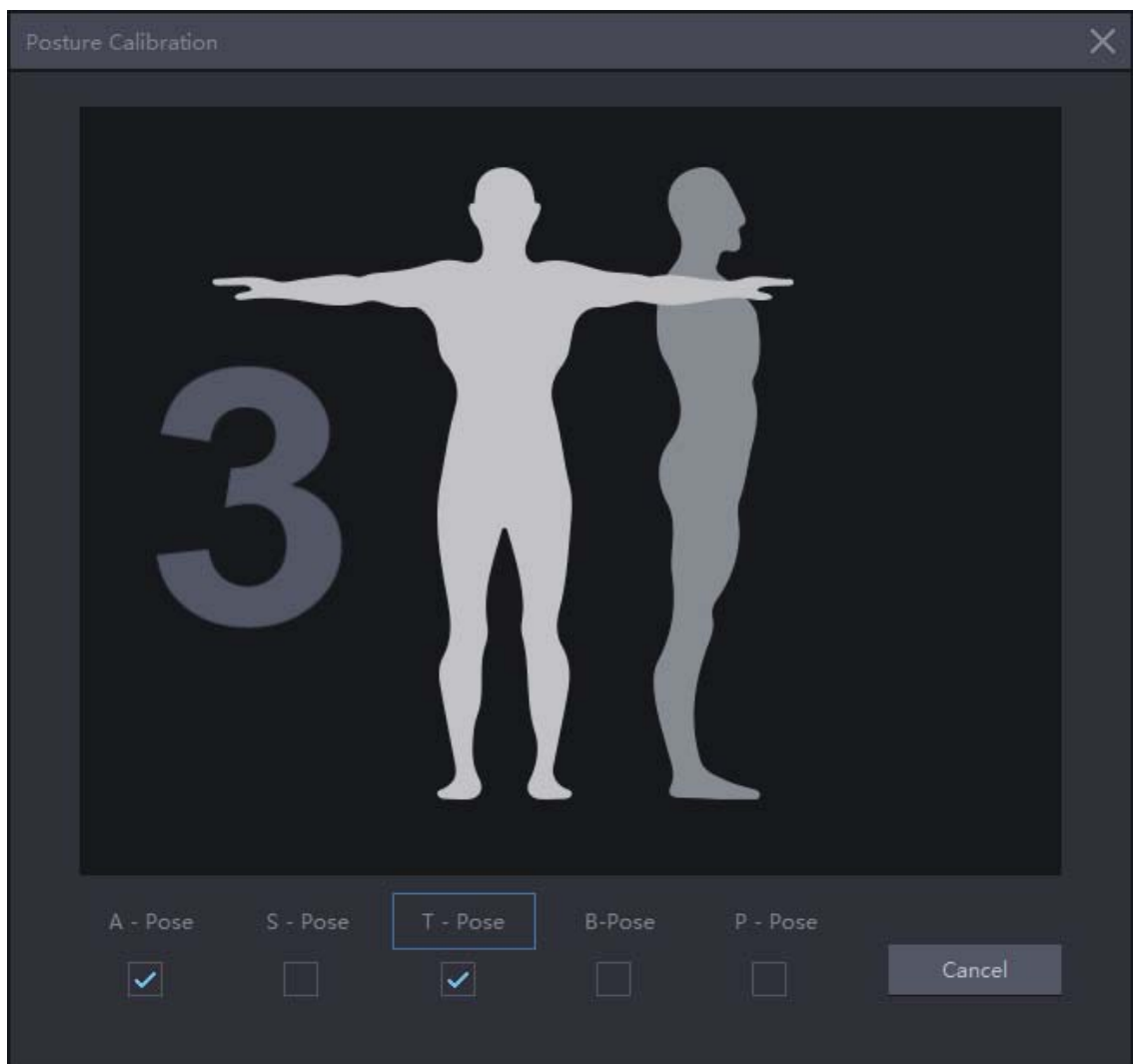
Crouch down with feet flat on the ground while maintaining feet and legs parallel to each other. Extend arms forward with palms facing down.



- T Pose:

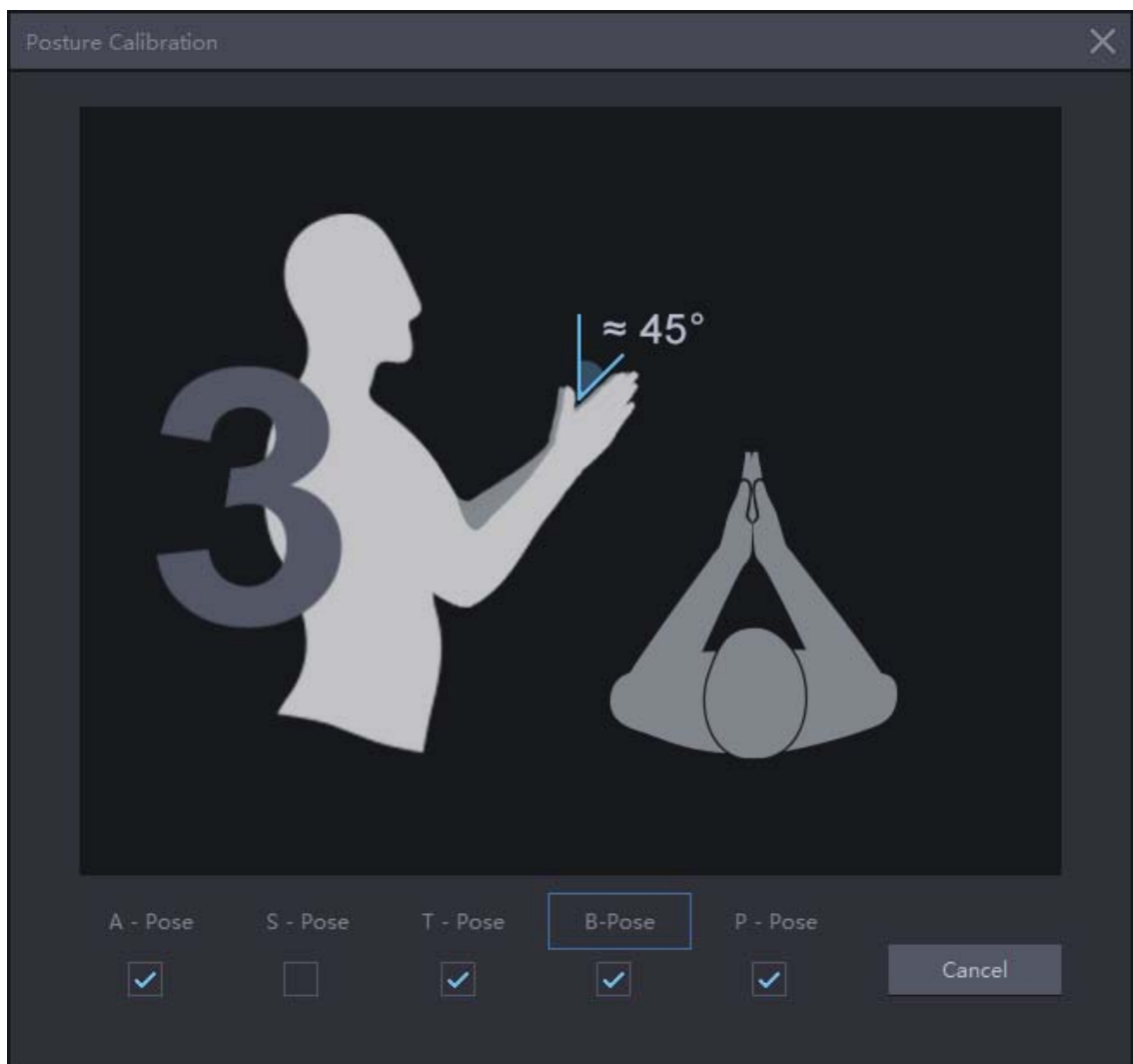
Stand straight spread out arms perpendicular to your body's upward position, with palms facing down. If you are using gloves, extend fingers and position thumb in a resting position.





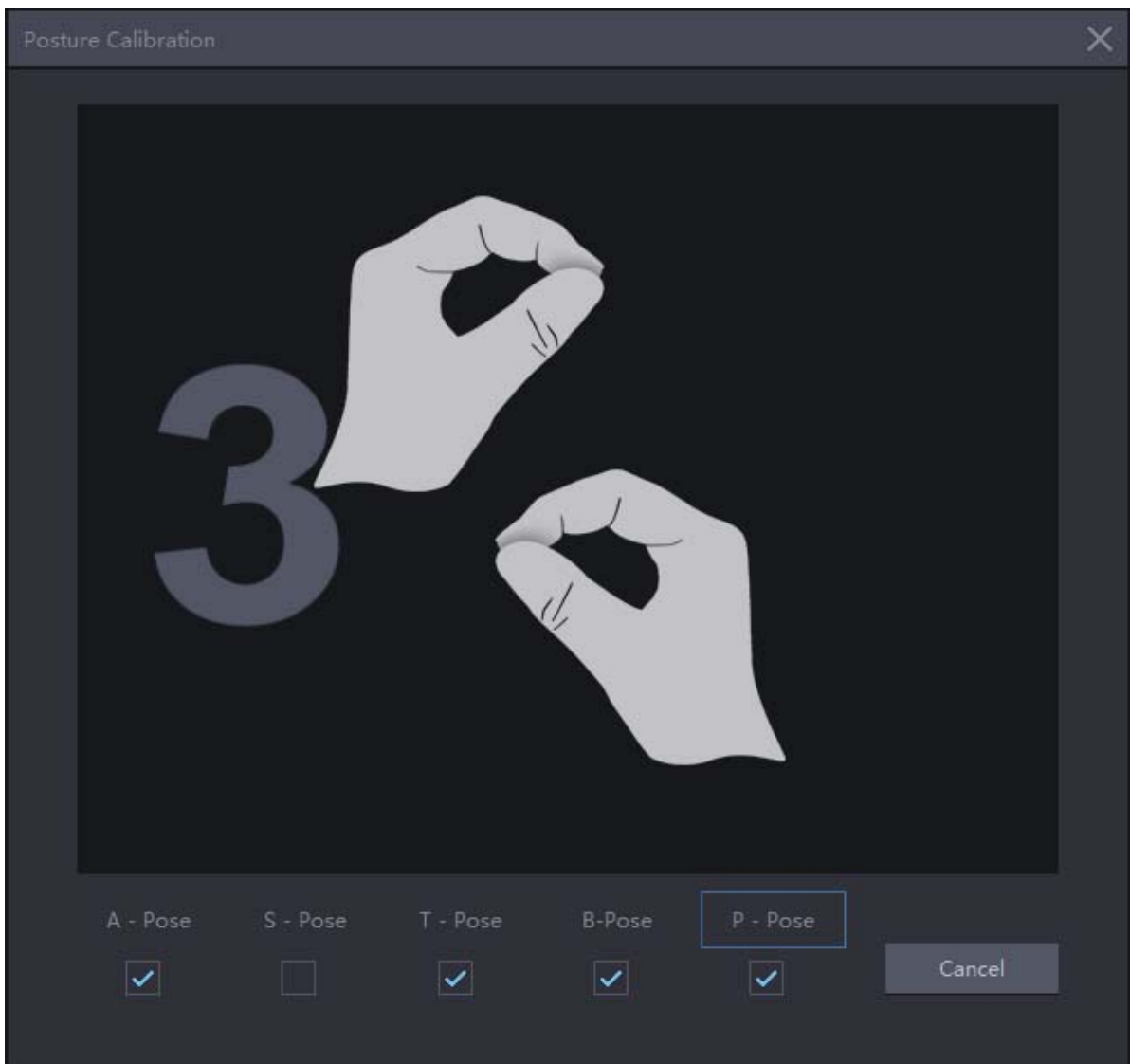
- B Pose:

Place your hands together in front of your chest. Palm to stick. The thumb and the other four fingers are at an Angle of about 45 degrees.



- P Pose:

Gently knead the thumb between the forefinger and the straight thumb. Try to keep your thumb on a straight line from the base of your finger to the tip of your finger. The middle finger, ring finger and little finger can also be bent naturally.

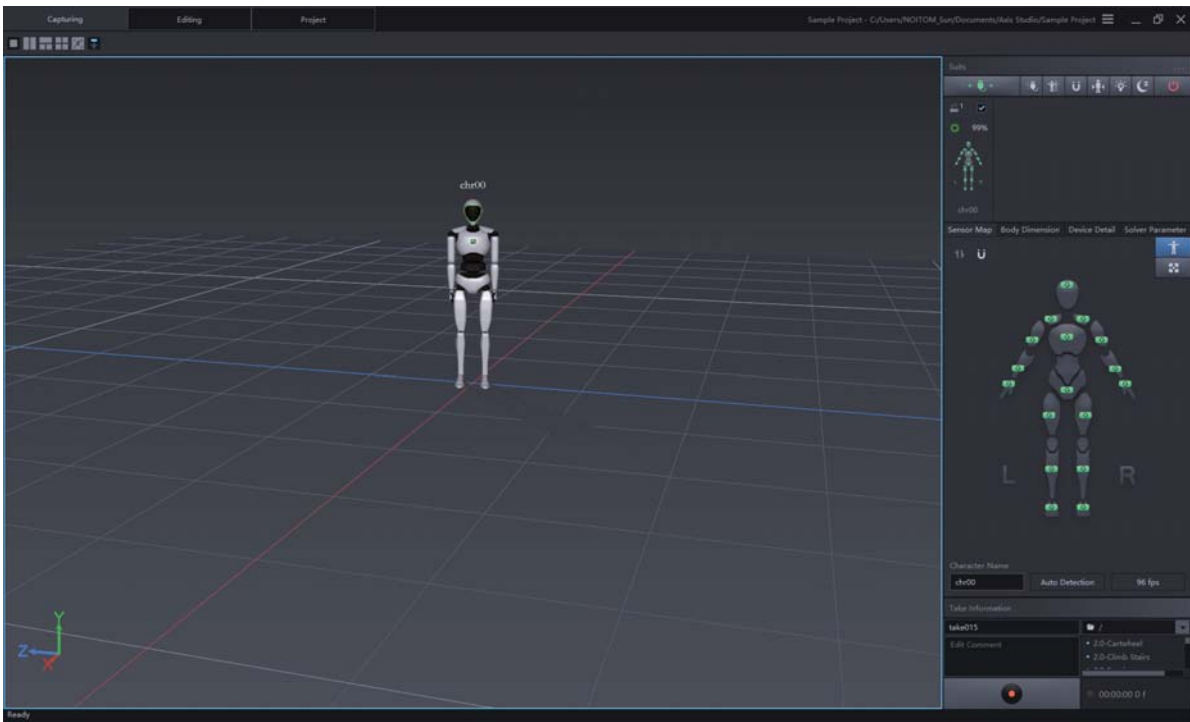


### **Start calibration**

If you have learned to calibrate the action, click start, and you will hear the sound of the three-second countdown. At this time, it is time to prepare. At this time, the actor should adjust his posture to keep the same posture as the one on the picture.

### **Calibration completed**

If you have completed the calibration properly, the interface should be as shown in the figure.

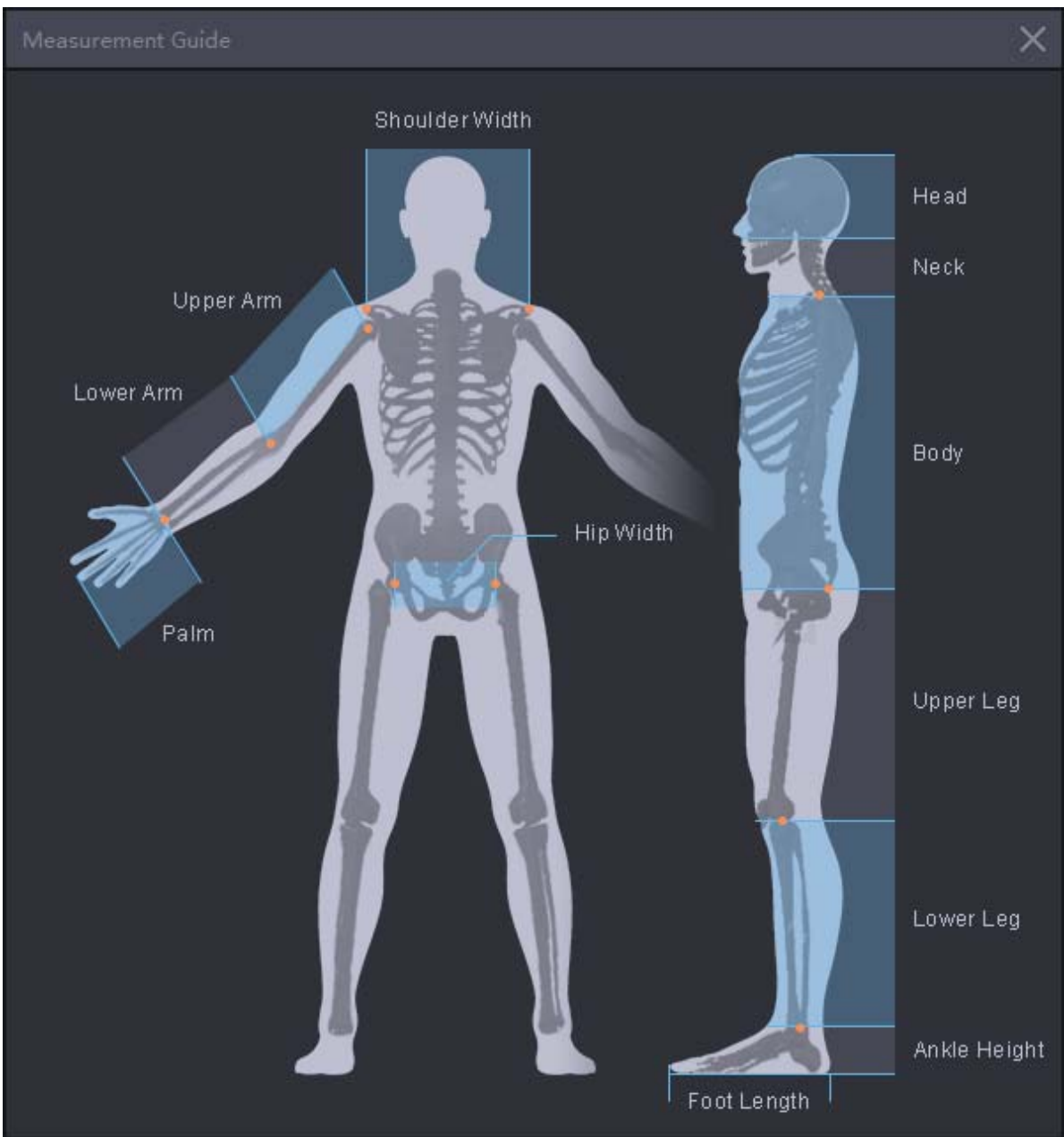


## 2.4 Measure Body Segment Length

Axis Studio allows users to input their own body size dimensions if the provided default body size presets do not apply. Prior to capturing, choose the body size preset that fits the actor's body dimension closest before carrying out the posture calibration. Inertial motion capture accuracy is affected by the body segment length of the Avatar.

Sensor Map	Body Dimension	Device Detail	Solver Parameter
	Head		
	<input type="text" value="15.95"/>		
	Neck	Shoulder Width	
	<input type="text" value="9.47"/>	<input type="text" value="32"/>	
	Body		
	<input type="text" value="55.84"/>		
	Upper Arm	Forearm	Palm
	<input type="text" value="26.5"/>	<input type="text" value="26"/>	<input type="text" value="17.5"/>
	Hip Width		
	<input type="text" value="18.5"/>		
	Upper Leg	Lower Leg	
	<input type="text" value="41.87"/>	<input type="text" value="41.87"/>	
	Heel Height	Foot Length	
	<input type="text" value="7.69"/>	<input type="text" value="25"/>	
	Template		
	<input type="text" value="male170"/>	<input type="button" value="Import"/>	<input type="button" value="New"/>

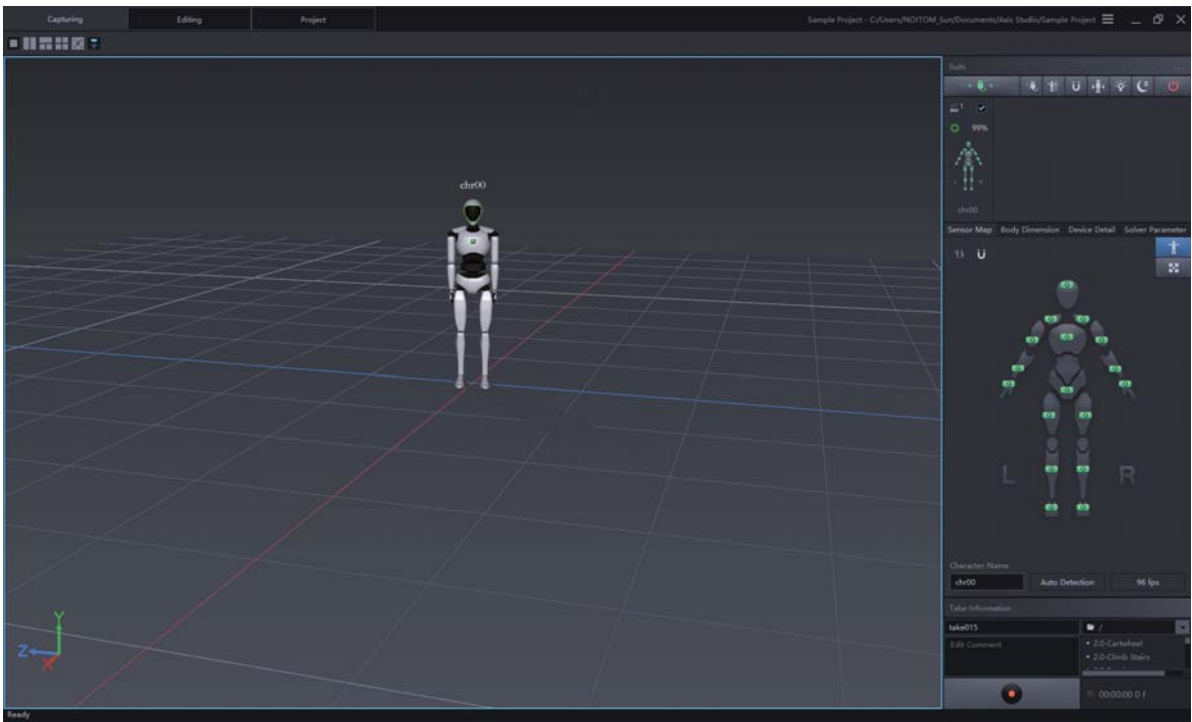
Please refer to measurement guide for bone measurement.



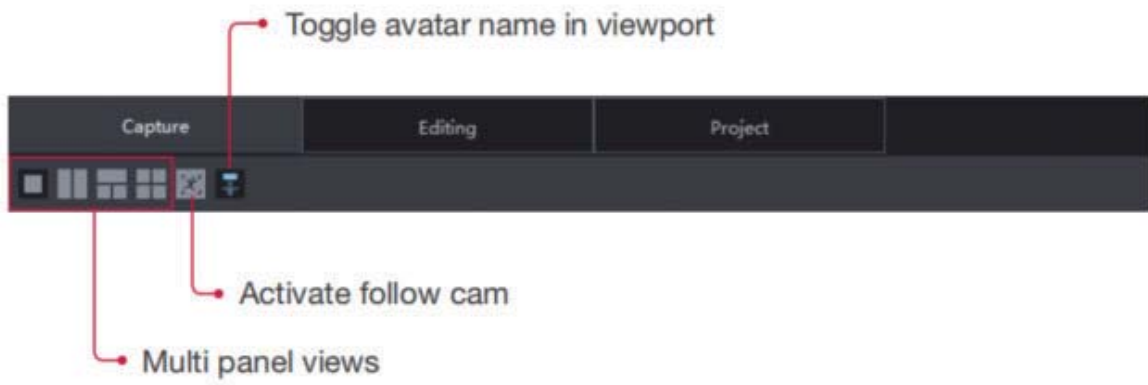
## 2.5 Set Parameter

Refer to 3.7- Solver Parameter.

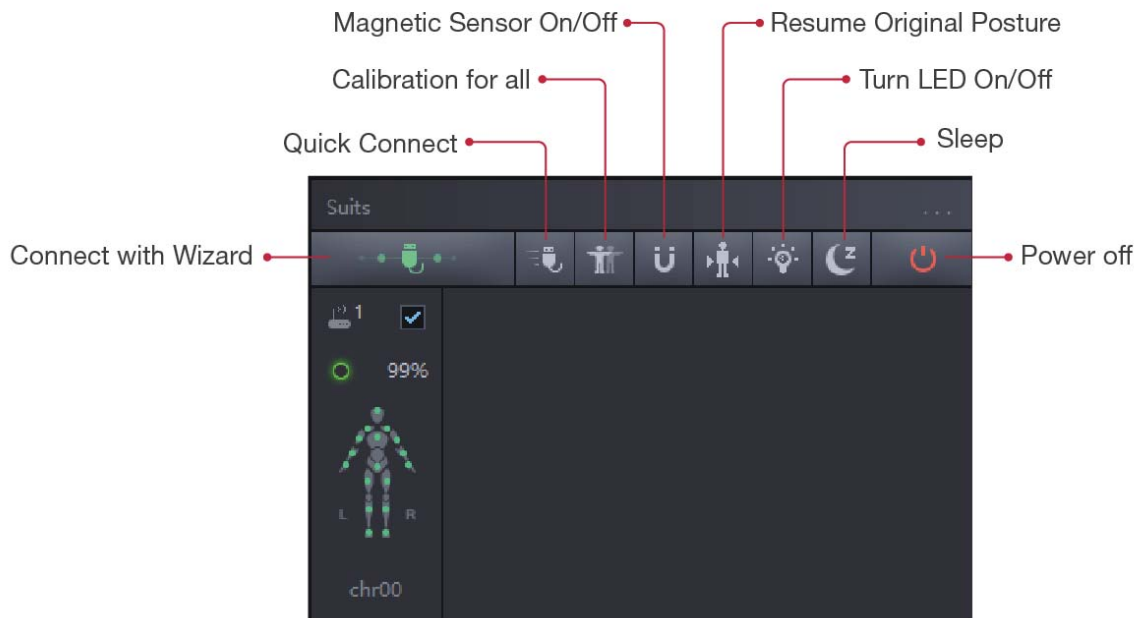
## 3. Capturing Interface



### 3.1 3D view functions



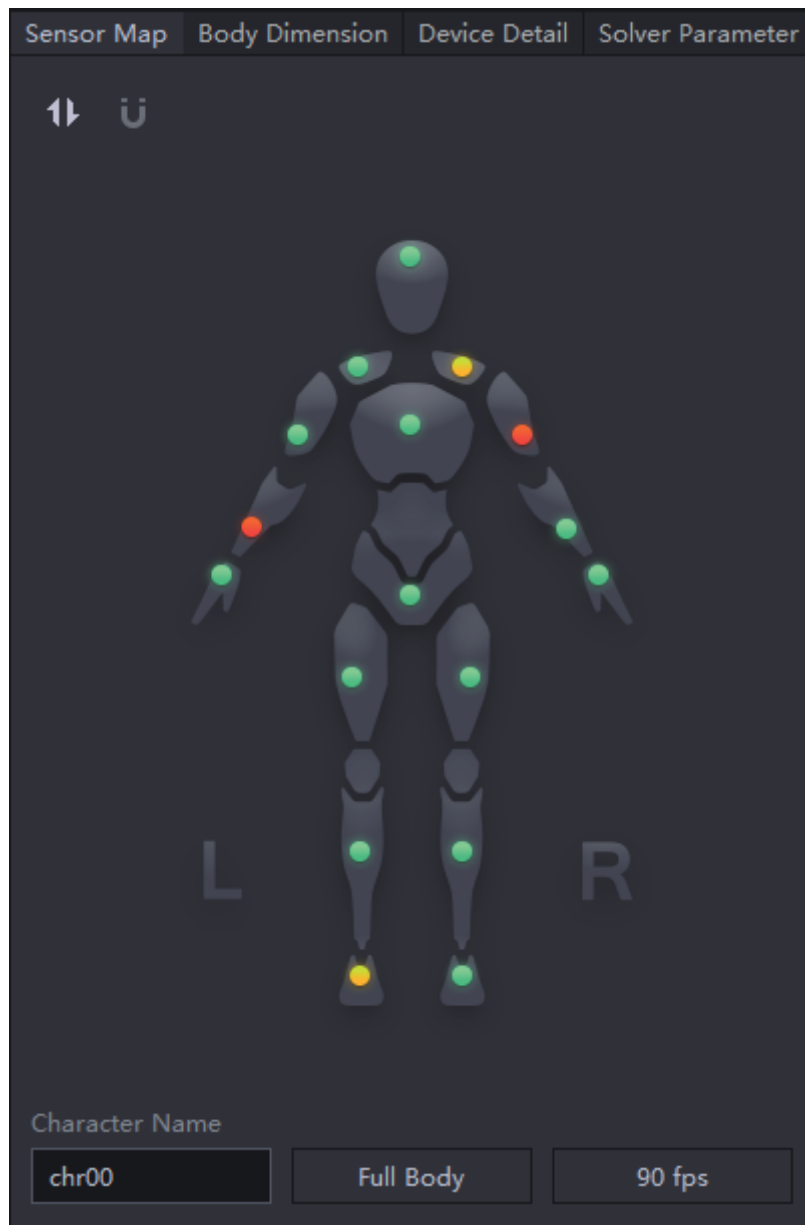
### 3.2 Suits



### 3.3 Sensor Map

#### Sensor signal strength (round dot)

- Green is good
- Yellow is medium
- Red is bad
- Grey is no sensor linked

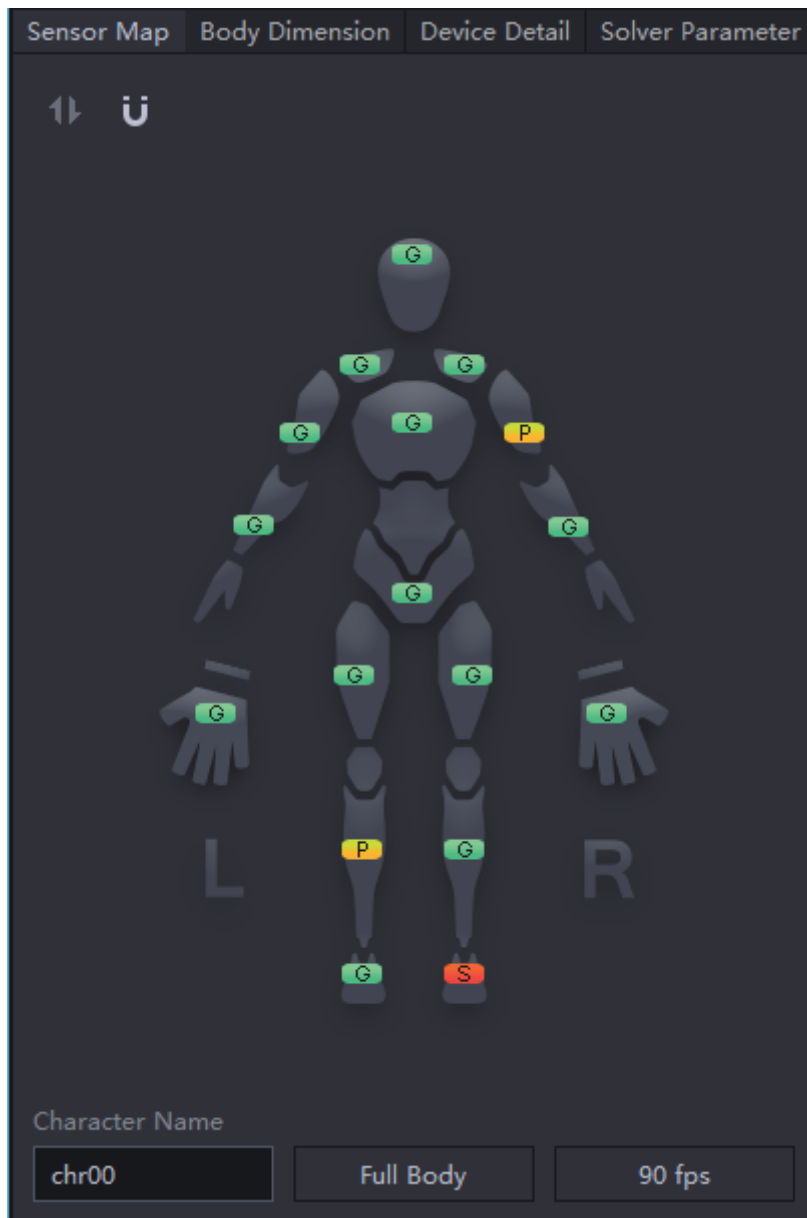


- You can customize the role name in the role name option box in the lower left corner.
- In the lower right corner are the motion capture mode and the number of capture frames.

#### **Magnetic environment (Square dot)**

- Green is good (G)
- Yellow is poor (P)
- Red is severe (S)
- Grey is no sensor linked or in Anti-mag Mode





### 3.4 Body Dimension

Sensor Map   Body Dimension   **Device Detail**   Solver Parameter

Head	15.95	
Neck	9.47	
Shoulder Width	32	
Body	55.84	
Upper Arm	Forearm	Palm
26.5	26	17.5
Hip Width	18.5	
Upper Leg	Lower Leg	
41.87	41.87	
Heel Height	Foot Length	
7.69	25	

Template  
male170 ▼   Import   New

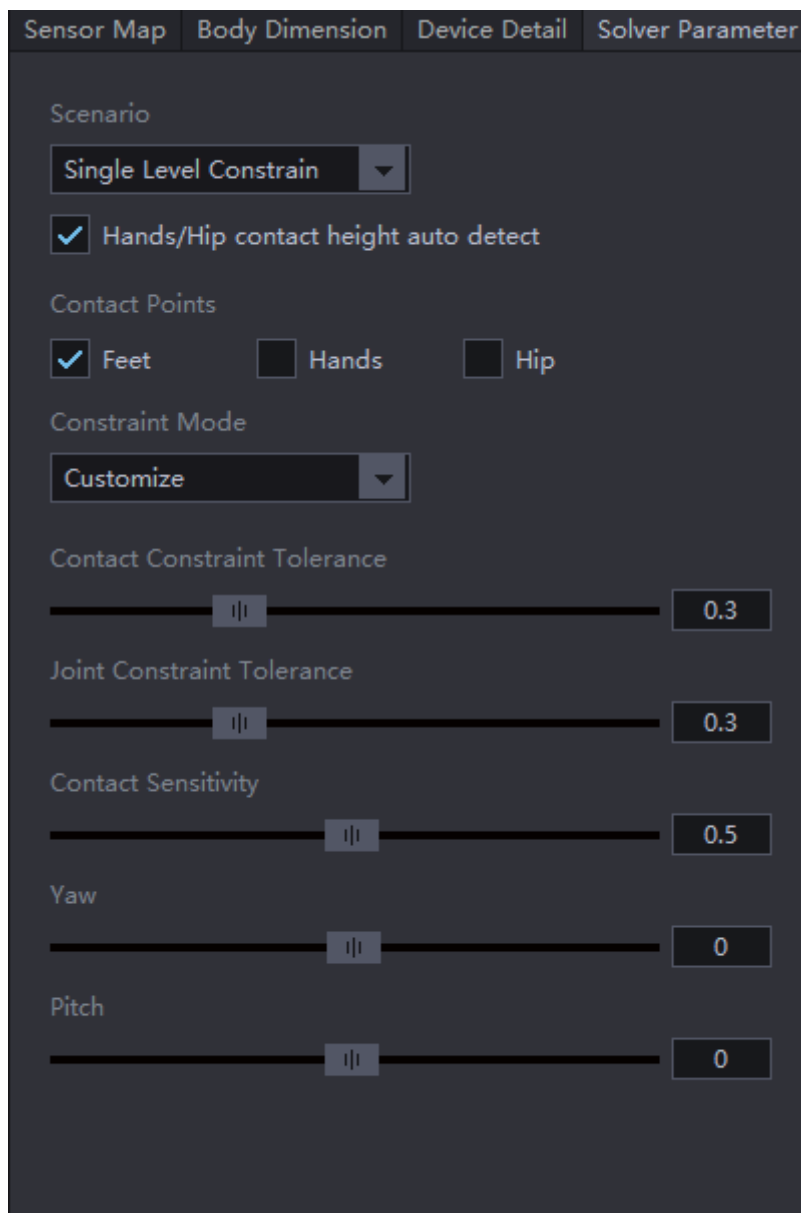
### 3.5 Device Detail

Displays detailed information of the individual sensors, including sensor ID, sensor signal, magnetic levels, and battery life.

Sensor Map	Body Dimension	Device Detail	Solver Parameter
LeftShoulder	12	72.9% <span>Good</span>	
LeftArm	13	99.9% <span>Poor</span>	
LeftForeArm	14	95.9% <span>Poor</span>	
Head	16	98.9% <span>Severe</span>	
Spine2	17	81.9% <span>Severe</span>	
RightHandThumb2	19	96.9% <span>Severe</span>	
RightHandIndex2	20	96.9% <span>Poor</span>	
RightHand	21	97.9% <span>Severe</span>	
RightHandMiddle2	22	97.9% <span>Good</span>	
RightHandRing2	23	97.9% <span>Poor</span>	
RightHandPinky2	24	96.9% <span>Poor</span>	
LeftHandRing2	25	99.9% <span>Good</span>	
LeftHandPinky2	26	99.9% <span>Good</span>	
LeftHand	27	99.9% <span>Poor</span>	
LeftHandMiddle2	28	99.9% <span>Severe</span>	
LeftHandThumb2	29	99.9% <span>Severe</span>	
LeftHandIndex2	30	98.9% <span>Poor</span>	

### 3.6 Solver parameter

Adjust algorithm behaviour to control motion capture performance.



### Scenario

- Single Level Constrain: If you are doing motion capture on a flat floor, use Single Level Constrain.
- Free Climbing: If you are capturing going upstairs, downstairs or any motion without a certain floor, use Free Climbing.
- Hip Locked: Hip Locked means lock your Avatar in the certain position, you can use it as running on a treadmill or hanging wire.

### Hands/Hip contact height auto detect

Check this box to do different height of hand and hip contact in single level mode.

### Contact Points

- Choose which body segment will make contact with the floor or a solid surface during the performance.
- For most scenarios we choose foot contact, selected by default. If you want to record a movement with hand.
- Contact such as cartwheel, select both the foot and the hand contact.

## Constraint Mode

- Normal Mode: For normal situation.
- Steady Contact: Select steady contact will let contact point more steady.
- Customize: When the above default parameter mode is not applicable, adjust the parameter to adapt the current mocap state.

## Contact Constraint Tolerance

- Axis Studio will use a pattern recognition algorithm to determine the contact between the feet and ground.
- The Step Stiffness value affects the speed of this status change.
- Smaller values will plant the feet firmly on the ground and larger values will allow the feet to slide easily while contacting the ground.

## Joint Constraint Tolerance

- There are gaps between different body segments, and Joint constraint tolerance is to modify the tolerance of the gaps.
- The smaller the value is, the gaps will be smaller.

## Contact Sensitivity

- The step constraint value determines the threshold a foot contact is activated.
- A higher value increases sensitivity of the foot contact algorithm. A low value reduces the sensitivity of a foot contact.

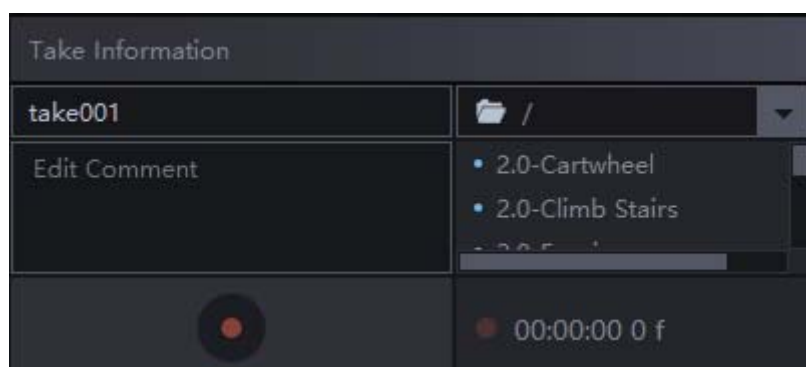
## Yaw

- Adjust the yaw direction of the Character.
- You can use it to control the Avatar direction directly in third party software.

## Pitch

- Adjust the pitch direction of the Character.
- If you find the Avatar is too leaned forward than it should be, you can make the Pitch value a little lower.
- Or if you find the Avatar is too leaned back, make the Pitch value higher.

## 3.7 Record Function



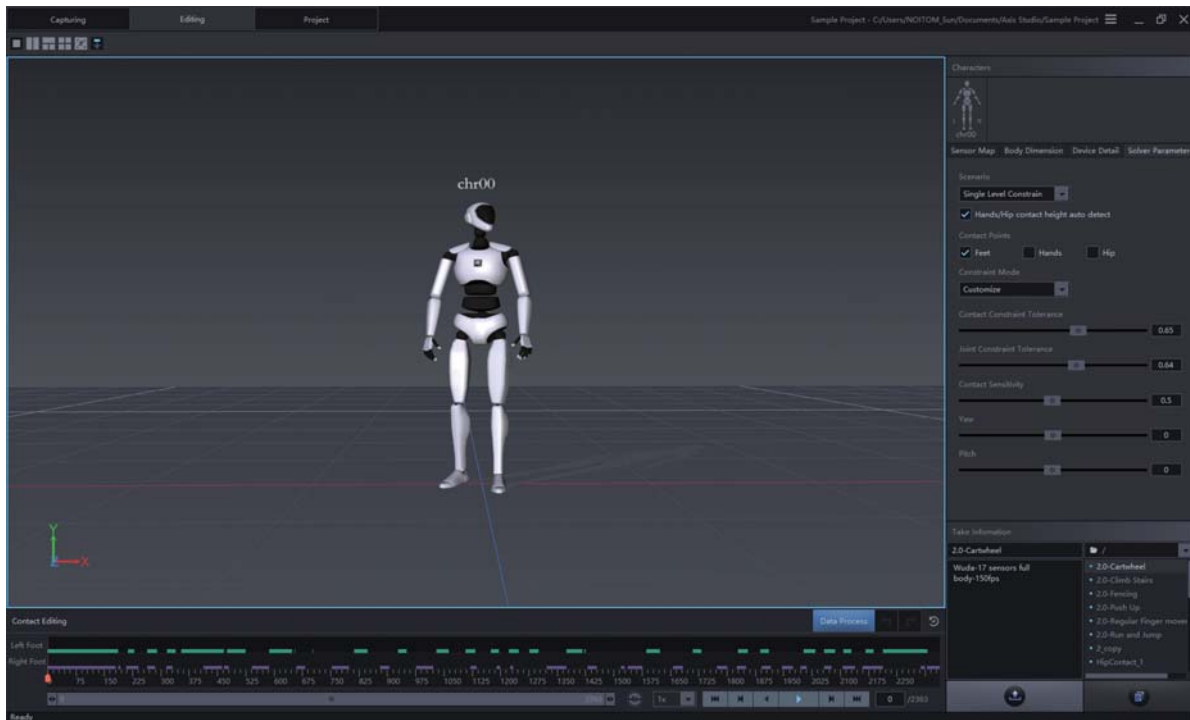
Click red icon start/stop record.

## 4. Editing Interface

In edit view, review and perform post processing of your captured data. Axis Studio provides an abundance of optimized algorithms to achieve an ideal contact result. Adjustments of the effect can be done by single frames or interval frames values.

### 4.1 Data Process

By click “Data Process” button after the first time of opening a new recording data, Axis Studio incorporates an automatic post-processing algorithm that will optimize the original motion capture file, such as make-up lost frames during wireless data transfer or correct sensor error data produced by unwanted muscle movement during real-time motion capture. Several files will take longer than others to open due to the amount of post-processing that may be required.



### 4.2 Contact Editing Window



The line color indicates a floor contact captured on particular body segment.

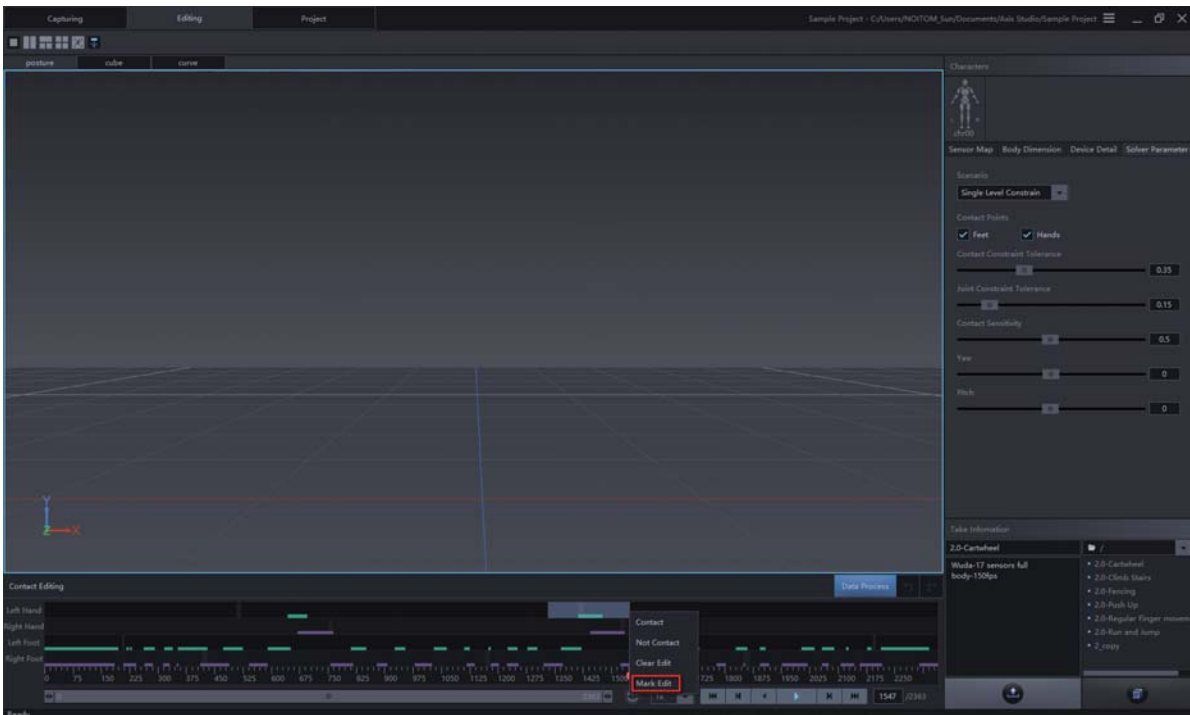
- L Hand: Left hand contact editing area.
- R Hand: Right hand contact editing area.
- L Foot: Left foot contact editing area.
- R Foot: Right foot contact editing area.
- Right click and drag to modify the frames that you want to edit contact/uncontact points.
- Change the length of the frames that will be displayed in the bar in order to edit frame by frame. See example below, a capture with 2363 frames, where the visible frames are not long enough to show and edit each frame. If you change the length to make the bar to show a certain length of frame (e.g frame 864-1023) only then you will be able to select and edit each frame as needed.



- After you edit the body segments contact points successfully, you can click “Data Process” button to get an optimized data result.
- You can choose button to undo your editing process, and button to redo your editing process. After you undo or redo the contact editing, you always need to click “Data Process” button to make your editing become effective.

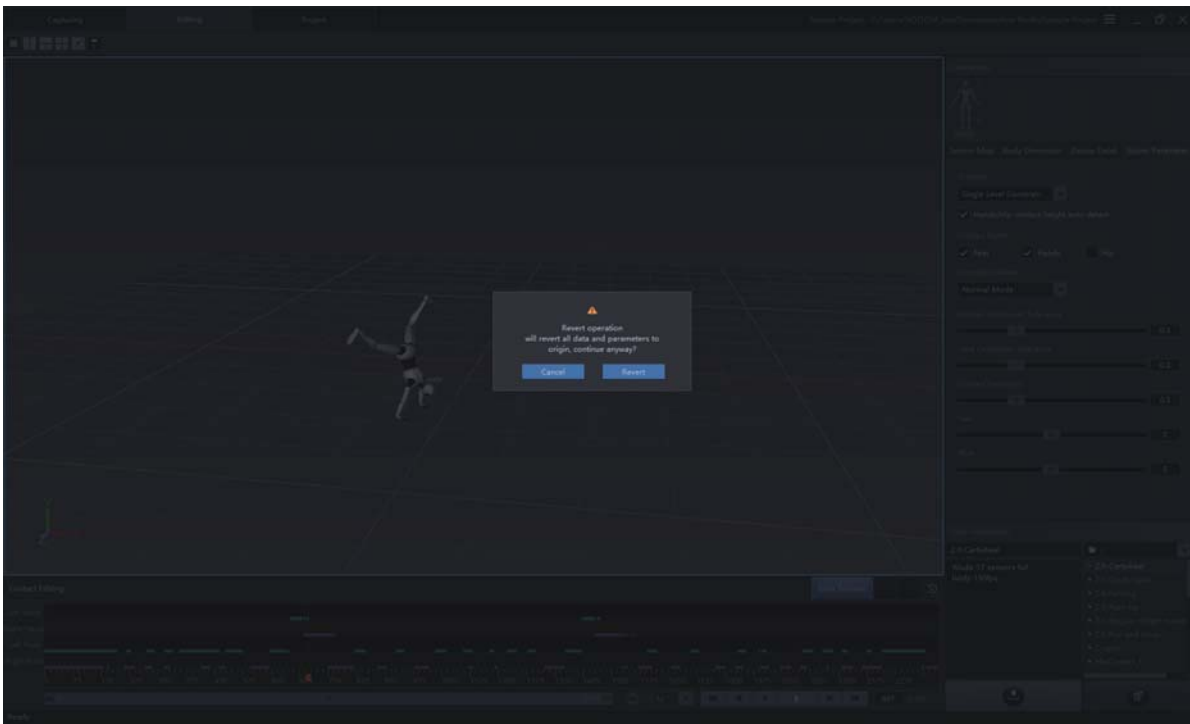


- When you click the data process, you may found other segment might be changed, the reason is the algorithm will work with the whole data, if you change one part, the other data might be impacted, so you need to use the mark edit function to protect the data which you don't want to change. Hold down the right mouse button and drag a piece of data, you will see mark edit function. this function will protect the current editing state.

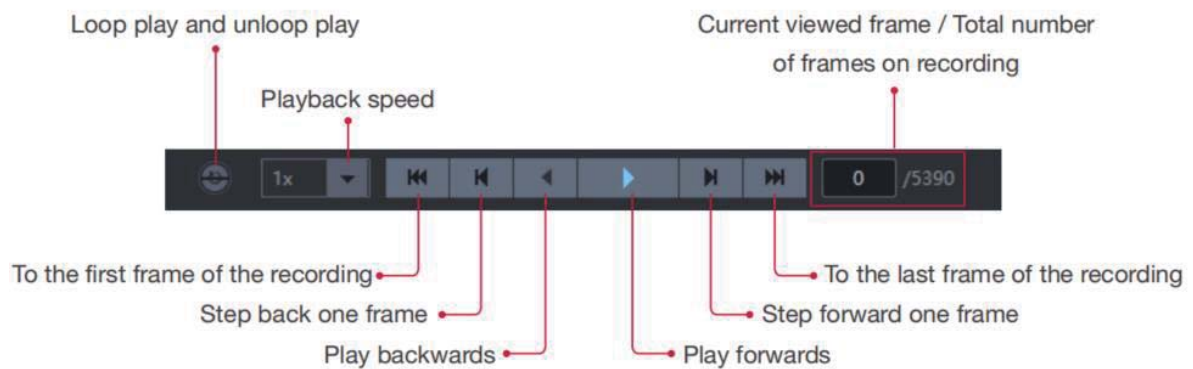


You can also click revert to origin button to back to restore to the state before editing.





### 4.3 Frame Editing Toolbar



### 4.4 Save and export editing work

- The modifications will be automatically saved when you close your motion capture file.
- To save your edits while keeping the original file at the same time, or to save multiple versions of editing work for a single motion capture file, use the “save as” button.
- Click the save as button, then you will be able to input a new name for the file that you want to save, choose “save” then the file you are currently editing will be the new file with the



name that you just renamed, now the original file will remain the same as it was opened.



## 4.5 Body Dimension

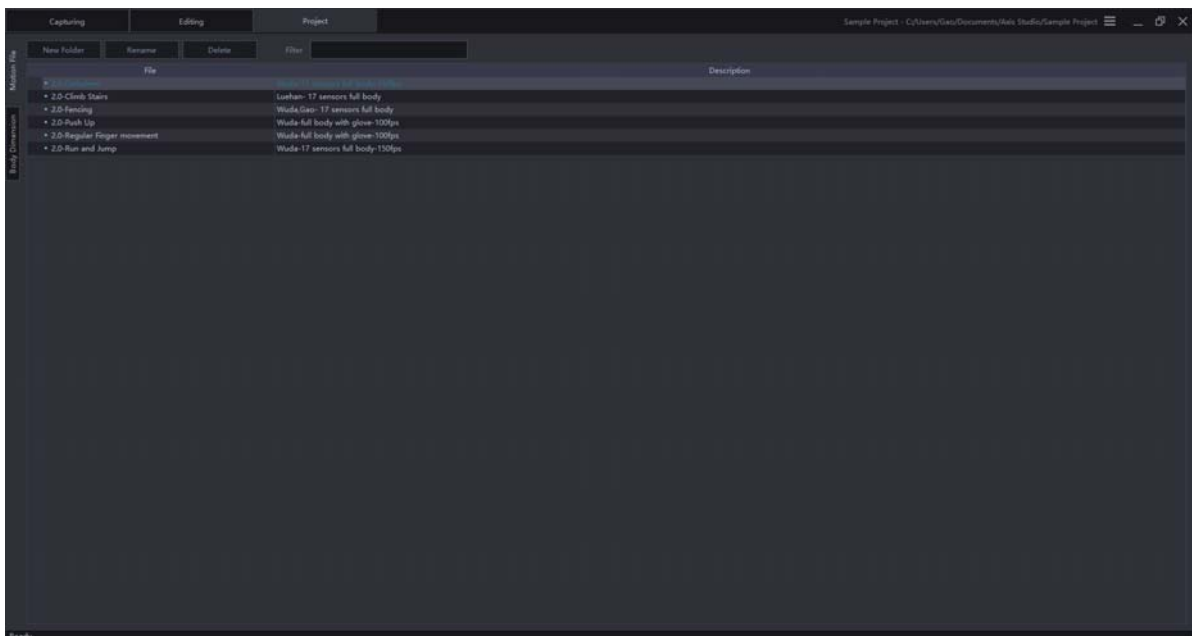
You can still adjust the body dimension of the model in the editing process. If you want to create a custom body size based on the original template, first select the body size template you want to use. The original body size name will automatically add behind, then you can enter the appropriate body size, click save to project to save. The original bone size will not be covered. If you do not save to project, this modification is temporary.



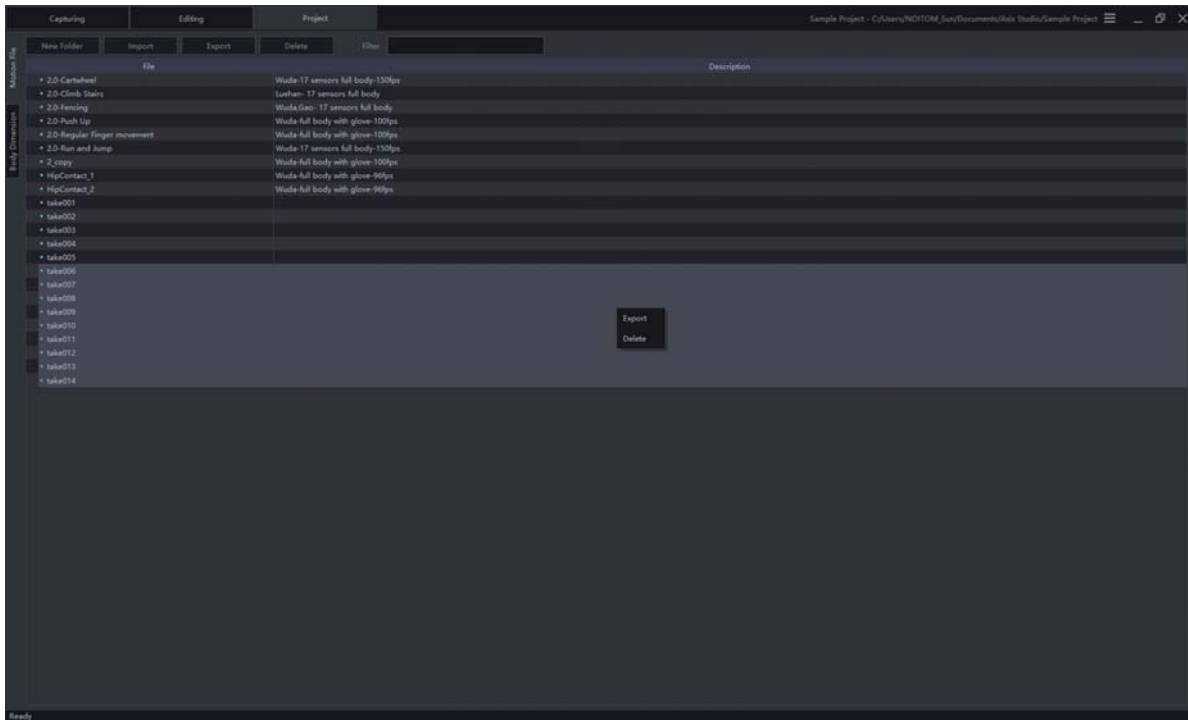
## 5. Project Interface

Manage motion capture files in this project.

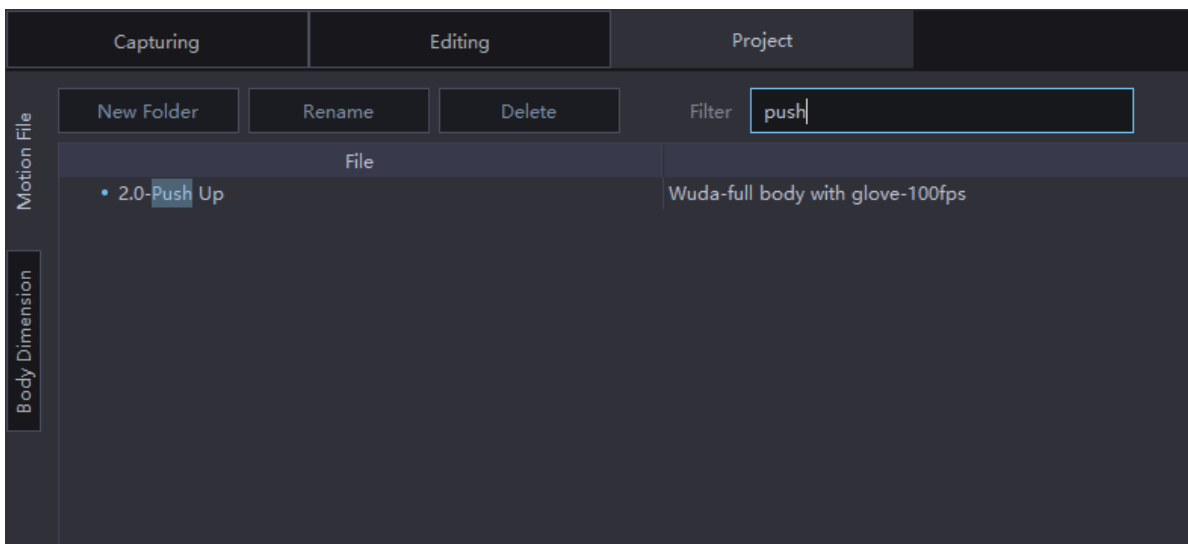
### 5.1 Motion File



- You can Rename and Delete your files directly.
- You can batch export or import captured data.



- Create new folders to organize large amount of capture files in this project to optimize file management.
- If you have a lot of capture files in one project, you will be able to tap key words in the filter to find your file. For example, I tapped " push " in the filter to find the three files with the word walk in the title.



## 5.2 Body Dimension

Manage body dimension profiles that will be used in the working project. You can modify the skeleton length directly in this page. The body dimension file is a simple xml file which includes the body dimension name and length for each body segment.

File	Import	Export	Delete	Filter	Head	Neck	Body	Shoulder Width	Upper Arm	Forearm	Palm	Hip Width	Upper Leg	Lower Leg	Heel Height	Foot Length
body-male					17	10.5	58	38	28	26	19	22	45	42	9.5	27
female150					15.43	7.71	55.38	29	18.5	21	15.5	20	35.51	34.86	6.62	21.5
female175					15.75	8	52.96	30	20.25	22	16	20.5	37.85	36.14	6.77	22
female160					16.07	8.29	53.82	31	21	23	16.5	21	39.4	37.22	6.82	22.5
female165					16.6	8.82	55.75	32	21.5	23.5	17	21.75	40.45	38.58	7.23	23.5
female170					17.12	9.34	57.6	33	22	24	17.5	22.5	41.51	39.43	7.54	24.5
female175					17.65	9.82	59.33	33.87	22.65	24.71	18	23.16	42.77	40.63	7.76	25.22
female180					18.18	9.91	61.08	34.94	23.29	25.41	18.53	23.82	44.02	41.81	7.98	25.94
female185					18.68	10.32	62.84	35.91	23.84	26.12	19	24.48	45.28	43.02	8.2	26.66
male160					14.95	8.97	52.34	30	25	24.5	16.5	17.5	39.37	39.37	7.08	23
male165					15.45	9.22	54.09	31	25.75	25.25	17	18	40.62	40.62	7.38	24
male170					15.95	9.47	55.84	32	26.5	26	17.5	18.5	41.87	41.87	7.69	25
male175					16.45	9.72	57.58	32.75	27.25	26.75	18	19.25	43.12	43.12	7.85	25.5
male180					16.95	9.97	59.34	33.5	28	27.5	18.5	20	44.37	44.37	8	26
male185					17.43	10.25	61.02	34.43	28.78	28.28	19	20.56	45.65	45.65	8.08	26.27
male190					17.92	10.55	62.71	35.36	29.56	29.03	19.53	21.11	46.91	46.91	8.44	27.44
male195					18.4	10.82	64.42	36.29	30.33	29.79	20.04	21.87	48.18	48.18	8.67	28.17

- You can Add and Delete a Body Dimension file.
- You can Import and Export a Body Dimension file. Body Dimension file is an \*. xml file. You can copy and paste the \*. xml body dimension file to anywhere.

## 6. Menu

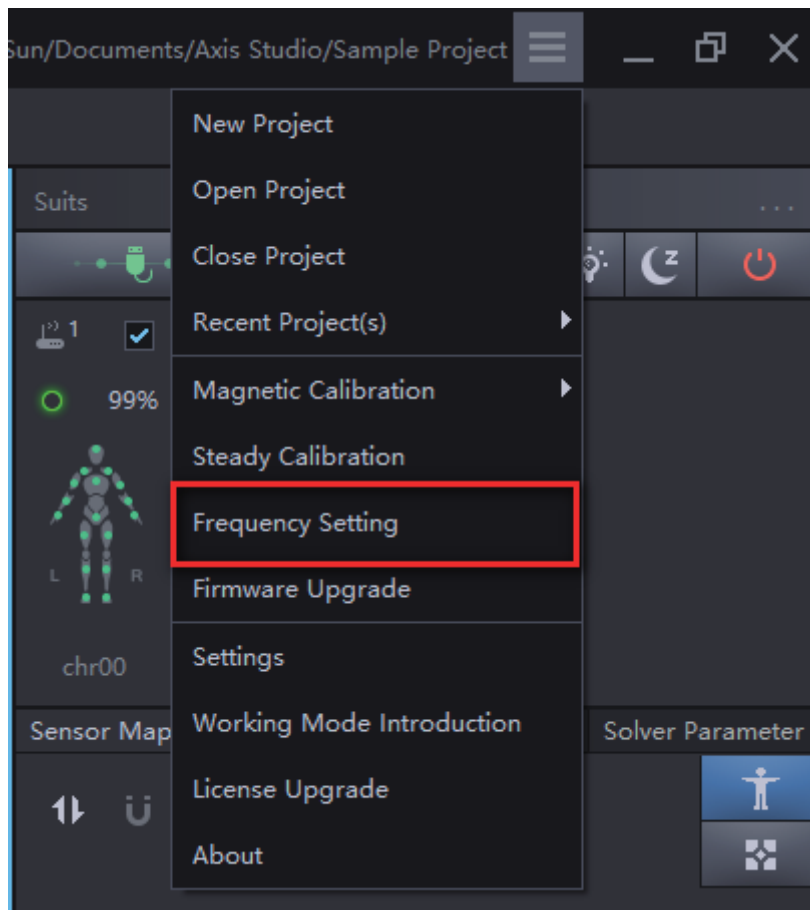
### 6.1 Overview

- New Project: Create a new project.
- Open Project: Open an existing project.
- Close Project: Close the project which is opened now.
- Recent Project: A shortcut to find the lasted projects that you opened before.
- Magnetic Calibration: Calibrate your sensors to resist magnetic interference.
- Steady calibration: Calibrate the gyroscope of the sensor.
- Frequency Setting: PN3 support 3 different data transfer frequencies. If you are using more than one set PN3 at the same time, you need to make sure the these sets of PN3 are using different frequencies.
- Firmware Upgrade: Upgrade your transceiver,sensor and glove separately.
- Settings: Basic software settings.
- Working mode introduction: Introduce 6 working mode.
- License update: When you purchase the payment function, click here to input the activation code provided by Noitom company to activate your payment function.
- About: Including Axis Studio version,Calculation Engine Version and Usage License.

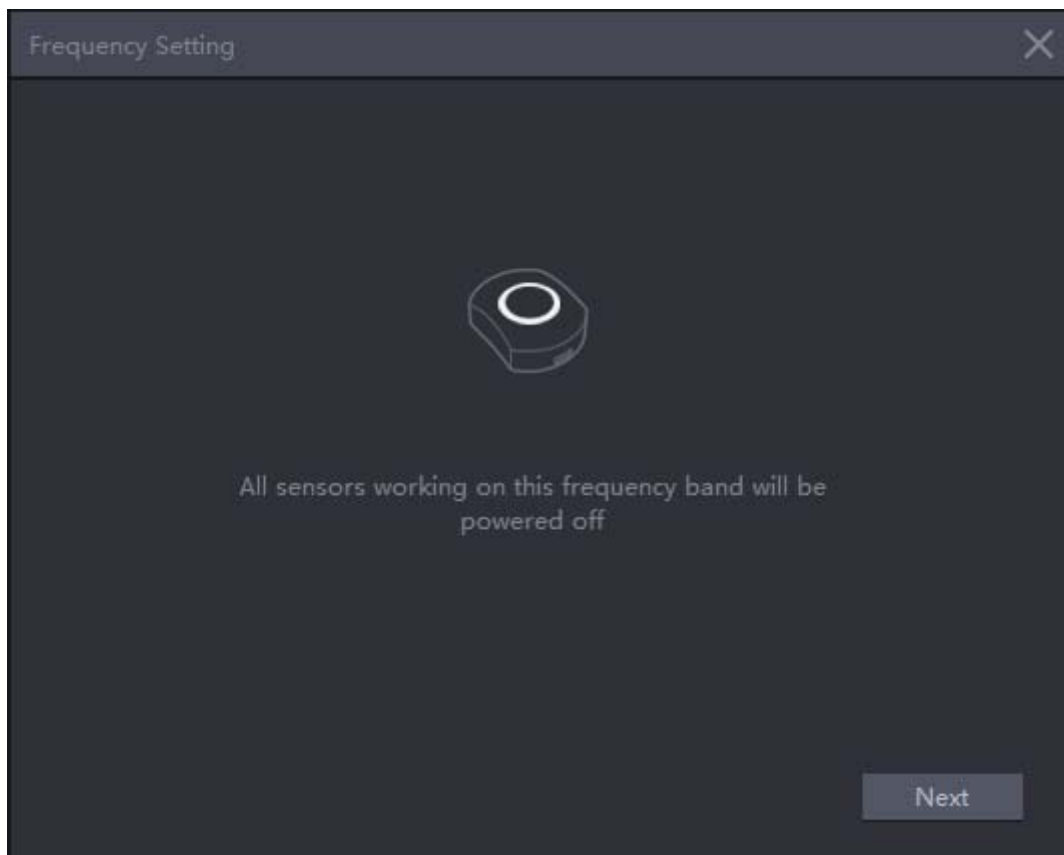
### 6.2 Frequency Setting

When there are multiple pn3 devices in one site, or the current signal quality shows bad, you can use frequency setting function.

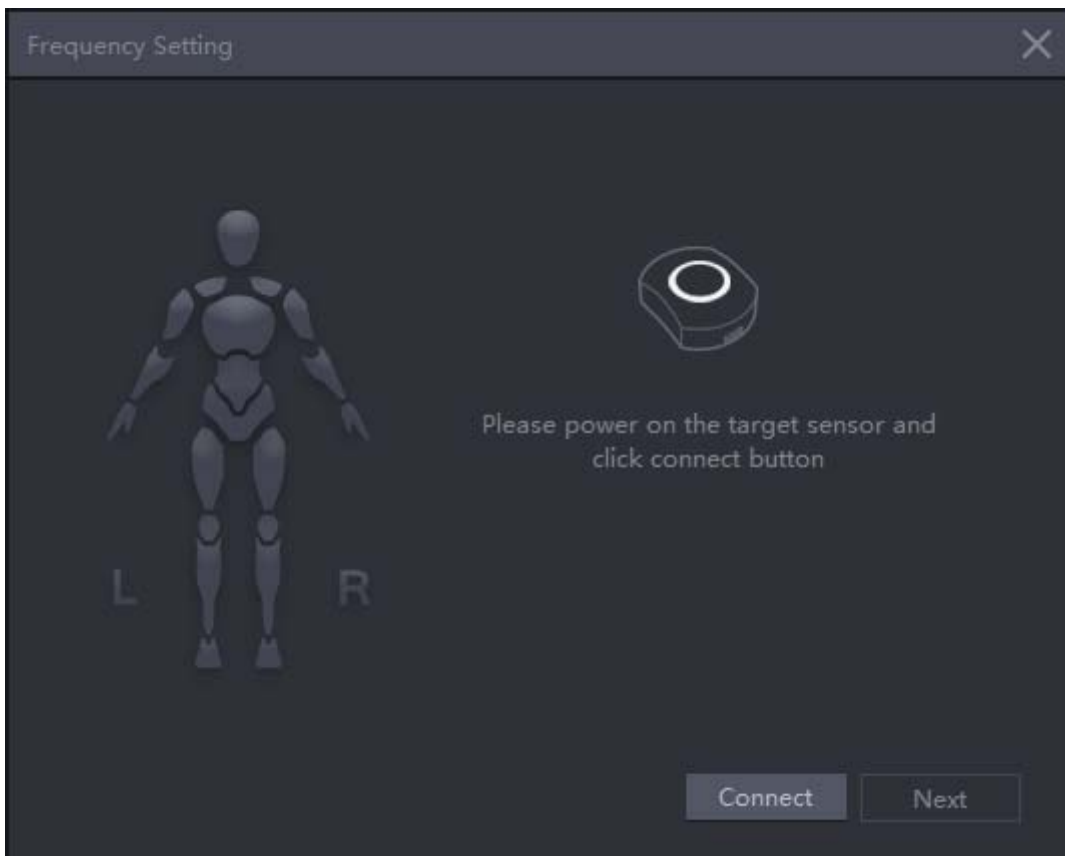
- Click frequency switch function in the menu.



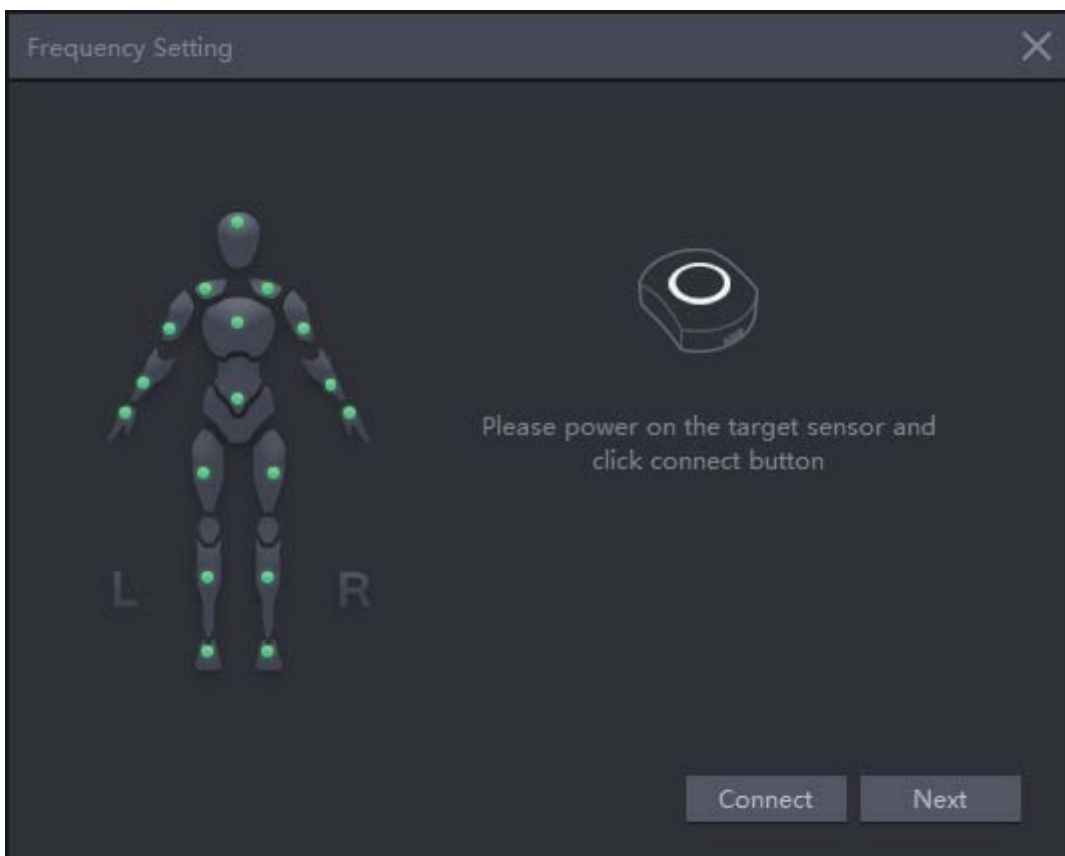
- Check the quantity of connected sensors in the left corner of the popup window.



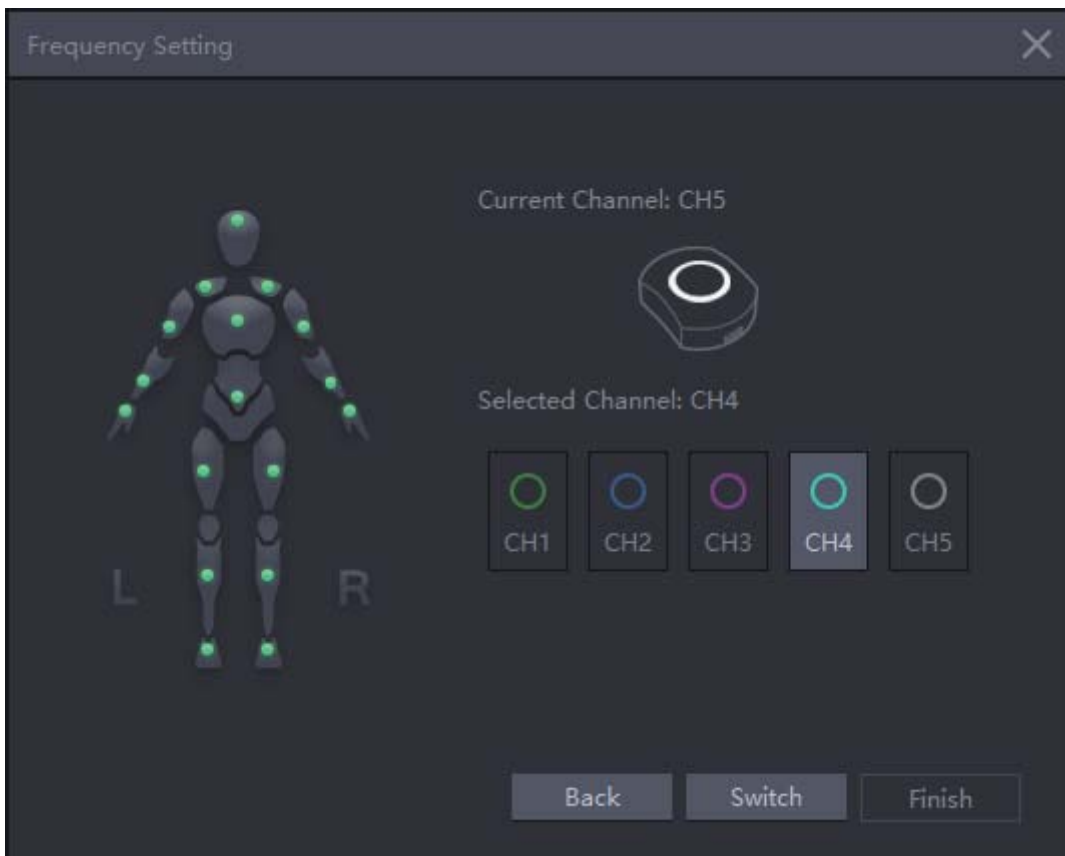
- Turn on all the sensors, then click connect button.



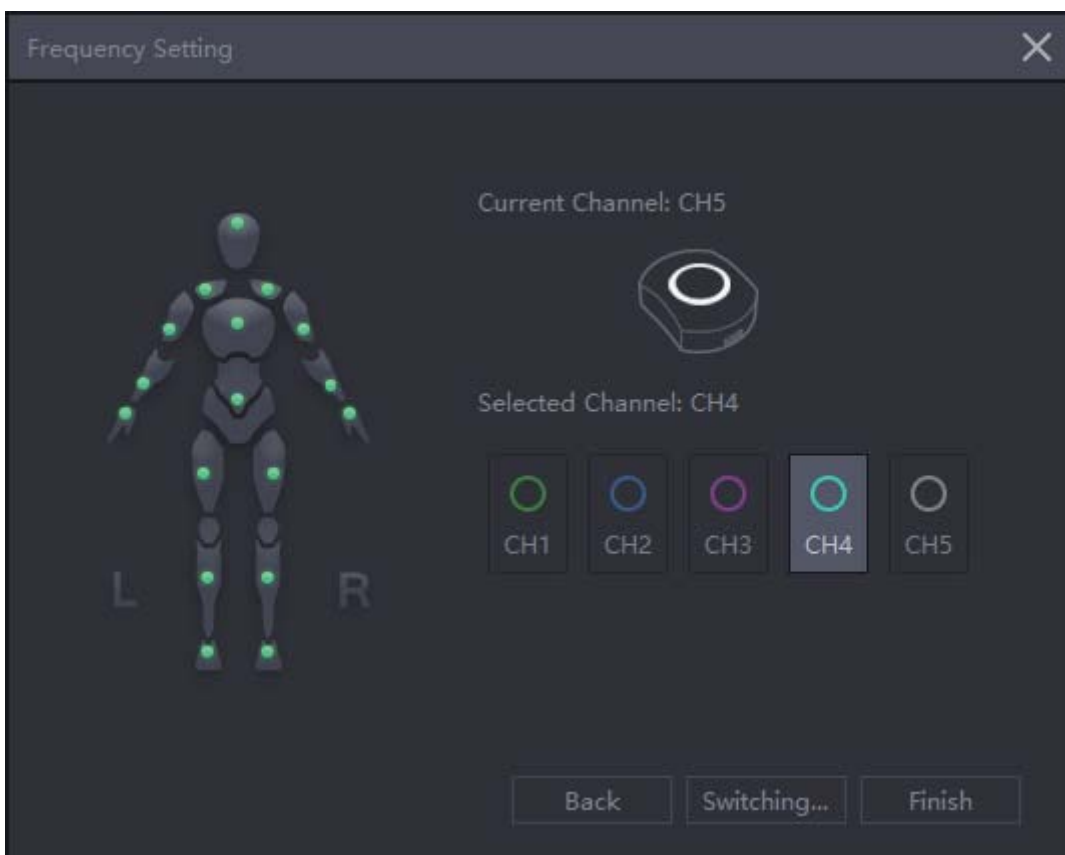
- You will see the sensors are shown in the left side.



- Select the channel.

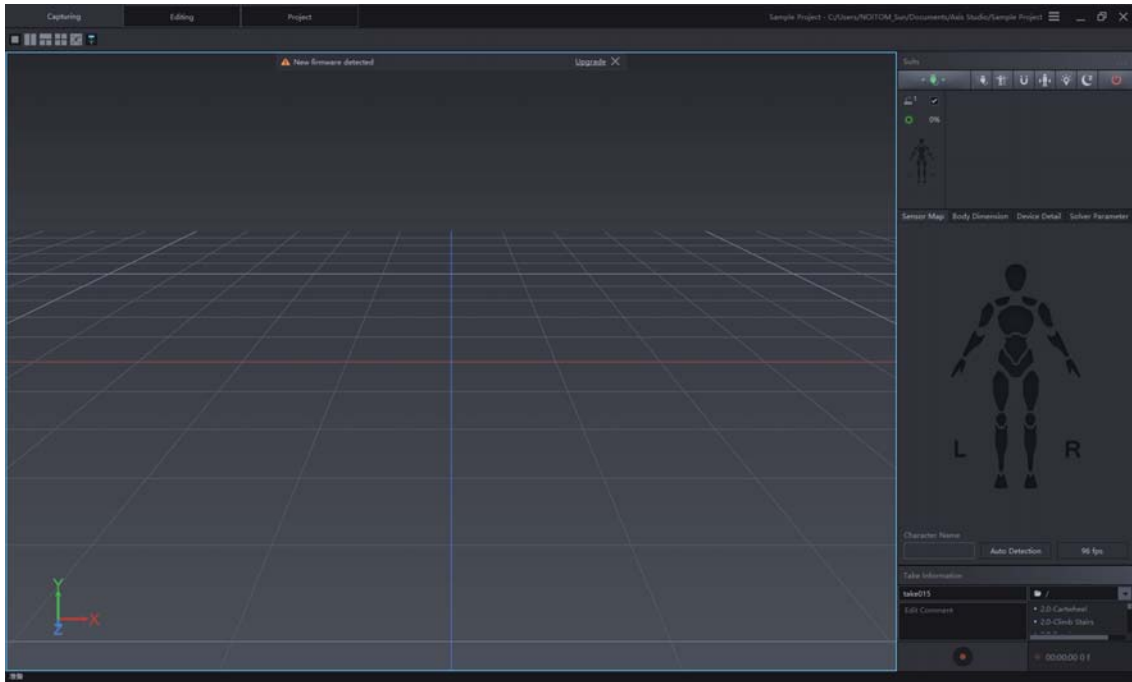


- Next Switch, all sensor LED color should be changed accordingly, then check the connection sensor number in the left corner of the popup window, make sure it matches the actual sensor number you are using, then click Finish.

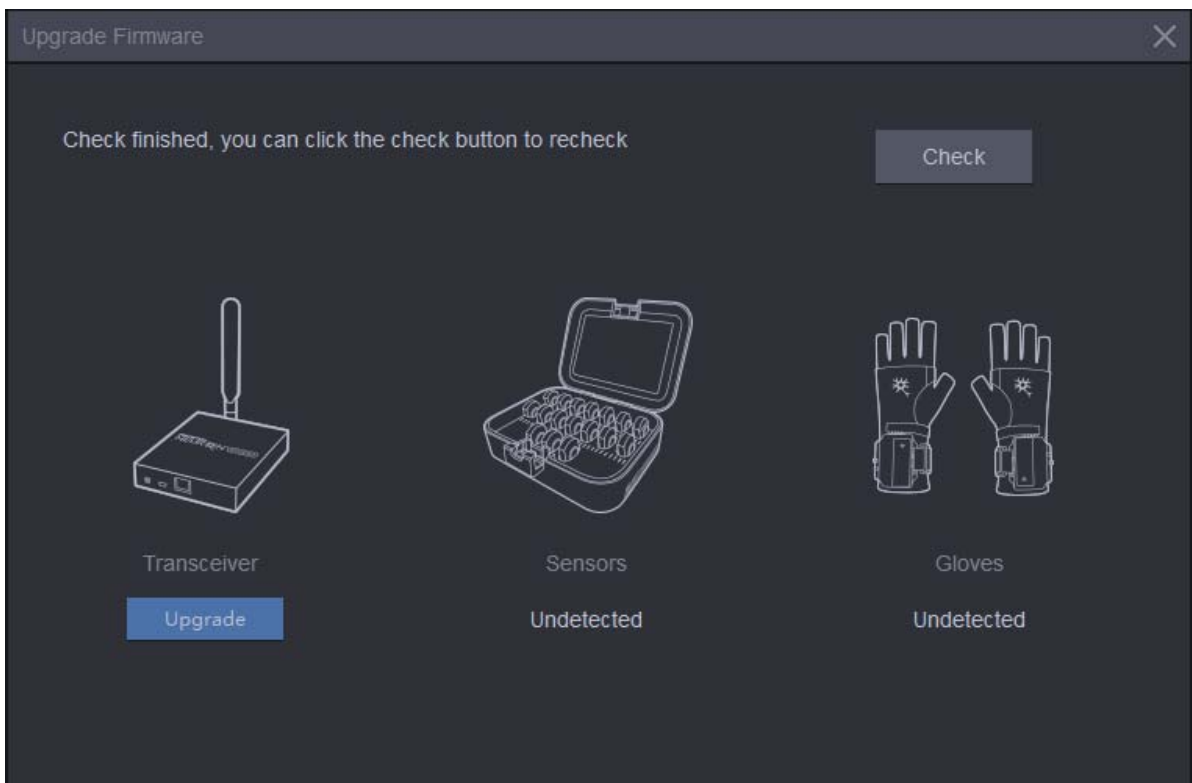


## 6.3 Firmware Upgrade

- If the firmware is not the latest version, there will be prompted at the top of the software interface.



- Click Upgrade, it will jump to the following interface, and if you click firmware upgrade in the menu bar, it will also jump to the interface.



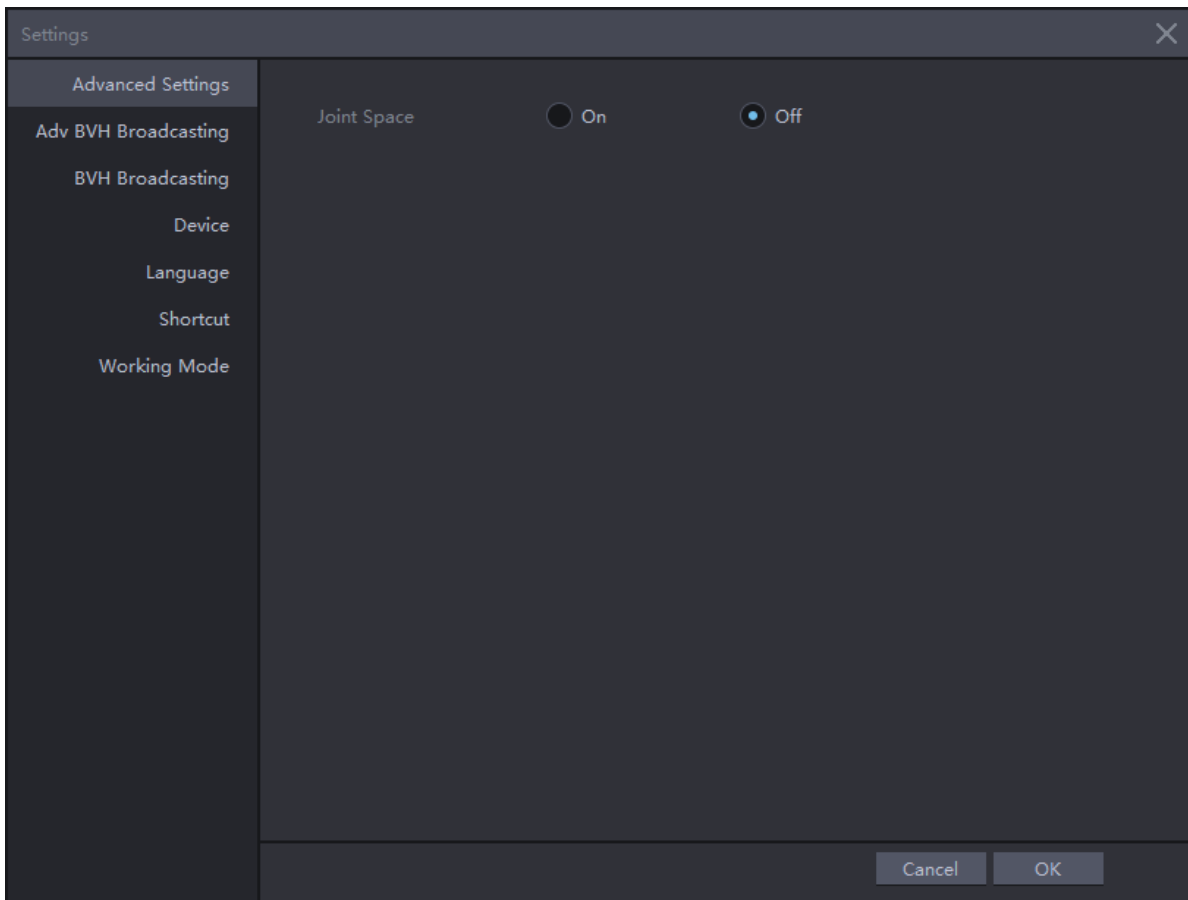
- Click upgrade, then you will upgrade the device.



## 6.4 Settings

### Advanced setting

Control joint space on/off, only works in editing mode.

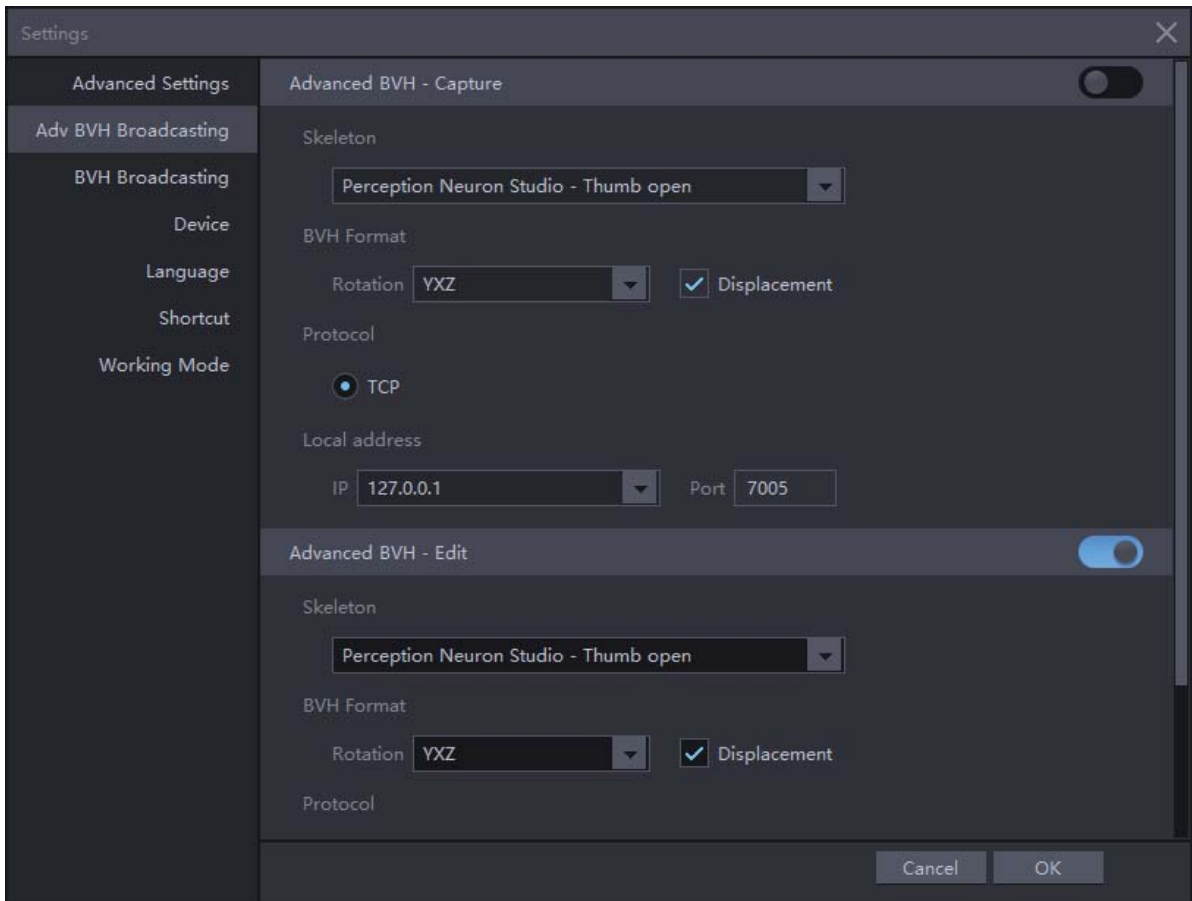


### Adv BVH Broadcasting

BVH used in Autodesk software is a special BVH format. If you use Autodesk series software, use advanced BVH data broadcast in axis studio.

Function	Description	Used for
Advanced BVH-Capture	Broadcast capture data	Motion builder, Maya
Advanced BVH-Edit	Broadcast Edit data	Motion builder, Maya

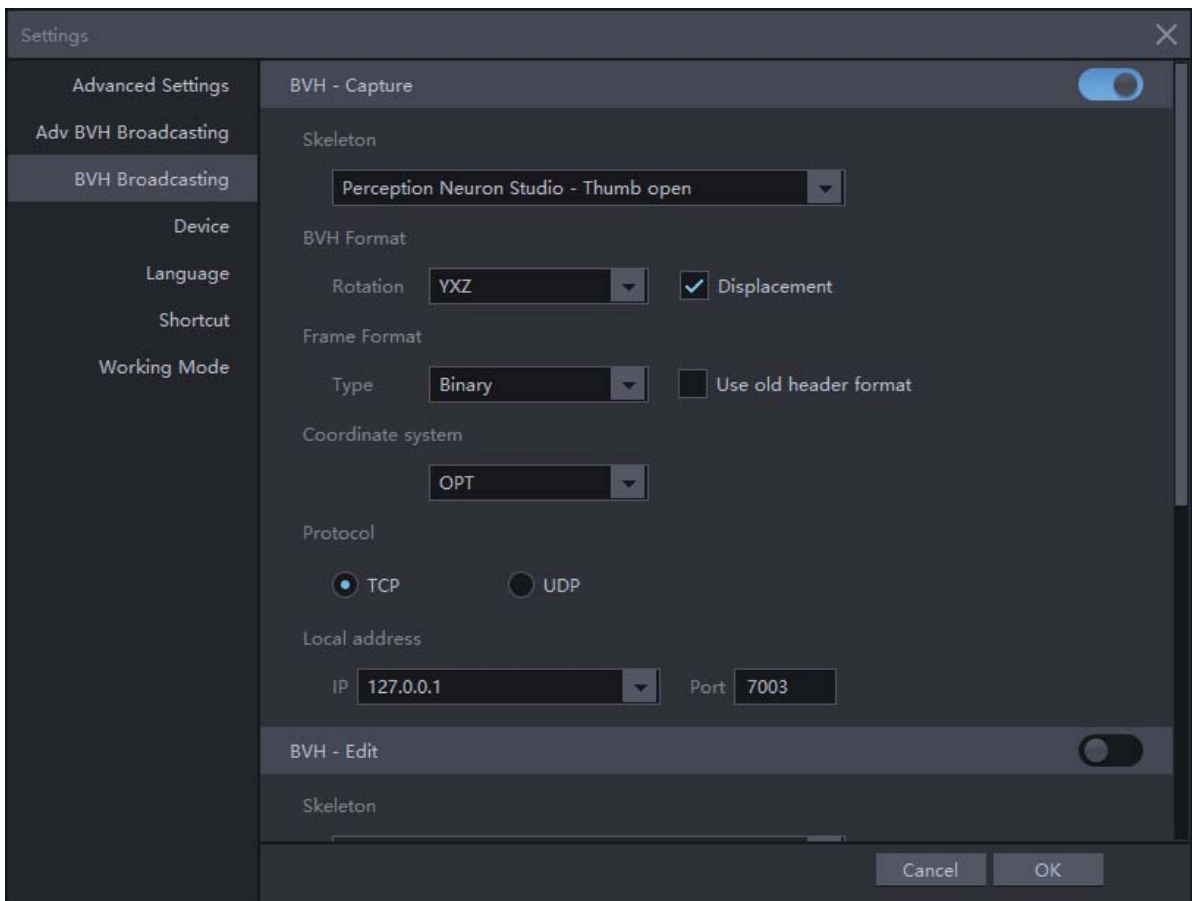
- Slide the upper right slider to enable the function.



## BVH Broadcasting

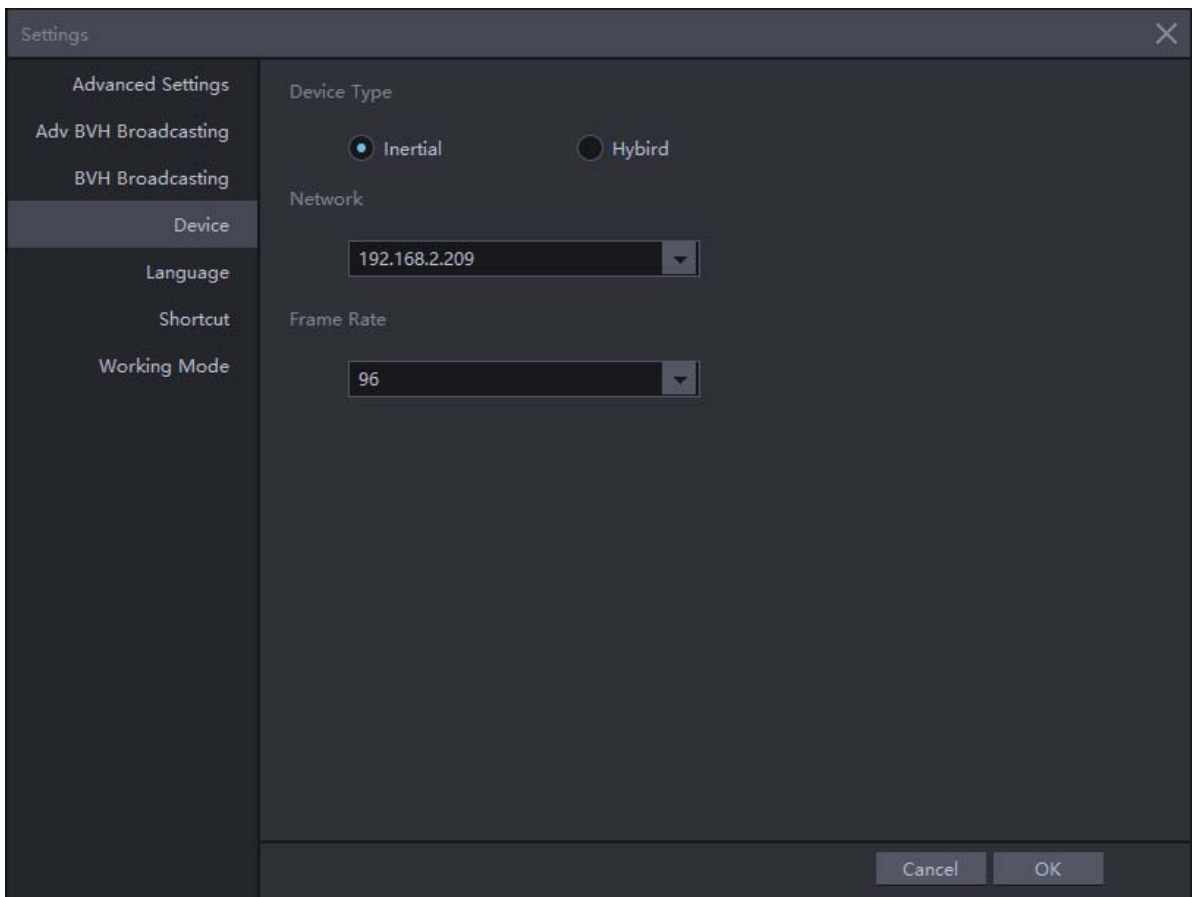
Function	Description	Used for
BVH-Capture	Broadcast capture data	Unity, UE
BVH-Edit	Broadcast Edit data	Unity, UE

- Slide the upper right slider to enable the function.

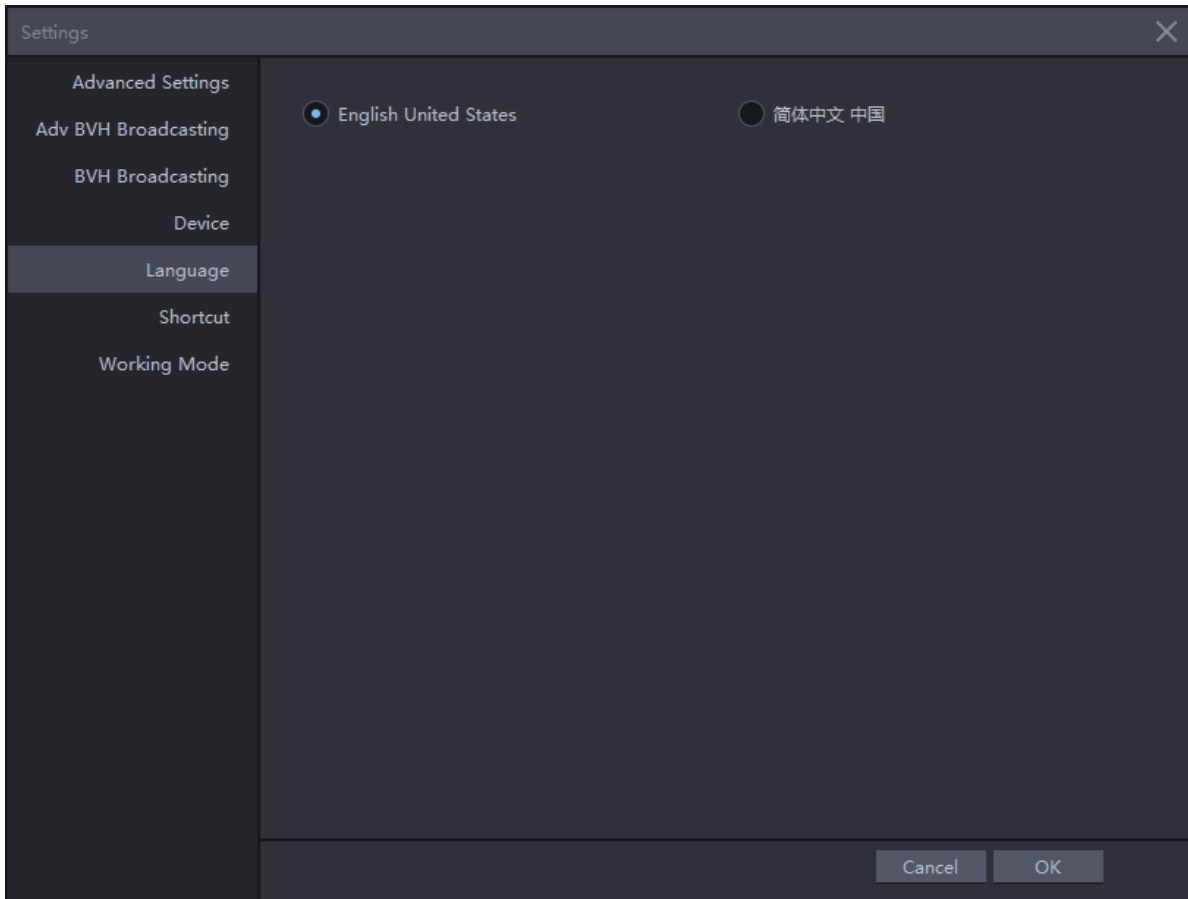


## Device

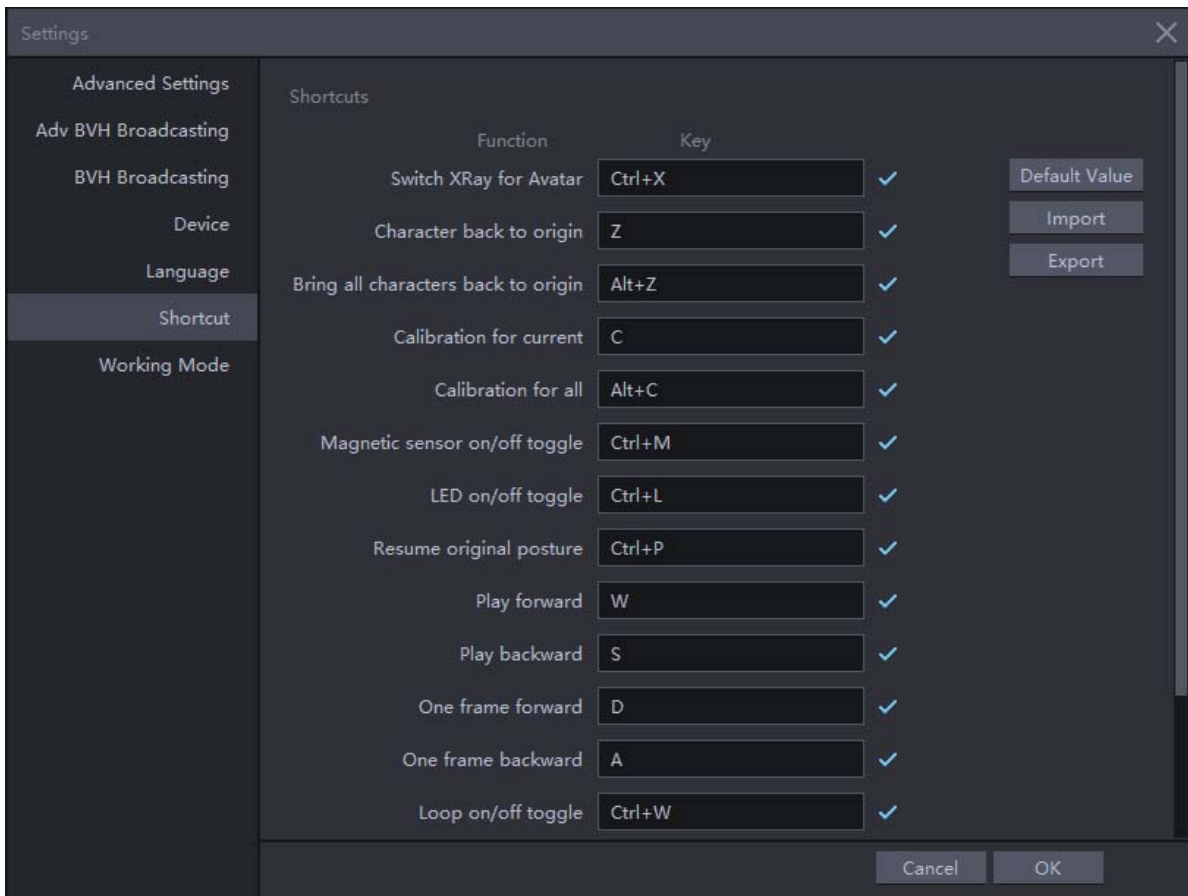
- Switchable device type
- Select network
- Unable to select frame rate



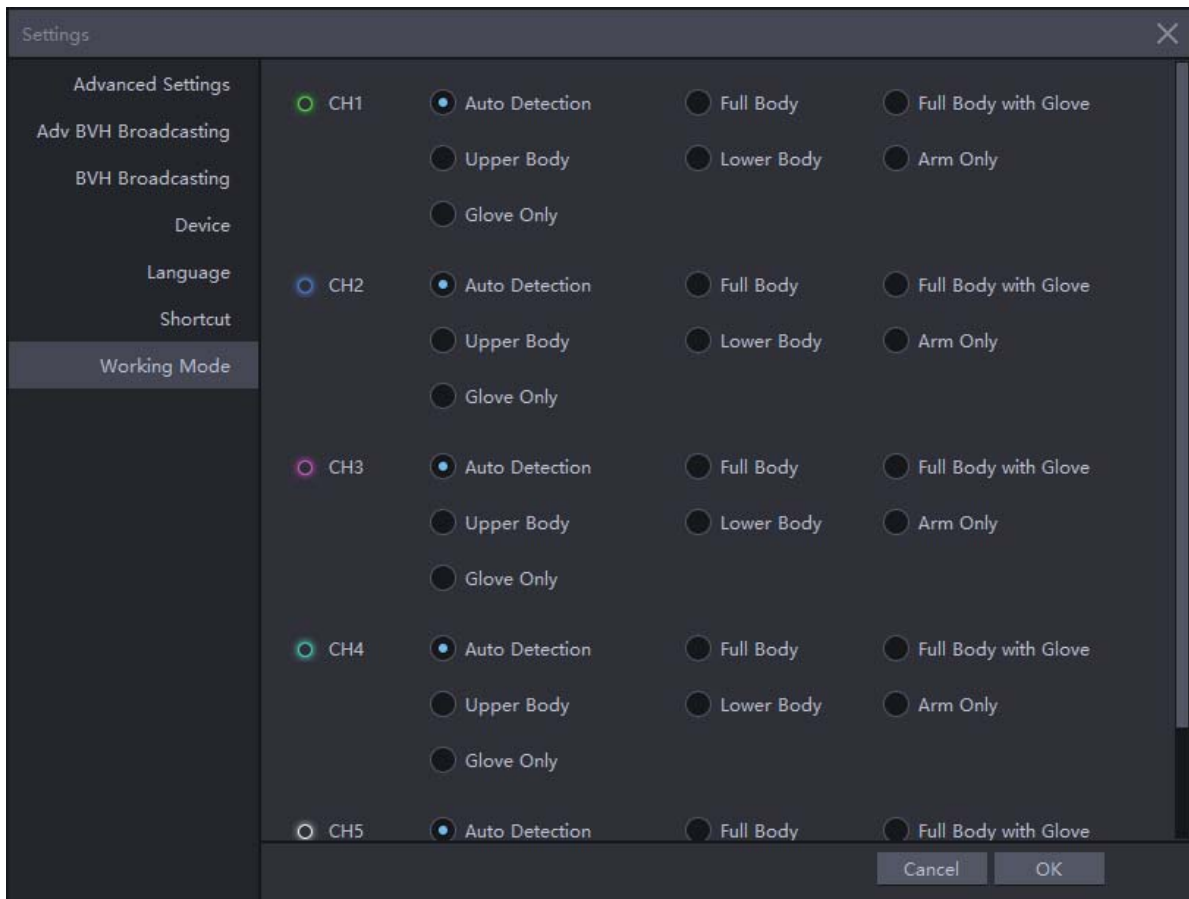
## Language



## Shortcut



## Working Mode



### FCC Caution:


Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.


### FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with RF radiation exposure limits set forth for an uncontrolled environment.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Product Name: Perception Neuron 3  
Model: NTM-MCP-05-TC-01  
Supply by USB: 5V  25mA  
FCC ID: 2ABTR-NTM-MCP05TC01  
MSIP ID: R-C-ntm-MCP05TC01  
Manufactured by: Beijing Noitom  
Technology Ltd.  
Address: 502, Tower A,  
28 Xijiekouwai Blvd, Beijing, China  
MADE IN CHINA



Product Name: Perception Neuron 3  
Model: NTM-MCP-05-BS-01  
Supply by USB: 5V  20mA  
FCC ID: 2ABTR-NTM-MCP05BS01  
MSIP ID: R-C-ntm-MCP05BS01  
Manufactured by: Beijing Noitom  
Technology Ltd.  
Address: 502, Tower A,  
28 Xijiekouwai Blvd, Beijing, China  
MADE IN CHINA

