

HARITORA-X

User Manual

**Some images are written in Japanese, but we will replace them later.*

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1 Before You Begin

1.1 Introduction

Thank you for your purchase the HaritoraX.

Please read this manual carefully, observe the precautions, and enjoy a correct and safe body tracking life.

1.2 Requirements

To use Haritora X, you need.

- i. PC running SteamVR with Windows 10.

Windows 10 21 H1 or later, SteamVR 1.17 or later.

- ii. VR headset that connects to SteamVR.

Oculus Quest, Quest2, Rift S, VIVE(1st), VIVE Pro, FUJITSU

FMVHDS1, Valve index,

- iii. Bluetooth adapter for pc

**This is required if your computer does not have the Bluetooth function.*

Unbranded Bluetooth adapter for pc sold on Amazon, etc. that claim to support Bluetooth 5.0 (often printed with BT 5.0) cannot connect to Haritora X due to problems such as not supporting SPP profile. Please use a Bluetooth USB adapter that has already been tested.

Verified working Bluetooth adapter for pc

<i>Manufacturer</i>	<i>Model name</i>
<i>TP-Link</i>	<i>UB400</i>
<i>TP-Link</i>	<i>UB4A</i>

iv. USB wall charger

Please prepare a USB wall charger, output: 5V/1A or higher.

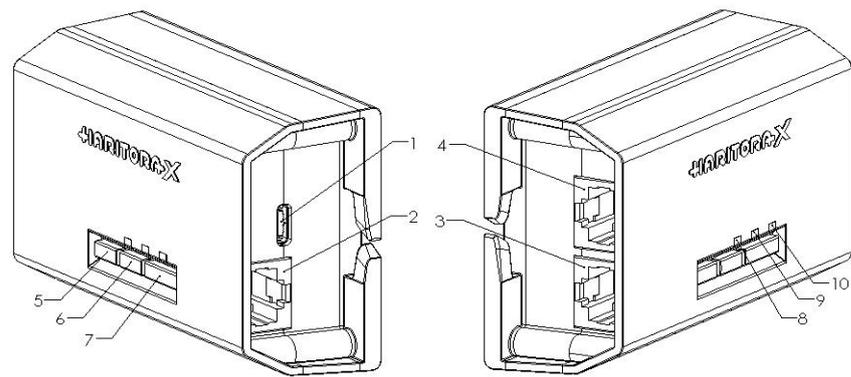
1.3 内容物 Included Items

Name	Quantity
Main unit	1
Sub unit above the knee	2
Sub unit below the knee	2
Connection cables	4
USB cable (Type C)	1
Special suits	1
Warranty	1

1.4 Overview

1.4.1 Main unit

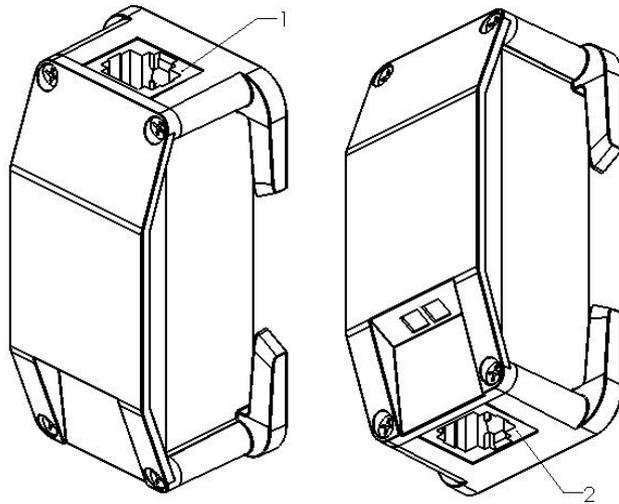
This unit is attached to the chest. The main unit also contains a sensor.



1. USB connector for charge
2. Sub unit connector for left foot
3. Sub unit connector for right foot
4. Sub unit connector for expansion
5. Button 1
6. Button 2
7. Power button
8. Blue LED
9. Green LED
- 10.Red LED

1.4.2 Sub unit above the knee

Sensor to be mounted above the knee.

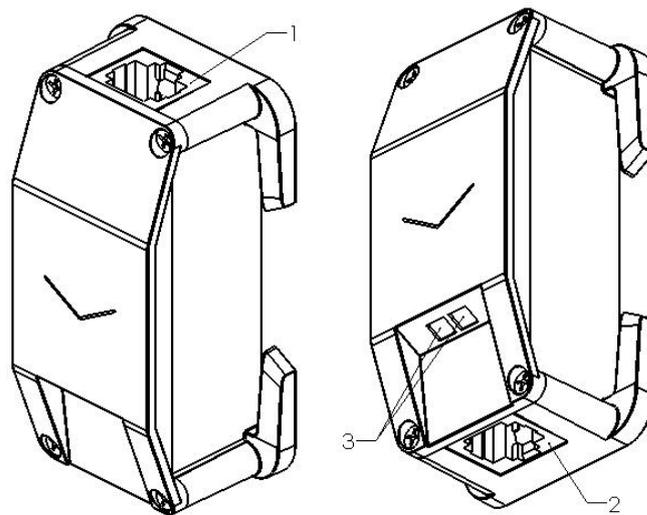


1. Upper connector

2. Lower connector

1.4.3 Sub unit below the knee

Sensor to be mounted below the knee. The “V” mark is on the case.



1. Upper connector

2. Expansion connector

3. distance sensor

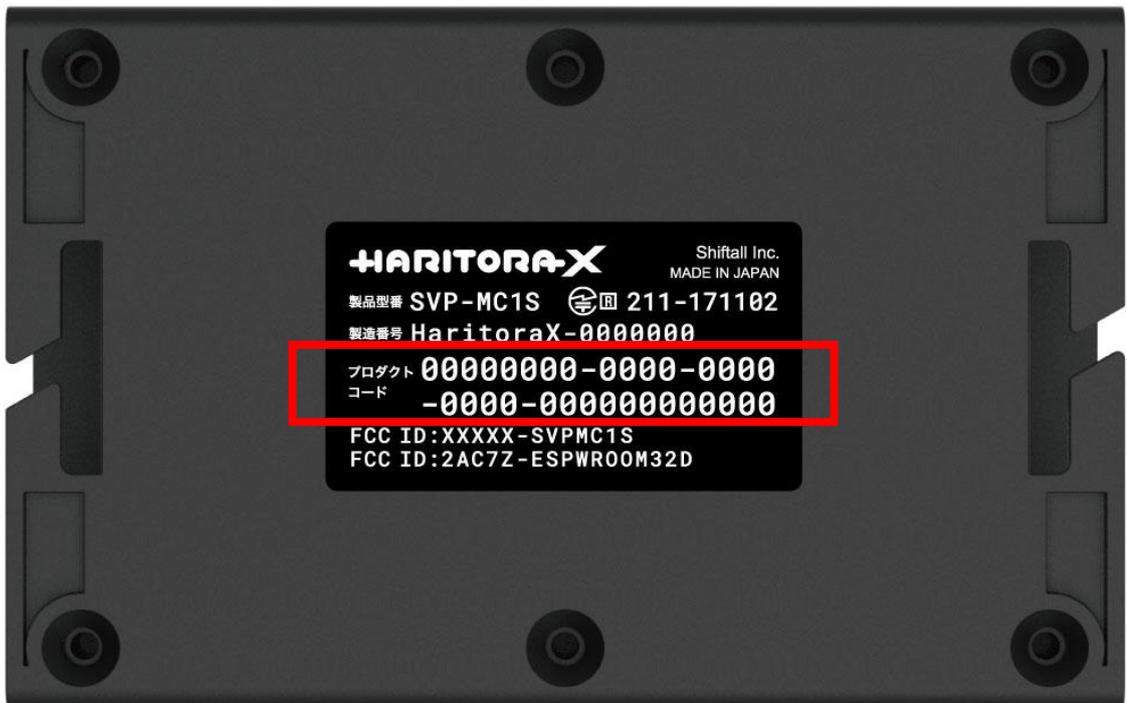
1.5 Important safety information

TBD

- **Attach the English version of the image.**

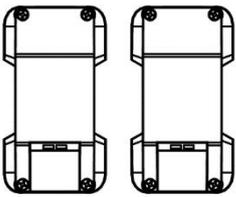
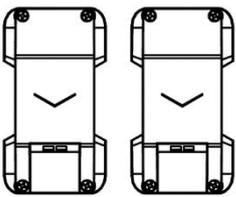
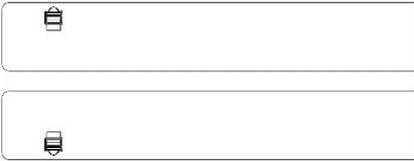
2 Put on the HaritoraX

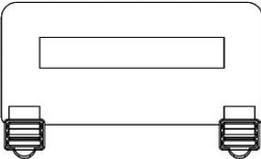
Copy the "Product Code" printed on the sticker on the rear of the main unit
by hand or camera to use it for setup later

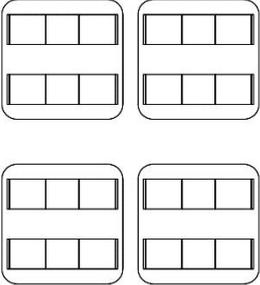
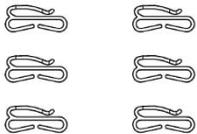
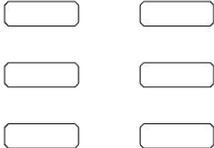


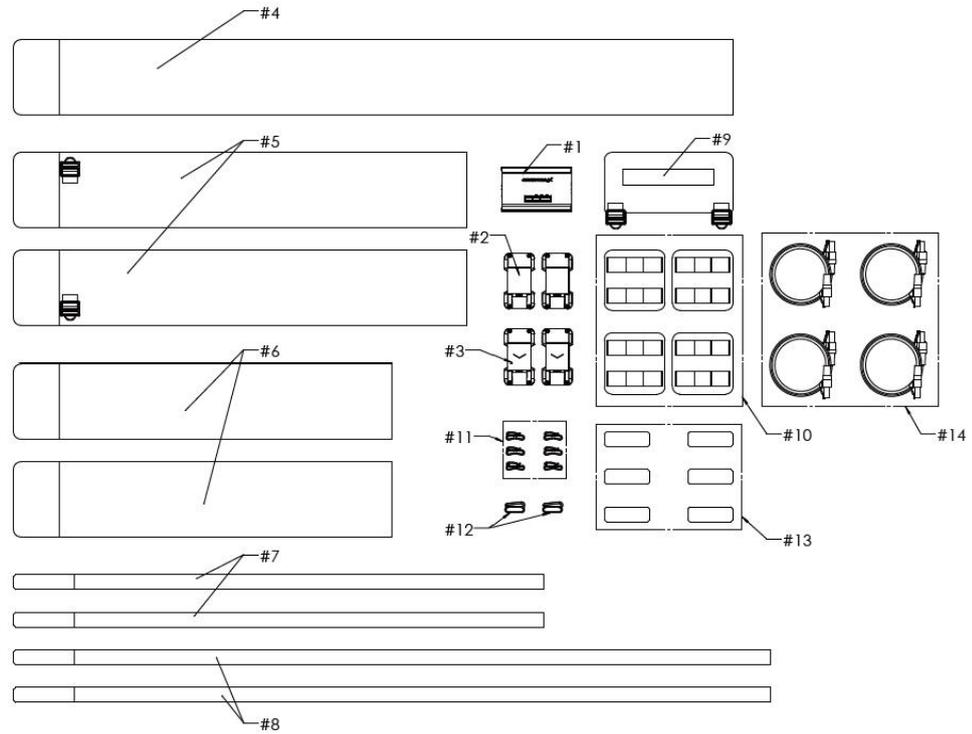
2.1 Assemble the special suit

2.1.1 List of parts required to assemble the special suit

No.	Name		Quantity
#1	Main unit		1
#2	Sub unit above the knee		2
#3	Sub unit below the knee		2
#4	Chest belt		1
#5	Above the knee belts		2

#6	Below the knee belts		2
#7	Connection cable protection straps (short)		2
#8	Connection cable protection straps (long)		2
#9	Main unit fixing pad		1

#10	Sub unit fixing pads		4
#11	Cable clips for special suit A		6
#12	Cable clips for special suit B		2
#13	Cable fixing tapes		6



1.1.1 Assemble

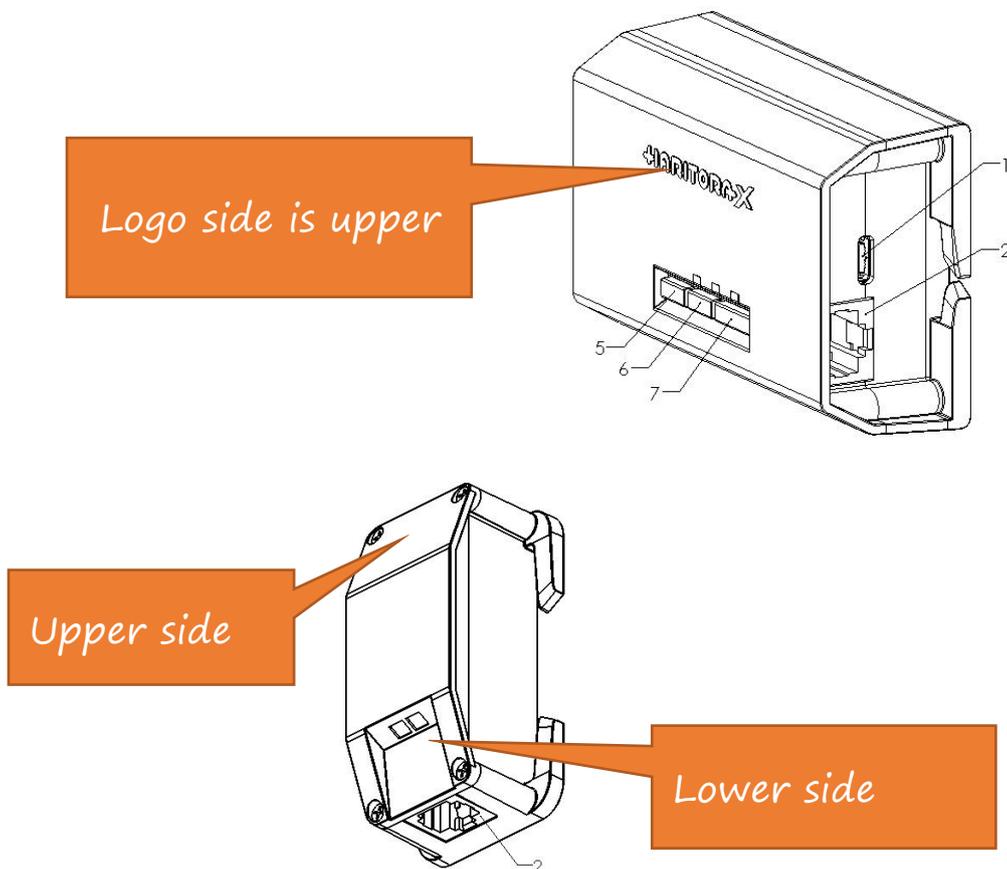
動画: <https://youtu.be/b8hboLWZvo4>

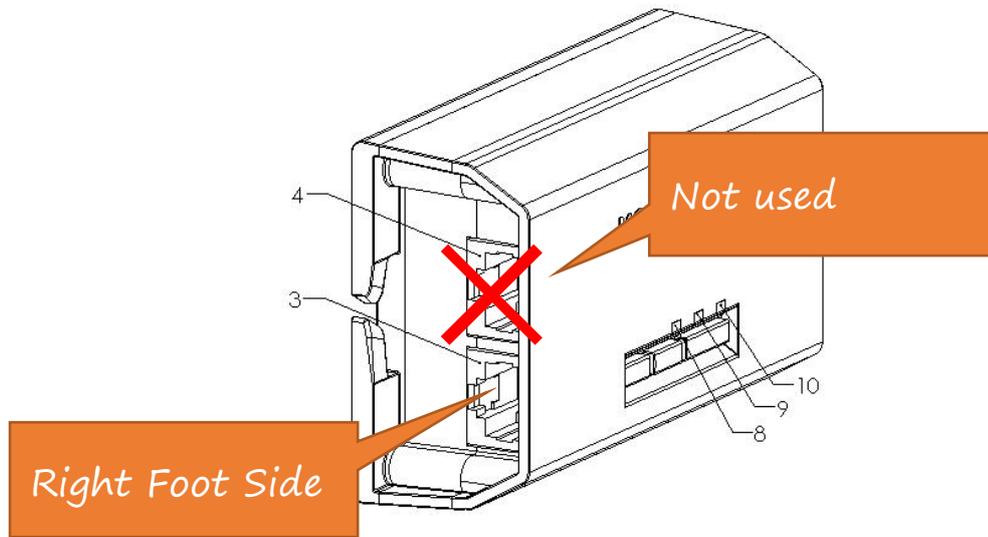
Video: <https://youtu.be/b8hboLWZvo4>

TBD

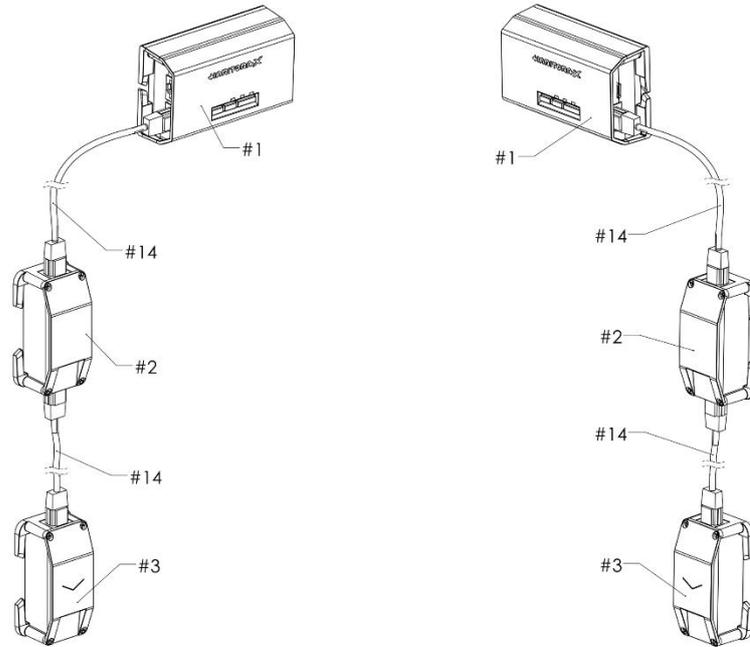
1.2 Check the connection direction of each unit

Each unit has a vertical orientation. If you install the unit in the wrong orientation, it will not work. If you turn on the power of the main unit with the wrong connections, the three colored LEDs will continue to blink simultaneously.





Connection diagram between units



1.3 Put on the HaritoraX assembled

Movie: <https://youtu.be/zEuZMOnenY4>

TBD

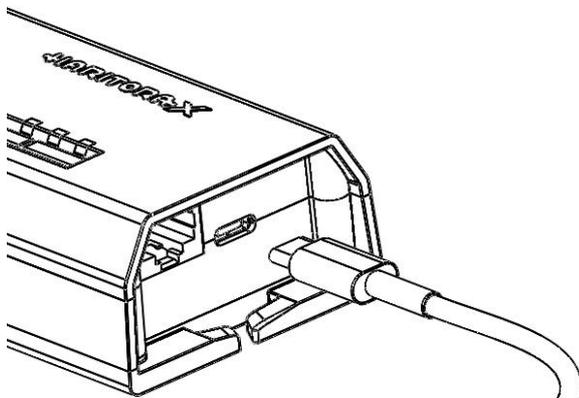
2 How to use at the main unit

This section explains how to charge and operate the main unit and how to connect to Bluetooth.

2.1 Charging

Please charge the battery before using the product.

Connect the main unit to a computer or USB wall charger with the supplied USB cable.



- i. Red LED will light up while charging

- ii. It takes about 4 hours and 30 minutes from empty to fully charged (with power off).
- iii. When charging is complete, the red LED will turn off

* Please hold the USB plug in your hand and insert/remove it straight (inserting it at an angle may deform the terminal and cause a malfunction).

* Please use a USB AC adapter with a power supply capacity of 5V/1A or more.

[Charging request]

- i. Charge the battery at an appropriate ambient temperature (10 °C to 35 °C).
- ii. When using the USB port of your computer, the battery may not charge if the computer is in standby or sleep mode.
- iii. Please also read "Safety Precautions".

2.2 Operation of Main Unit

2.2.1 Power ON

Press and hold the power button on the main unit for about 3 seconds or longer to turn it on.

The green LED will stay on for 2 seconds and go off. The blue LED then blinks slowly. This state is set to connection wait mode.

Video: <https://youtu.be/tpXOSxJce6Q>

If the connection between the units is not correct, the three blue, red, and green LEDs will continue to flash simultaneously. In this case, turn off the power, check the connection referring to "Checking how to connect each unit", and turn on the power again. When properly booted, the blue LED blinks slowly (connection waiting mode).

When connected to the "Haritora Configurator" application

dedicated to Haritora X, it becomes connected. If the printer is connected to the computer via Bluetooth but not connected to the Haritora Configurator, the lighting pattern does not change from the connection standby mode.

Video: There is a lighting pattern of "Blue LED 2 times continuous blinking" around 12 seconds.

<https://youtu.be/rBgHGKHutfA>

2.2.2 Checking the remaining battery level

You can check the remaining charge by briefly pressing the power button once during startup.

Battery level	Turn on LED
100 – 80 %	Green LED blinks 5 times
80 – 60 %	Green LED blinks 4 times > Red LED blinks 1 times

60 – 40 %	Green LED blinks 3 times > Red LED blinks 2 times
40 – 20 %	Green LED blinks 2 times > Red LED blinks 3 times
Under 20%	Green LED blinks 1 times > Red LED blinks 4 times

The red LED flashes when the battery level decreases during use.

If the power is turned on when the remaining charge is less than 10%, the red LED blinks continuously and the power is turned off without entering the connection standby mode.

2.2.3 Power OFF

Press and hold the power button for about 3 seconds or more during startup to turn off the power.

Video: All LEDs turn on and then off.

<https://youtu.be/Z5KtKPwQh08>

2.2.4 Power OFF (Forced shutdown)

During startup, press and hold the power button for 10 seconds or longer to force the power off.

The blue LED turns off.

*If you perform a forced shutdown with USB charging, disconnect the USB cable and turn the power on again.

3 Windows PC Settings

Prepare to use HaritoraX.

Please refer to the assembly video.

Video: <https://youtu.be/IRs8pcdSHFk>

3.1 Steam and SteamVR

This software is required to connect the Haritora X and VR headset to a PC.

Valve software. Contact Valve for Steam/SteamVR operation.

3.1.1 Install Steam

- i. Access the account registration site and create an account.
- ii. Download the Steam installer.
- iii. Run the downloaded file and install Steam.

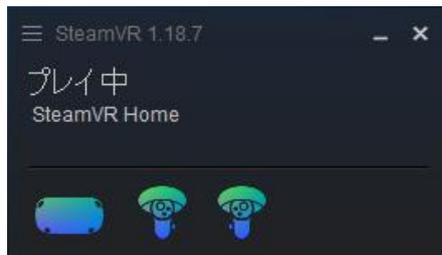
3.1.2 Install SteamVR

- i. Start Steam, search for "SteamVR" in the Store, and install it.

Windows MR users should install Windows Mixed Reality for SteamVR.

*Oculus Quest users should configure the Quest Link and Air Link settings.

- ii. Start SteamVR and make sure your VR headset and controller icons are visible and recognized in the SteamVR window as shown.
- iii.



3.2 Haritora Configurator

This software is required to use HaritoraX.

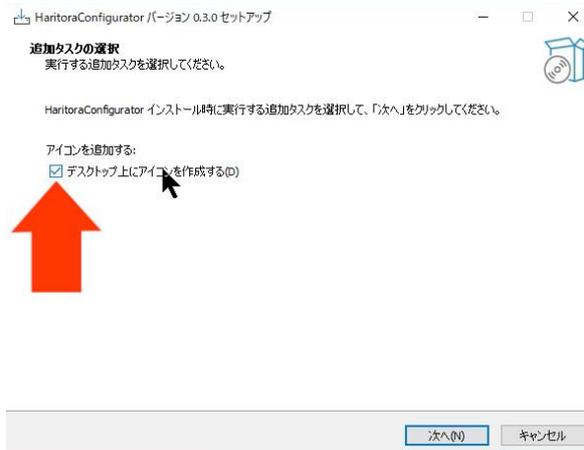
3.2.1 Install Haritora Configurator

- i. Download "Haritora Configurator" from the Shopify store page. It says "purchased", but you are not charged.
- ii.
- iii. Launch the downloaded "Haritora Configurator.exe".

*If Windows Defender alerts you, select More Information > Run.

iv. Check "Create an icon on the desktop", go to next, and click "Install".

v.

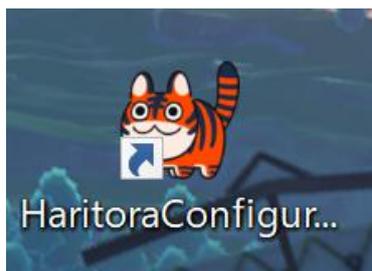


vi.

vii.

viii. When the installation is complete, check that the "Haritora Configurator" icon is on your desktop.

ix.



x.

xi.

3.2.2 Starting and Initializing the Haritora Configurator

3.2.3

- i. Double-click the Haritora Configurator shortcut to launch it.

*If Windows Defender alerts you, select More Information > Run.

*If not, select "Run as administrator" from the right-click menu to start.

- ii. Select HaritoraX. Please read and agree to the terms of use.

- iii.

- iv. Register the product code of the product. The product code is located on the back of the main unit.

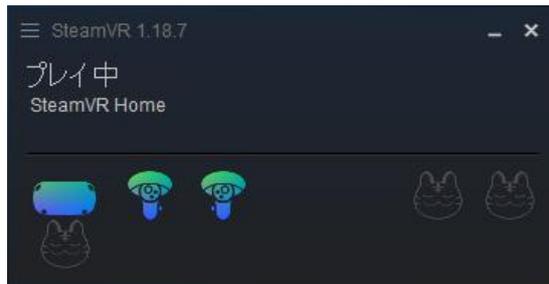
- v.

- vi. When the installation screen of the Haritora driver appears, select "Install" to install the driver.

- vii.

- viii. Once the driver installation is complete, SteamVR reboots. After the reboot, make sure the Haritora X icon (gray) is visible on the SteamVR window.

*If not, try restarting manually.



3.2.4 Set up Bluetooth (Windows)

- i. Go to Windows menu - Settings - Devices and open Bluetooth or Other Devices.
- ii.
- iii. Select "Add Bluetooth or other device" to open a separate window, then select "Bluetooth".
- iv.
- v. Power on the main unit.
- vi.
- vii. When the product is recognized by the computer, "Haritora X-*****" will be displayed in the window. Please confirm that the serial number on the back of the main unit is the same. If they are, select them to begin pairing.
- viii. *If not, make sure the main unit is powered on. If you are using

a Bluetooth USB adapter, make sure it is plugged in properly.

**If the main unit is connected to another Bluetooth device, it may not be connected properly.*

- ix. Make sure it's paired in Add Bluetooth or Other Device.*

3.2.5 Update the main unit firmware.

Firmware is software built into the main unit. It may be updated at the same time that the Haritora Configurator is updated.

Always use the latest firmware version. Operation may become unstable if the Haritora Configurator version does not match.

- i. Turn on Haritora X, make sure it is paired with Windows via Bluetooth, then select "Firmware update" on the Start screen.*



ii.

iii.

iv. The screen below appears depending on the status. If there are multiple connected COM ports, a box for selecting the COM port is displayed, so select the correct port to start.

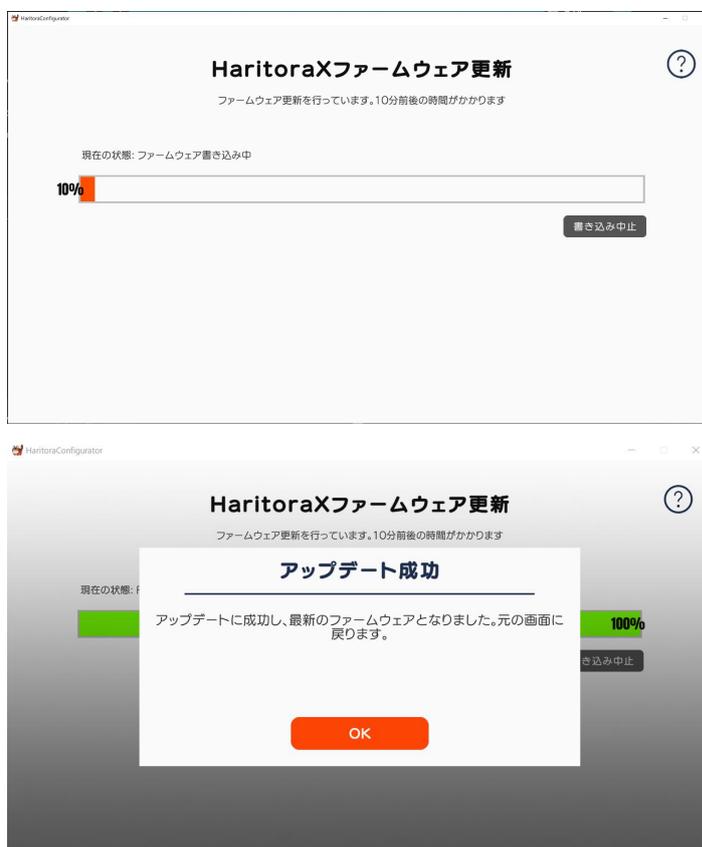
*See here for how to determine the COM port.

- If you see this screen, the firmware is not up to date.



Select "Update" to update the firmware. After selecting, the LED of the main unit lights up so that three colors flow, and the gauge is displayed and the update starts. When the gauge reaches 100%, the update is complete.

*Do not kill the Haritora Configurator or turn off the main unit and PC while the firmware is being updated.



- If you see this screen, the firmware is up to date.



- If you see this screen, Bluetooth connection is not working properly or the COM port may be incorrect.



Check the Bluetooth connection and try to restart the HaritoraX Configurator and reconnect the pairing.

*If you do not receive a message, the connection may not be correct.

3.2.6 Install drivers

- i. From the start screen of the Haritora Configurator, select Start.



ii.

iii.

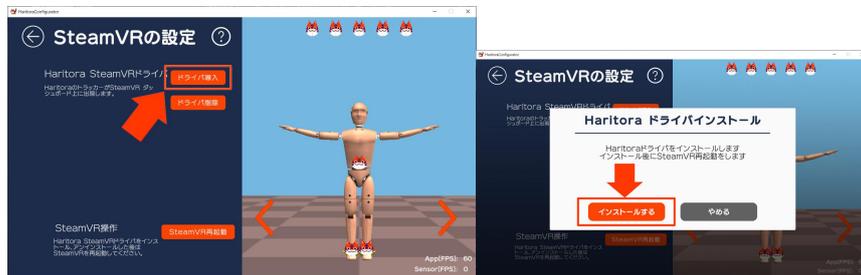
- iv. Open the SteamVR Settings screen.



v.

vi.

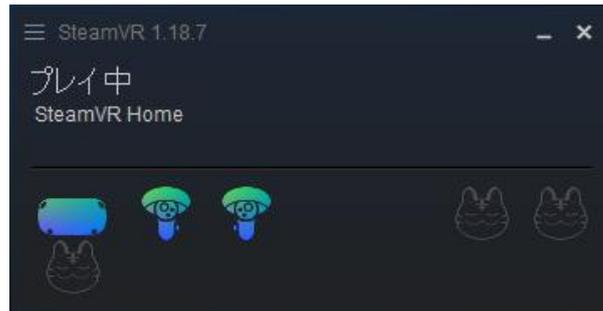
- vii. Select Install Driver to install the driver.



viii.

- ix. SteamVR automatically restarts after the driver installation is

complete. If the installation is successful, the HaritoraX logo (gray) will appear on SteamVR. If it does not appear, restart it manually.



x.

xi.

[If the logo does not appear]

The logo may not appear if the VR headset is not connected to SteamVR or if the driver is blocked by SteamVR. Check out the SteamVR drivers below.

*If "haritora" is not listed, the deployment is not complete. Please install again

3.2.7 (Haritora Configurator) Bluetooth setting

- i. Open the "Bluetooth Settings" screen.



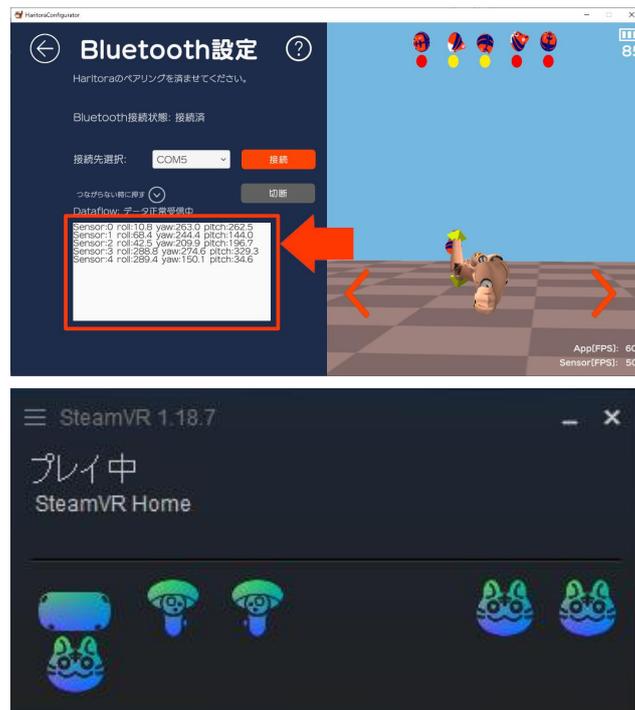
ii.

- iii. Select "Connect" and make a Bluetooth connection. If the sensor information is displayed in the box at the bottom of Receive Dataflow and the HaritoraX Truck icon is blue in the SteamVR window, the connection is complete.

*Depending on your environment, there may be multiple COM ports to connect to.

*If the sensor information is not displayed even after connecting to all the connected devices, refer here to confirm that Haritora X is connected correctly.





[When Windows and HaritoraX cannot be paired]

If Windows and HaritoraX cannot be paired via Bluetooth, or if the HaritoraX is not recognized by Windows, refer to the following page to check the Bluetooth environment.

*** The page is in preparation.**

[When sensor information is not displayed even when connected to all displayed COM ports]

When connecting via Bluetooth, the corresponding COM port may not appear in the list, and the connection to Haritora X may not be established even if all the ports are tried.

In this case, refer to the page below and perform forced connection by manual input.

** The page is in preparation.*

3.2.8 Setting of subunit mounting position and height

- i. Select Calibration.
- ii.
- iii. Select the mounting location for the subunit. Be sure to select the same position as you are installing it, as it will not work correctly if it is wrong.
- iv.
- v. Set the height. Set the height of the user, not the avatar.
- vi. Refer to "4.2 Calibration" and later for the calibration

procedure.

4 Calibration

Calibration is an operation to reset the correct azimuth and direction to the device, which is required for IMU full body tracking devices. Calibration using the Haritora Configurator should be done frequently (once every few minutes or tens of minutes) while using a VR application.

**Frequency varies by environment.*

Video: <https://www.youtube.com/watch?v=IRs8pcdSHFk>

4.1 Preparing for Calibration

- i. Launch SteamVR from the top right of the Steam window or from the library.*
- ii.*
- iii. Make sure your VR headset and Haritora X are recognized in the*

SteamVR window.

- iv.
- v. *Start the Haritora Configurator and select Start. Make sure all items except Calibration are set to "OK!", then select Calibration.*
- vi.

4.2 Calibrate

**Attach a Haritora X and a VR headset and perform within a VR application such as VRChat. Note that it does not work when the Steam menu or Oculus menu is displayed in the VR view.*

Calibration is performed in two successive operations.

- i. *With the feet closed and upright, turn the left and right controls straight down and press the index trigger on one control 5 ~ 7 times in a row. If it succeeds, a sound effect is played.*

**It does not respond if you push it left and right at the same time.*

Press one side continuously.

**If the sound effect does not sound, change the pressing speed continuously.*

- ii. Immediately bend your upper body and keep your knees closed, then press the index finger trigger on one of the controls 5 ~ 7 times in a row. It is enough to lower your waist by about 30 ~ 40 cm. If successful, a different sound effect is played.*

**Calibration in an upright position alone can cause the knees to become crotch or cross each other when bending the knees, such as when sitting in a chair. Be sure to perform two calibrations.*

- iii. In the Haritora Configurator, check that the dummy model reflects the actual movement.*

**If the tracking is not correct, perform calibration again.*

4.3 Calibrate on the Haritora Configurator

4.4 In some environments, calibration by controller operation (5 times continuous input of trigger) may not be possible. In this case, you can display the desktop in the VR space by the following method and perform calibration by clicking the button from the screen.

**Here's how to use the Oculus Quest 2 controller. If you are using another controller, check the position of the menu button in the operation manual of the controller.*

- i. Press the "Menu button" or "Oculus button" on the controller.
- ii.
- iii. If you press the "Menu button", select "Desktop" from the Steam menu.
If you press the "Oculus button", select "Desktop" from the Oculus menu.
- iv.
- v. When the desktop screen is displayed in VR, select "Perform

calibration" from the screen of Haritora Configurator.

- vi.*
- vii. Select "OK" to start calibration. With your feet closed and your hands upright, select > to the right of Forward.*
- viii.*
- ix. Hold the position for 5 seconds. If it succeeds, a sound effect is played.*
- x. "nyaa"*
- xi.*
- xii. Curl your upper body, keep your knees closed and bend your hips down about 30 ~ 40 cm, then select > on the right side of Forward.*
- xiii.*
- xiv. Hold the position for 5 seconds. If the calibration is successful, a second sound effect is emitted and calibration is completed.*
- xv. "nyaaa"*

5 Use in a VR application

6 TBD

7

7.1 VRChat

7.2 VirtualMotionCapture

7.3 Cluster

7.4 バーチャルキャスト

8 Haritora Configurator の画面説明

TBD

9 Sensor reset (only in case of failure)

This product constantly corrects the sensor during use. However, depending on the operating environment, there may be a large deviation in direction/direction, and it may take about 20 minutes for stable direction/direction operation after turning on the power. In this case only, perform the sensor reset operation as follows.

This function is not for daily use. This will twist your hips and feet in an unintended direction for 30 minutes to 1 hour. The situation may also be worse than before the reset. It should only be done in situations where there are unavoidable problems and where it is acceptable for twisting to continue for an hour or so after implementation.

- i. Place all units on the floor with connecting cables to stabilize them.
- ii.
- iii. With the main unit (From now on, the AIT library) powered off, press button 2 and the power button (for the button position, refer to "Main Unit") at the same time to enter the sensor reset mode. When

the blue and green LEDs light up at the same time, immediately release your hands and do not move the main unit.

iv.

- v. The angular velocity sensor is reset in a few seconds, and the blue and green LEDs start flashing alternately as shown in the video.*

Video: <https://youtu.be/hotNyJHqjPO>

**Since the angular velocity sensor cannot be reset in an environment where slight shaking continues, such as when it is attached to the body, be sure to remove it from the body and operate it in an environment where there is no vibration.*

- vi. Next, pick up all the units and cables with both hands and move them in a horizontal figure-eight motion in the air, making sure to twist your wrists to point the unit at all angles as you do so.*

vii.

- viii. Continuing to move for about 10 seconds will change the lighting pattern. The green LED will turn off and only the blue LED will slowly*

blink, but please continue drawing the figure 8 for about 3 minutes.

This is a very tiring task, but the longer you use the character number 8, the shorter the time it takes to perform stable movements (learning time).

10 Precautions

10.1 About Bluetooth

The radio wave range of this product is approximately 10 m in an unobstructed horizontal viewing space. The actual operating distance may be shorter than this depending on obstacles, the installation environment, and the performance of the PC.

10.1.1 Environments that do not work properly

A) Near this product

- i. When using a Bluetooth® device such as a cell phone, PHS phone, smart phone or tablet.*
- ii.*
- iii. Using a bell or motor driven by DC voltage*
- iv.*

- v. When using household appliances such as microwave ovens, personal computers or OA equipment, wireless LAN devices, or other devices that use radio waves in the 2.4 GHz band.
 - vi.
 - vii. When using a microwave therapy device.
- B) When the machine is interrupted by a partition between the Windows computer and the machine
- C)
- D) When the Windows PC and this product are surrounded by furniture, metal cabinets, etc.
- E)
- F) When using the product in a strong electric field area near a TV or radio transmitter, or in a place where there are various radio stations nearby.

10.1.2 Restrictions on use

- i. Available only in Japan and USA.

- ii.
- iii. *Wireless communication with all Bluetooth ® compatible devices is not guaranteed.*
- iv.
- v. *Devices supporting Bluetooth ® functions that communicate wirelessly must comply with the standards set forth by Bluetooth SIG, Inc. and be certified. However, the operation method, display, and operation are not guaranteed because connection may not be possible depending on the specifications and settings of the equipment even if it complies with the standard.*
- vi.
- vii. *Security functions compliant with the Bluetooth ® standard are supported, but may not be sufficient depending on the usage environment and settings. Be careful when communicating wirelessly.*
- viii.
- ix. *Our company shall not be liable for any data or information*

leakage arising from wireless communication.

10.2 About use

10.2.1 Usage and Storage Location

- i. Do not store in areas subject to high temperatures, such as areas exposed to direct sunlight or near heating appliances.*
- ii.*
- iii. Do not place in a dusty area.*
- iv.*
- v. Do not place in a place subject to excessive vibration.*
- vi.*
- vii. Do not use or place this product in a humid place such as a bathroom.*
- viii.*

10.2.2 About handling

- i. Do not drop, step on, or hit the product, or it may cause malfunction.*

- ii.
- iii. Do not wash with detergent.

10.3 About put on

- i. When put on this product, do not hold or swing the cable while it is connected.
- ii.
- iii. Do not apply any external force when put on this product.

10.4 About Maintenance

- i. Use a soft, dry cloth to clean the unit. Please shape the body suit and dry it in the shade immediately after washing it by hand. You can't use the washing machine. Do not soak, bleach or scrub.
- ii.
- iii. If the unit is heavily soiled, wring out a cloth soaked in water and wipe off the dirt, then wipe with a dry cloth.
- iv.
- v. Do not use solvents or chemical cleaning cloths such as benzene,

thinner, alcohol, or kitchen detergents, as they may degrade or cause the paint to peel off.

vi.

vii. When washing the special suit with other clothes, fasten the hook and loop fastener and put it in the laundry net. The hook and loop fastener may stick to other clothes and damage the fabric.

viii.

ix. If dust accumulates in the window of the subunit below-the-knee distance sensor, the distance sensor will not work properly. Clean regularly with a soft brush.

*The function using the distance sensor will be provided later.

10.5 About Disposal

The main unit has a built-in lithium battery. When disposing of this product, do not dispose of it together with general garbage (non-combustible garbage). Please follow the regulations of your municipality.

10.6 Copyright, etc.

- i. The Bluetooth [®] word mark and logo are registered trademarks owned by Bluetooth SIG, Inc. Shiftall Co., Ltd. uses these marks under license.
- ii.
- iii. Windows is either a registered trademark or a trademark of Microsoft Corporation in the United States and/or other countries.
- iv.
- v. Other names, company names and product names mentioned in the text are trademarks or registered trademarks of their respective owners.
- vi.
- vii. Credentials can be found on the sticker located on the center of the back of the main unit.

10.7 Specifications

Bluetooth	v4.2 BR/EDR
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Battery	Built-in Lithium-ion battery
Socket	USB Type-C
Charging Time	4 hours 30mins. (Power OFF)
Power	About 10 hours.
Size	Main unit 93(W) × 59(H) × 32(D)mm Sub unit 40(W) × 74(H) × 30(D)mm
Weight	Main unit About 131g (Excluding cables) Sub unit About 39g (Excluding cables)
In the Box	Special suit USB cable (Type C) Connection cable
Exterior material	PA66
OS	Windows 10 21H1 or later / SteamVR 1.17 or later

11 FAQ

TBD

12 Contact Information

For other inquiries, please contact the Shiftall Support Desk.

Shiftall Support Contact Email Address

support@shiftall.net

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.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions,

may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

All other devices shall bear the following statement in a conspicuous location on the device:

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.

When the device is so small or for such use that it is impracticable to label it with the statement specified under paragraph (a) of this section in a font that is four-point or larger, and the device does not have a display that can show electronic labeling, then the information required by this paragraph shall be placed in the user manual and must also either be placed on the device packaging or on a removable label attached to the device.

All company names, system names, and product names mentioned in this manual, with the exception of Shiftall and Haritora X, are registered trademarks or trademarks of their respective companies, and are not the property of our company.

In principle, "TM" and "®" are omitted in the text and figures.