

## **User Manual for Devices**

The User Manual for Devices contains the following information for using the Raccoon.Recovery:

1. Intended use and a short general description of the Raccoon.Recovery Solution;
2. Symbols in the User Manual;
3. Contraindication;
4. A short description of the Hardware Solution parts - Controller and Sensors (the Devices);
5. Instruction how to start working with the Devices (frequently used functions, power on procedure, normal workflow, power off procedure);
6. Information about the Charging of the Devices;
7. Information about the battery;
8. Information about the cleaning procedure;
9. Information about the Mode of Disposal;
10. Specifications to the Devices;
11. Troubleshooting;
12. Warranty terms;
13. Safety;
14. Warnings (general);
15. Maintenance ;
16. Contact information.

### **Intended use and general description**

This user manual is intended for use by the Specialist (and/or other representative in the Clinic), as well as by the Patient for using both in the rehabilitation centre and in any other location convenient for the user (telerehabilitation), including at home settings.

A Specialist (and/or another representative of the Clinic) will be able to help the Patient in using the Solution.

A Specialist (and/or another representative of the Clinic) is trained to use the Solution before starting to use it and training Patients to use the Solution.

Raccoon.Recovery for hands and arms is a physical rehabilitation tool based on video gaming. The tool is intended primarily for recovering fine motor skills of the hand and/or arm, as well as for monitoring the general condition of the Patient. The product is used whenever physical exercises for hand impairment are indicated, e.g. after stroke, trauma, etc.

The Raccoon.Recovery Solution includes:

1. Software (the Platform and Application);
2. Hardware (Controller and Sensor(s)).

PC App Raccoon.Recovery has 3 dashboards with different functionalities and access rights:

Clinic: settings of the Clinic account, adding and deleting accounts of Specialists, access to general data from accounts of Specialists and Patients that are associated with the Clinic.

Specialist: settings of the Specialist account, adding and discharging Patients, seeing list of own Patients, editing Patients' profiles, executing digitized physiotherapy tests and seeing their results according to the chosen period, recommending exercises, sending test results to own Patients, adding comments and seeing log of Patient recovery story including tests, exercises and comments

Patient settings of the Patient account, seeing the list of games including their rules and overview, playing games, settings of controls for games, adding games from PC, seeing achievements, seeing the progress of recovery process sent by a Specialist).

The customer receives an email with a link to download the PC App from the Internet. PC App should be used with Access Keys – user's email as a login and a unique personal password generated by the Platform.

The Hardware connects to a PC via Bluetooth with the help of receiver and transmits data to the PC and then – to the Platform via the Internet.

#### Symbols in the User Manual



**Warning!** Information requires your highest attention.



**Information!** Check the User Manual before use.

#### Contraindication



**Warning!** This Device serves to support rehabilitation but does not replace consultation with medical professional. If use of the Device causes discomfort or restrain your range of motion, consult your Specialist.



**Warning!** Using Raccoon.Recovery Solution in conjunction with Devices connected to a cardiac stimulator and / or having direct contact with the heart and / or spinal cord is not recommended.



**Warning!** Please restrict the use of the Solution if you cannot read the User Manual or if you have problems with the perception of colors.



**Warning!** The Solution is not intended for use by people with a lack of vision or lack of organs of vision.



**Warning!** Please limit your use of the Solution if you have ever experienced epileptic seizures or if you have noticed at least one of the following symptoms while working in front of the monitor: loss of consciousness, loss of orientation, blurry vision, muscle twitching, any involuntary movements and/or convulsions.



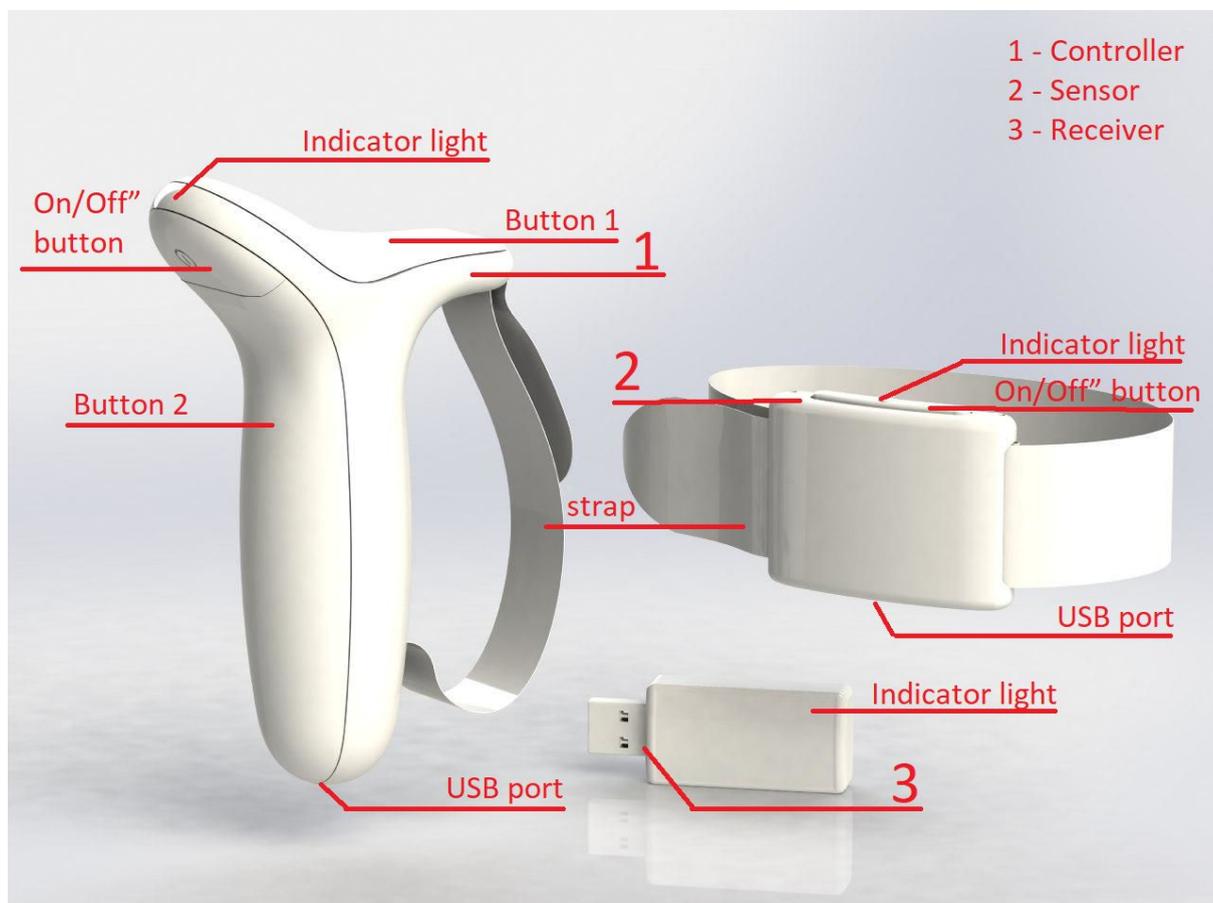
**Warning!** Use with upper limbs prosthesis is not foreseen.

## Devices of the Hardware Solution

Requires PC with USB 2.0 or compatibles.

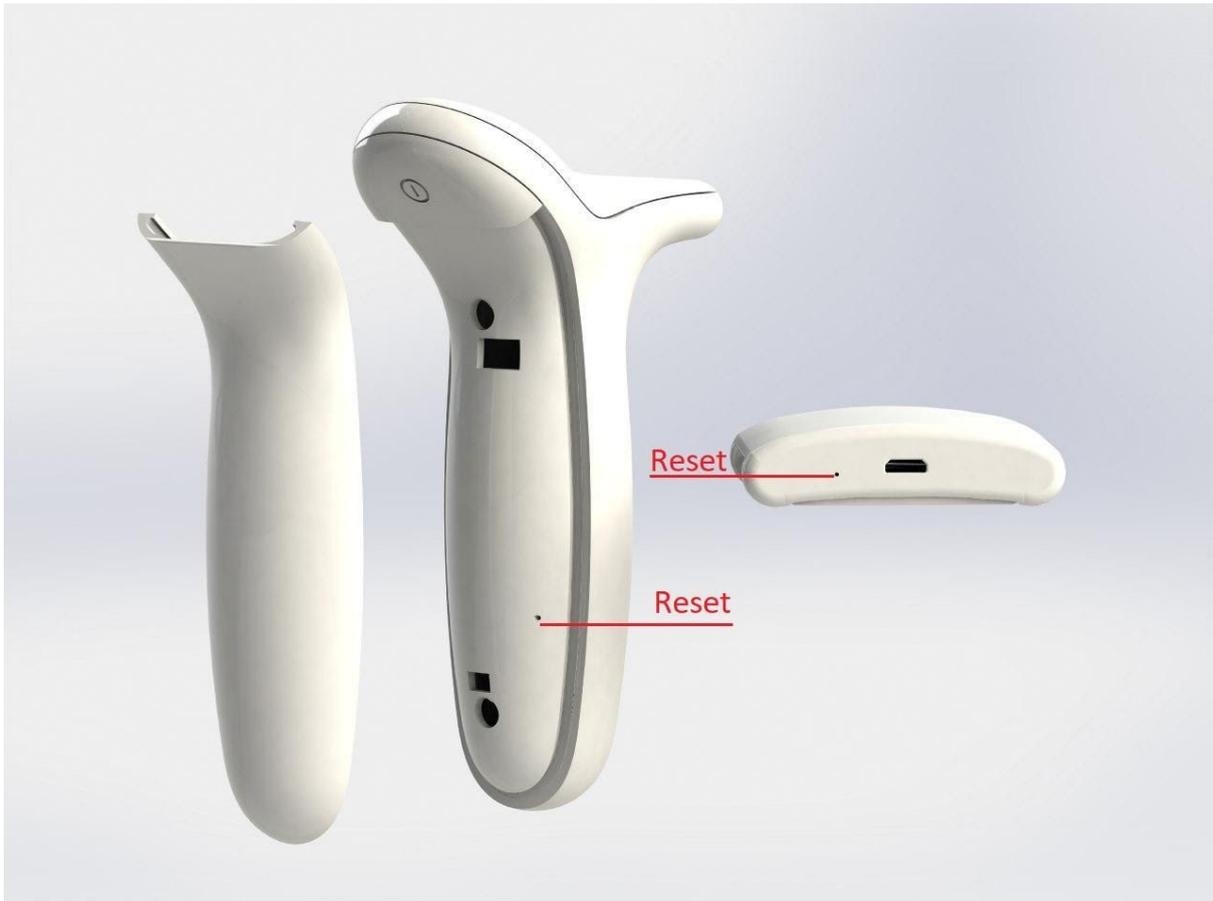
The Hardware part of the Solution consists of the following components :

1. Controller (Pic.1);
2. Sensors(Pic.1);
3. Receivers (for Controller and Sensors individually)(Pic.1);
4. Wrist and arm straps (Pic.1);
5. USB charging cable;
6. User's Manual.



*Pic. 1. Raccoon. Recovery Devices.*

1. "On/Off" button:
  - 1.1. To turn on the Device, press and hold the button for 2-3 seconds until the indicator light on the Device turns on;
  - 1.2. To turn off the Device, press and hold the button for 2-3 seconds until the indicator light on the Device turns out.
2. Button 1 (this button can be programmed in the Patient dashboard, for Controller only).
3. Button 2 (this button can be programmed in the Patient dashboard, for Controller only).
4. Indicator light:
  - 4.1. "Green" indicates that the Device is more than 60% charged;
  - 4.2. "Yellow" indicates that the Device is 30-60% charged;
  - 4.3. Stable "Red" indicates that the Device is less than 30% charged and it is recommended to charge it, in this case vibro will not work;
  - 4.4. Flashing "Red" indicates that the Device need charging. In this case, the operation of the Device will be impossible and it will turn off automatically;
  - 4.5. Flashing "Blue" indicates that the Device is searching for a connection with the receiver, when the connection is established, the blue color stops blinking and turns off;
  - 4.6. When charging, depending on the battery level, the indicator may blink red, yellow or green. When charging is complete, the indicator stops flashing and lights up in green.
  - 4.7. USB port for charging the Device.
5. Receiver indicator light:
  - 5.1. Blinks if there is no connection to the Device
  - 5.2. Steady on if connection to the Device is established.
6. Wrist and arm straps for proper fixation on hand (x1 for Controller and x3 for Sensors - sizes S, M, L).



Pic.2. Reset buttons.

7. Button for manual reset of the Device (Pic.2).
8. To remove button 2 for restarting the controller, you must first remove the "On/Off" button (Pic. 1)
9. Allows to restart the Device manually in case it refuses to turn off with "On/Off" button.



**Information!** All the Devices contain a lithium-polymer battery.

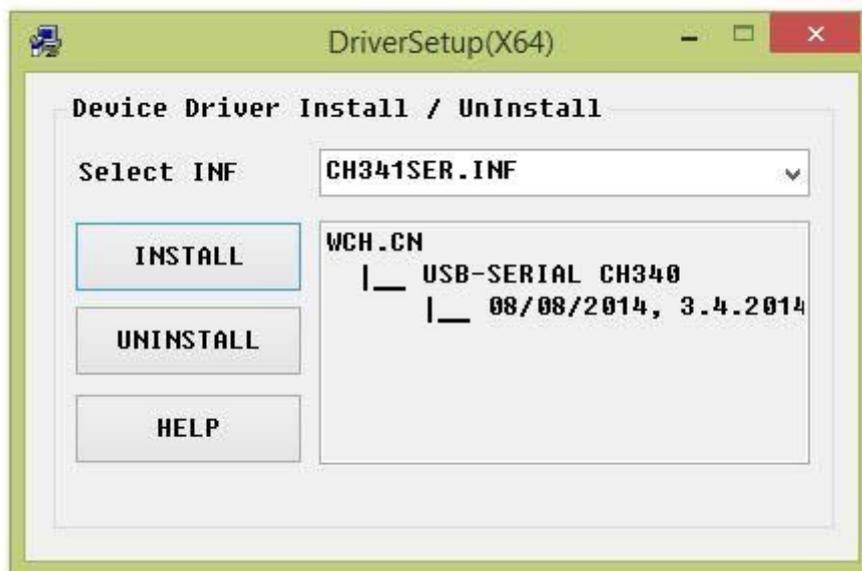
Before using Devices, please, read all battery handling and charging instructions and carefully follow them.

Always dispose of used batteries in accordance with local laws and regulations.

#### Instruction how to start working with the Devices

1. A link to the PC App Raccoon.Recovery, as well as a login and password for authorization in it, will be sent to the email address specified within registration.
2. Using the link you can download the archive of Raccoon.Recovery software together with software User Manual and necessary drivers for the devices. Please read the User Manual for the software before installing it.

3. Unzip the archive to any place convenient for you Install the program using the installer Raccoon.Recovery.exe.
4. After the installation is complete, a shortcut will appear on your desktop for quick access to the program.
5. Insert the receiver into any USB port of your computer directly or through certified USB hub by any other manufacturer.
6. Install the driver. In order to do this, switch to the drivers folder and run the setup.exe installer (Pic.3).



*Pic.3. Raccoon.Recovery Driver Setup popup.*

7. Click on the install button and wait for the installation to complete.
8. Enter into the program using the role, username and password that were emailed to you earlier.
9. Turn on the Device and wait till connects to the receiver.
10. Put the Device on a flat surface and leave it motionless for 10-15 seconds. It is necessary to calibrate the accuracy of the Device (this procedure starts automatically every time after turning on the device).
11. If you did everything properly, Raccoon.Recovery is ready to use. If you can't connect - contact your Specialist or manufacturer (for contact details: see bottom/last page of User Manual)



**Information!** A detailed description of the games' options and settings for the Device can be found in the User Manual for Software.



**Warning!** If the device has not been active for more than 5 minutes, the connection procedure should be repeated.

#### Charging of the Devices (Controller & Sensors)

Use the USB cable to charge the Device.

You can connect the USB cable to a computer or power adapter.

Recommended specifications of the power adapter: DC 5V, 1000mA.



**Warning!** Do not use power adapters with other specifications, as this may damage the Device.

To connect, use a USB cable that conforms to USB standards (USB2.0 AM/micro USB BM).



**Warning!** Use extreme caution when handling the battery. Improper use can result in fire and burns.



**Warning!** Never attempt to open, crush, heat, or burn a battery.



**Warning!** Do not leave the battery charging for a prolonged period of time when the Device is not in use.



**Warning!** Do not operate with a damaged or leaking battery.



**Warning!** If liquid leaks from the internal battery, stop using the Device immediately and contact Clients Support for assistance.



**Warning!** If liquid gets on your clothing, skin, or eyes, immediately rinse the affected area with clean water and consult a doctor.



**Warning!** Battery fluid may cause blindness.

#### Battery life and operation terms

Battery life is limited. The battery life of the Devices will be gradually reducing.

The life of the Devices depends on the method and conditions of its storage, charging, frequency of use and other factors.

Battery life of the Devices may vary depending on usage conditions and environmental factors.

#### Cleaning procedure

Cleaning can be done in a couple of steps:

1. Before cleaning, turn off the Device and unplug the power cable.
2. If there is dirt on the Devices, such dirt must be removed with a dry brush (from nylon polypropylene) or gauze or cloth. If the buttons need to be removed to remove dirt, the buttons must be removed (Pic.4).



*Pic.4. The way the buttons must be removed for cleaning.*

3. Wipe the surface of the Devices with a napkin/cloth moistened (moist but not wet) with isopropyl alcohol up to 70% Solution (hydrogen peroxide up to 7% Solution, or chlorhexidine Solution).
4. Dry the product at room temperature.



**Warning!** Before turning on or charging the Controller, make sure that its surface is completely dry.



**Warning!** If the buttons were removed during the process, reinstall them.



**Warning!** Prevent liquid from entering the process holes.



**Warning!** Do not clean when charging is connected or the Devices is on.

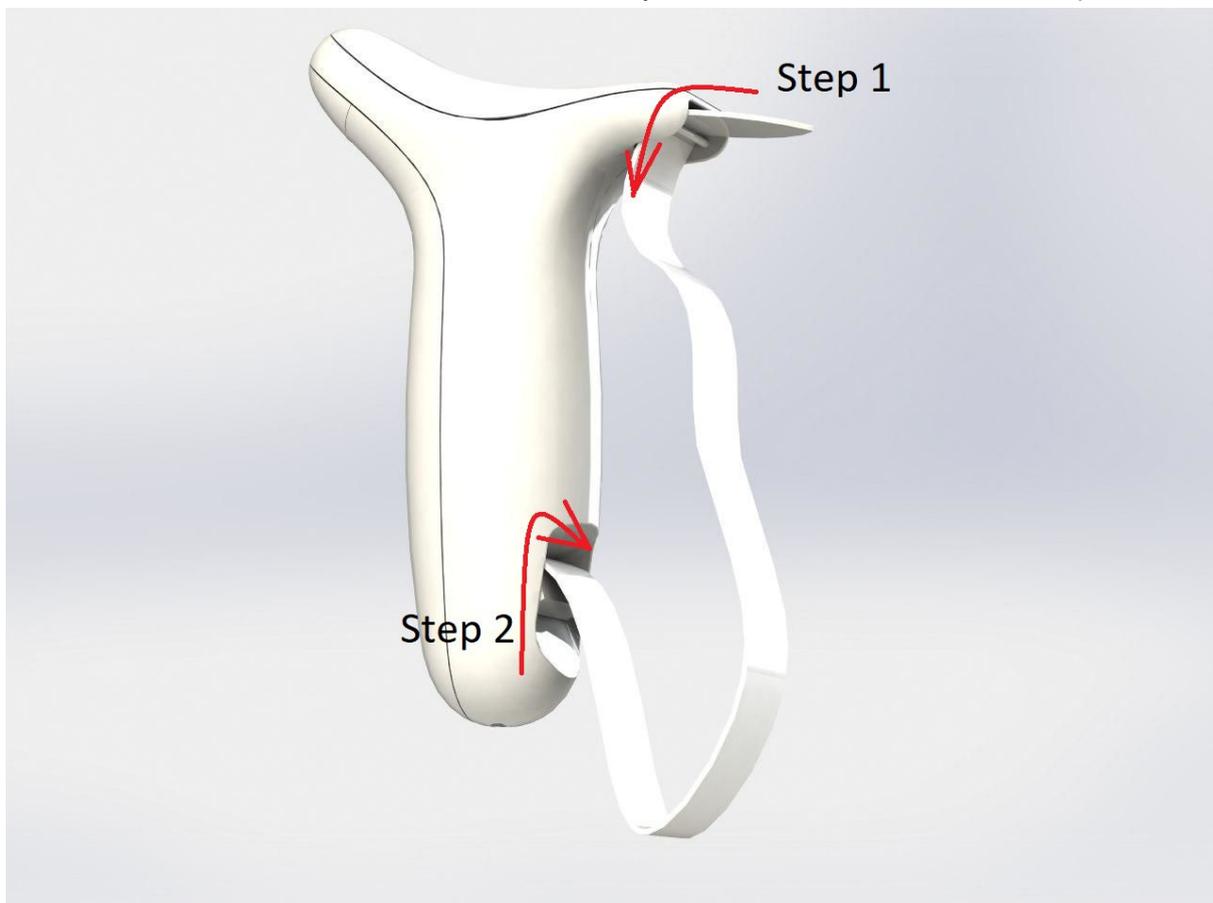


**Warning!** Do not allow any direct contact of the Devices with water, as this may cause a malfunction.

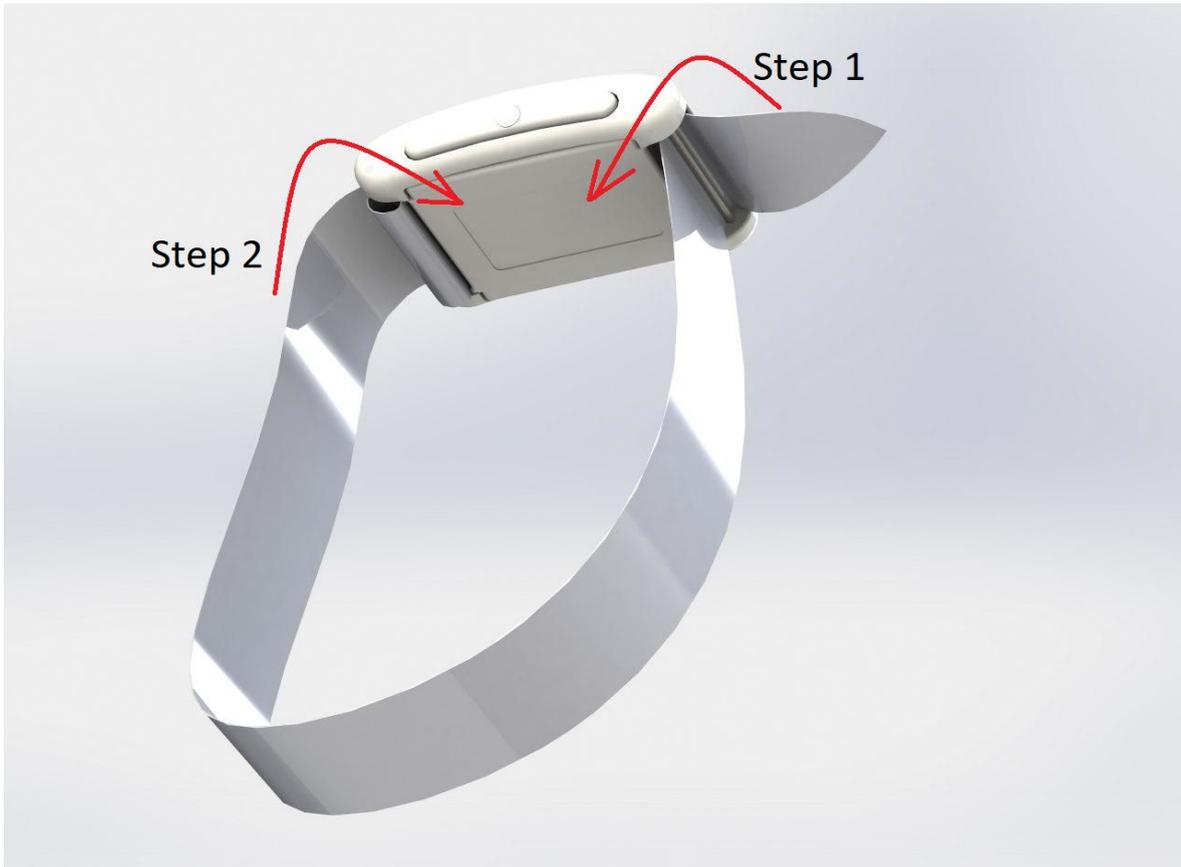


**Warning!** Wipe the Devices from the outside with a damp cloth, making sure that moisture does not get inside the Devices.

To clean the strap, pull it out as shown on the scheme (Pic.5 and Pic.5.1). After that, it can be washed either manual or in machine wash mode. After it finally dries, it can be returned back to its place.



Pic.5. Controller strap. Take the strap off.



*Pic.5.1. Sensor strap. Take the strap off.*

**Mode of Disposal**

Disposal of device is on manufacturer, please send it to manufacturer.

Proper disposal of the Devices will help to preserve harm to human health and the ecology.

**Specification**

**Raccoon.Recovery Controller :**

Weight	90g
Size	135X75X42 mm
Storage temperature	-20 °C - +60 °C
Exploitation temperature	+5°C - +35°C
Power consumption	DC 5V 500mA (charging state)
Battery type	Internal lithium-polymer battery
Battery capacity	650 mA
Voltage	DC 3.7 V
Data transfer	Bluetooth 4.0 BLE
Sample rate	100 frame per sec
Sensors	Accelerometer, gyroscope

No. of buttons	-6-axis movement & position + 3 acceleration channels + 3 angular rate channels 2 functional buttons 1 service button - on/off
Vibration	Yes
Lights system information	Status connect, status battery
Made in	Poland, EU

#### Raccoon.Recovery Sensors:

Weight	30g
Size	58X42X15mm
Storage temperature	-20 °C - +60 °C
Exploitation temperature	+5°C - +35°C
Power consumption	DC 5V 350mA (charging state)
Battery type	Internal lithium-polymer battery
Battery capacity	250mA
Voltage	DC 3.7 V
Data transfer	Bluetooth 4.0 BLE
Sample rate	100 frame per sec
Sensors	Accelerometer, gyroscope -6-axis movement & position + 3 acceleration channels + 3 angular rate channels
No. of buttons	1 service button - on/off
Vibration	Yes
Lights system information	Status connect, status battery
Made in	Poland, EU



**Information!** Controller/sensor operation is possible with Raccoon receiver only.

#### Raccoon.Recovery Receiver:

Weight	12g
Size	58X23.5X12.5mm
Storage temperature	-20 °C - +60 °C
Exploitation temperature	+5°C - +35°C
Power consumption	DC 5V 120mA (working state)
Data transfer	Bluetooth 4.0 BLE
Sample rate	100 frame per sec
Lights system information	Status connect
Interface	USB 2.0
Made in	Poland, EU

## Troubleshooting

### Possible problems:

1. The Device does not turn on:
  - 1.1. Make sure the Device is charged. If not, charge the Device and repeat an attempt.
2. The Controller does not turn off:
  - 2.1. Press and hold the power button for 5-10 seconds. If it didn't help gently remove button 2 and using a paper clip or other thin object click on the manual reset button of the Controller. Then insert button 2 back into place.
3. The Sensor does not turn off:
  - 3.1. Press and hold the power button for 5-10 seconds. If it didn't help use a paper clip or other thin object click on the manual reset button of the Sensor.
4. When connected, there is no light of receiver indicator:
  - 4.1. Try using a different USB port on your computer/laptop. If you use a USB hub, try connecting the receiver to a different port or to computer / laptop directly.
5. The Device does not connect to the receiver:
  - 5.1. Make sure that the indication flashes blue on both the Device and the receiver.
  - 5.2. Make sure that the Device and the receiver are in direct line of sight, there are no metal objects or obstacles between them and the distance between them does not exceed 5 meters;
  - 5.3. Try turning the Device off and on.
6. The Device does not charge:
  - 6.1. Try using a different USB cable;
  - 6.2. Make sure that the power adapter is working and meets the requirements described in the charging section;
  - 6.3. Make sure the USB port of your computer/laptop is working or try using a different USB port.
7. If the problem cannot be resolved by the methods described above, refer to the Client Support of the manufacturer.

## Warranty Terms

The warranty period for the Devices constitutes 12 (twelve) month from the date of purchase.



**Information!** More information can be found in the warranty card.

## Safety



**Warning!** The Devices are intended for use by hands only. Do not place the Devices close your head, face or touch it otherwise than is foreseen hereby.



**Warning!** Keep the Devices out of the reach of small children, as they may damage the Device and cause malfunctions, swallow small parts, wrap up with cables, and accidentally injure themselves or others.



### Warnings (general)

1. **Warning!** This Device serves to support rehabilitation but does not replace consultation with medical professional. If use of the Device causes discomfort or restrain your range of motion, consult your doctor.
2. **Warning!** Using Raccoon.Recovery Solution in conjunction with Devices connected to a cardiac stimulator and / or having direct contact with the heart and / or spinal cord is not recommended.
3. **Warning!** Please restrict the use of the Solution if you cannot read the User Manual or if you have problems with the perception of colors
4. **Warning!** The Solution is not intended for use by people with a lack of vision or lack of organs of vision.
5. **Warning!** Please limit your use of the Solution if you have ever experienced epileptic seizures or if you have noticed at least one of the following symptoms while working in front of the monitor: loss of consciousness, loss of orientation, blurry vision, muscle twitching, any involuntary movements and/or convulsions.
6. **Warning!** Use with upper limbs prosthesis is not foreseen
7. **Warning!** Only intended use is foreseen.
8. **Warning!** Before start using Raccoon.Recovery Solution, the user must be trained to use it.
9. **Warning!** When using the Devices, make sure there is enough free space around you.
10. **Warning!** Avoid getting liquids or small objects inside the Devices .
11. **Warning!** Do not touch the Devices with wet/moist hands.
12. **Warning!** If the device has not been active for more than 5 minutes, the connection procedure should be repeated.
13. **Warning!** Do not use power adapters with other specifications, as this may damage the Device.
14. **Warning!** Do not use the damaged Device.
15. **Warning!** Store in a clean and dry environment. Store in protective case to protect from dust.
16. **Warning!** Do not throw or drop the Devices, avoid applying any other strong mechanical influences to it.
17. **Warning!** Do not place any heavy objects on the top of the Devices.
18. **Warning!** Do not touch the internal parts of the connector and do not insert any extraneous objects into it.
19. **Warning!** Never disassemble or modify the Devices.
20. **Warning!** Do not leave any rubber or vinyl objects in continuous contact with the Devices.

21. **Warning!** Wipe the Devices with a dry and soft cloth only. Do not use solvents or other chemicals. Do not wipe the Devices with fabric soaked with chemicals. Do not use materials other than those specified in the cleaning procedure.
22. **Warning!** Use ethanol/isopropanol-based disinfectant only, let Device dry before use
23. **Warning!** Transport the Devices in the original packaging by the manufacturer only.
24. **Warning!** Do not leave the Devices connected to the charger for a long time unattended.
25. **Warning!** Charge the Devices in a temperature range of 10 to 30 degrees Celsius only.
26. **Warning!** Do not use Devices while they are charging.
27. **Warning!** If the Devices is not used for a long time, the battery should be fully charged at least once a year in order to maintain the functionality of the Devices.
28. **Warning!** Do not expose the Devices to effects of extreme high or low temperatures, pressure drops, high humidity or direct sunlight.
29. **Warning!** Do not expose the Devices to dust, smoke or steam effects.
30. **Warning!** Do not expose the Devices to strong magnetic, electric, or electromagnetic fields influence.
31. **Warning!** The Devices should be stored in its original packaging in a dark, dry, clean, ventilated area, isolated from the storage of acids and alkalis.
32. **Warning!** Do not use the Devices in case of any malfunction.
33. **Warning!** Do not use the Devices if there is any visual damage.
34. **Warning!** During use, hands should be clean and dry in contact with the Device. The using of cosmetics is forbidden.
35. **Warning!** Do not leave the Device turned on unattended.
36. **Warning!** Do not immerse for cleaning, wipe clean with a moistened cloth. Allow Device to dry after cleaning or disinfection. Do not use while still wet.
37. **Warning!** Before turning on or charging the Controller, make sure that its surface is completely dry.
38. **Warning!** If the buttons were removed during the process, reinstall them.
39. **Warning!** Prevent liquid from entering the process holes.
40. **Warning!** Do not clean when charging is connected or the Devices is on.
41. **Warning!** Do not allow any direct contact of the Devices with water, as this may cause a malfunction.
42. **Warning!** Use extreme caution when handling the battery. Improper use can result in fire and burns.
43. **Warning!** Never attempt to open, crush, heat, or burn a battery.
44. **Warning!** Do not leave the battery charging for a prolonged period of time when the Device is not in use.
45. **Warning!** Do not operate with a damaged or leaking battery.
46. **Warning!** If liquid leaks from the internal battery, stop using the Device immediately and contact Clients Support for assistance.
47. **Warning!** If liquid gets on your clothing, skin, or eyes, immediately rinse the affected area with clean water and consult a doctor.
48. **Warning!** Battery fluid may cause blindness.
49. **Warning!** Keep away from small children and pets to avoid swallowing of small parts.
50. **Warning!** The Devices are intended for use by hands only. Do not place the Devices close your head, face or touch it otherwise than is foreseen hereby.
51. **Warning!** Use CE certified 5V power supplies only to charge the Device.
52. **Warning!** Do not use near operating microwaves and high-frequency EM fields.
53. **Warning!** The Device should not develop excessive heat during use. Put down the Controller if it becomes uncomfortably warm. Do not use again, as overheating indicates malfunction. Contact your therapist or manufacturer (for contact details: see bottom/last page of instruction booklet)

54. **Warning!** Do not shove into the fire and do not store in hot places

## Maintenance



**Information!** Before a user obtains permission to operate a solution, it must be ensured that he has read/listened to and fully understood the operating instructions contained in this User Manual.



**Warning!** Never disassemble or modify the Devices.



**Warning!** Transport the Devices in the original packaging by the manufacturer only.

If you have concerns that the device requires maintenance - contact your Specialist or manufacturer (for contact details: see bottom/last page of instruction booklet)

## Contact information

For any information or assistance, please contact us:

*e-mail: [service@raccoon.world](mailto:service@raccoon.world)*

*[www.raccoon.world](http://www.raccoon.world)*

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Limited Liability Company  
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Poland, Kraków



*Manufactured in Poland, EU*

Effective Date: 03-03-2020

Controller > REF 2000-1000  
Arm Sensor > REF 2000-0300

Raccoon.Recovery Version 1.0  
code REF 2000-1305