



PIXIO

YOUR INDOOR & OUTDOOR
PERSONAL CAMERAMAN

PIXIO User Manual V3.0
February, 2019

Congratulations!

Congratulations on purchasing your PIXIO, the very efficient and easy to use robotic camera. You are about to shoot quality videos of indoor and outdoor activities, at distances up to 330ft (100m). This User Manual lists the contents of the package, how to install and start your PIXIO, to set it up, and how to get the best of it. With PIXIO, film sport, trainings, lessons, conferences, ceremonies, Arts and entertainment, recreative activities... and much more!

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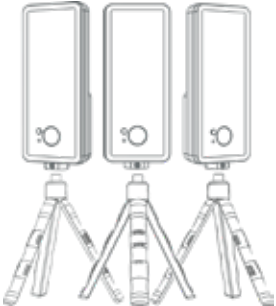
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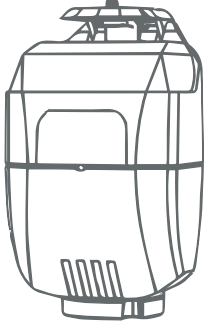
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Supplied items

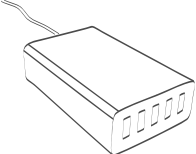
Micro-beacons (x3)
Mini tripods (x3)



PIXIO Robot



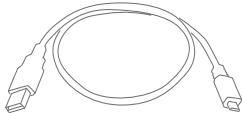
Watch & wristband
PIXIO



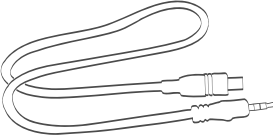
USB Charger & power cord



Wireless charger and its cable for the watch



USB cables (x4)



MULTI cable

Before starting

1. CHARGING THE BATTERIES



Charging the batteries

The complete charging of each device takes about 2 hours.

Plug the USB charger into the socket thanks to the power cord. Plug the USB cables on the USB charger.

Recharge the PIXIO robot.

Plug one of the USB cables to the plug «5V DC» at the back of the PIXIO robot. The corresponding red LED located near the plug lights up during the recharge, and turns off when the robot is charged.

To avoid self-discharge of the robot, unplug the robot after the end of the robot charge, turn the robot ON for a few seconds and then turn it OFF before storing it.

Recharge the PIXIO micro beacons.

Plug USB cables in each one of the micro beacons plug located behind as shown. The red LED of the micro-beacon lights up during the recharge, and turns off when the micro-beacon is charged.¹

Recharge the PIXIO watch.

Plug the wireless charger to one of the USB cables connected to the USB charger. Just put the watch on the wireless charger. The red LED of the watch lights up during the recharge, and goes down when the watch is charged.¹

You can also recharge the PIXIO devices with a computer. Connect the USB cable to a USB port on your computer.



¹ Sometimes the red light flashes at the end of the charge. It is not a problem, the item is charged

Getting started



1. SETTING UP YOUR PIXIO

**2. SETTING UP THE
BEACONS**

3. STARTING THE TRACKING

4. STARTING RECORDING

Setting up the PIXIO

NOTICE

Before using PIXIO for the first time, you must check that the firmware of the PIXIO is up to date (refer page 30), and check that the camera parameters kept in the memory of the robot matches your camera model (refer page 32).

1. Screw the robot on a tripod equipped with a standard 3/8'' screw (check that the motor is switched off before screwing or unscrewing the device).
2. Screw your camera, DSLR, smartphone/tablet adaptor to the robot with the 1/4'' screw of the PIXIO robot.
3. If you are using a supported model of camera, plug the camera and the robot with the correct cable. There are 3 cable models depending on the camera model:



MULTI cable

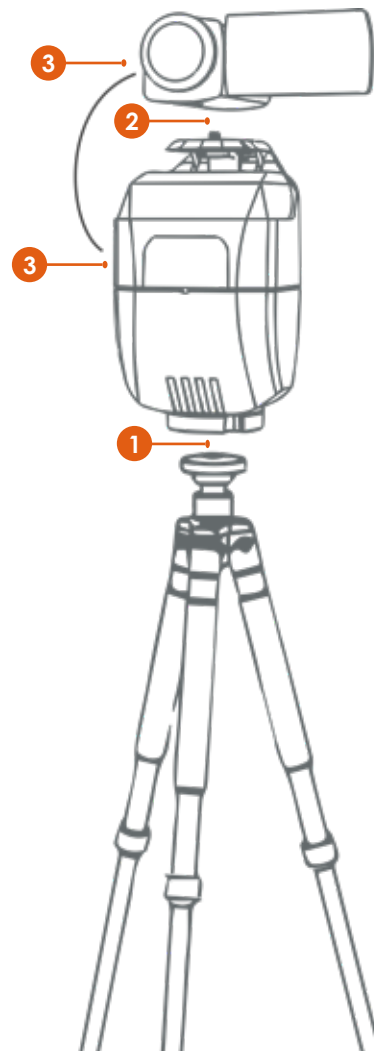


AV/R cable




Jack Ø2.5mm cable

A **MULTI** cable is supplied with your system. You can order an **AV/R** and/or a **Jack 2,5mm** cable at <https://shop.movensee.com/>



Setting up the beacons

The watch is located by the beacons thanks to triangulation techniques which is why the beacons are essential both **INDOOR** and **OUTDOOR**.

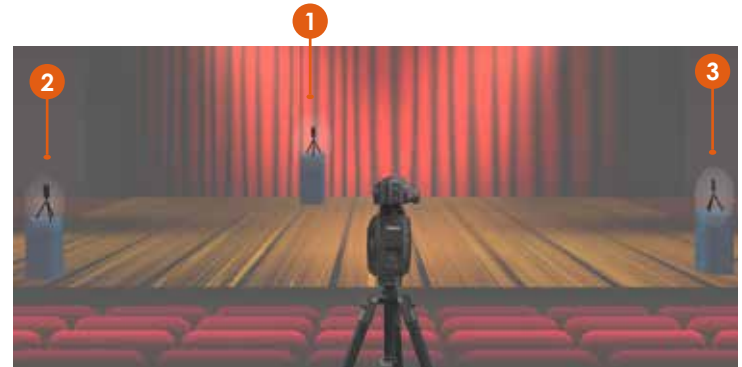
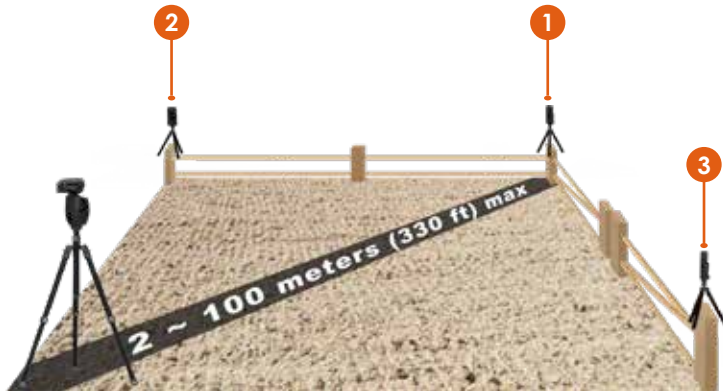
After screwing the beacons on the mini-tripods, switch ON each beacon by pressing its button  until the green light turns ON.

Place the PIXIO robot and the 3 beacons around the area you want to film following these instructions:

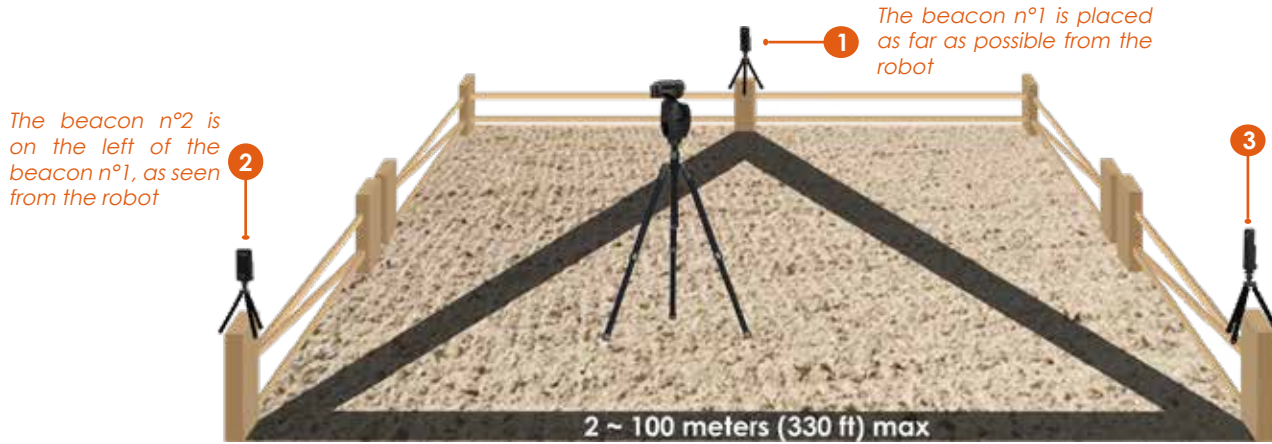
- **Place the beacon n°1 as far as possible from the robot** (but not more than 330ft or 100m). It will improve the left-right accuracy of the tracking (*beacon numbers are written at the back of each beacon*).
- **Place the beacons n°2 on the left of the beacon n°1, as seen from the robot.**
- The beacon n°3 can be placed on the left or on the right of other beacons.

The beacon n°2 is on the left of the beacon n°1, as seen from the robot

The beacon n°1 is placed as far as possible from the robot

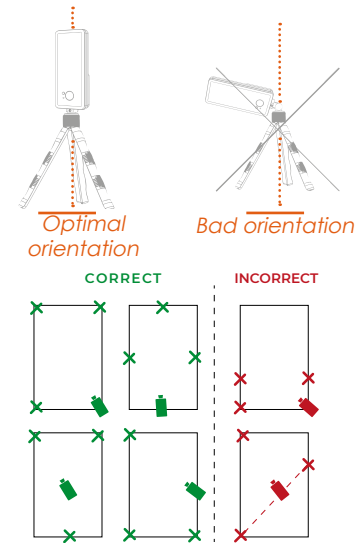


The PIXIO robot can also be placed at the middle of the 3 beacons.



The positions of the beacons are very flexible, but tracking and accuracy are better with proper configurations:


- Check that there are direct lines of sight between the beacons, and between the robot and each beacon. Or at least check that any obstacle is small.
- Keep the robot, the beacons, and the watch at more than 20-30 cm (10 inches) from the walls or from massive metallic parts. Avoid operating near a big electrical transformer, powerful antenna, etc.
- The best height for the beacons is 1 to 2m (3 to 6 ft) from the ground. The three beacons need to be on the same level and perpendicular to the ground.
- The distance between the beacons, and the distance between the robot and the beacons, must be smaller than 330ft (100m).



Start tracking

Switch ON the camera.

Adjust the tripod horizontally and set the TILT angle of the camera by screwing more or less the screw at the rear of the robot.

Check that the watch is OFF. Switch ON the PIXIO robot by pressing the power button  at the rear of the robot until the green light starts to flash.

By rotating the tripod, or using robot buttons  and , place the beacon n°1 at the center of the camera screen. What is important is the right-left position of the beacon. Use the manual ZOOM on the camera to improve the precision. A 50cm (20 inches) precision is enough.



Remain in the area and switch ON the watch by pressing  its starter button until the green light turns ON. The system initializes during about 10 to 30 seconds. When the watch LED is blinking regularly, the initialisation is finished and the robot is tracking the watch.

Start / Stop Recording

1. If you are using a supported camera

You can start/stop recording by pressing BRIEFLY the watch button . **DO NOT press the REC button directly on the camera.**

When the camera is recording, the green LED of the watch turns ON. The watch will blink slowly when you stop recording. If the zoom is busy, some delay might occur when you start/stop recording. In this case, the green LED of the watch will blink quickly until your order is taken into account.

2. If you are using a non supported camera

If you are using a camera model which is not supported by the robot, just press «record» directly on your camera.

*LED blinking slowly :
recording command is OFF*



*LED full green :
recording command is ON*

Using the PIXIO_REMOTE App

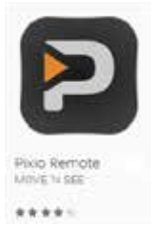


**1. USE YOUR PHONE OR
TABLET TO CONTROL YOUR
PIXIO**

**2. CONFERENCES,
CEREMONIES, CLASSROOMS
SPECIAL SETTINGS**

**3. HOW TO RESTRICT THE
ROTATION OF THE ROBOT**

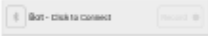
Use your phone/tablet to control your PIXIO



You can control your robot PIXIO with your smartphone using a bluetooth connection and the «Pixio_Remote» App.


How to connect a phone or tablet to a PIXIO robot

Turn ON the robot, then briefly press the button  on the rear of the robot. A blue light starts blinking rapidly. During one minute, your robot is ready to be connected with your smartphone.


- > Activate bluetooth on your smartphone.
- > Launch the «Pixio_Remote» App.
- > Connect the bot 0 by pressing  on the App.

Follow the same procedure as above to connect the extra-robots to your phone. You can use as many extra-robots as you want with your App.

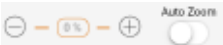
NOTICE

1. If you never have connected an extra-robot slave to your smartphone/tablet by pressing briefly the ON/OFF button of the slave, this slave will appear in the App (thanks to information given by the master robot), but the App will not be able to control this extra-robot.
2. Due to smartphone/tablet limitations, only one extra-robot can be connected at the same time to the App (the master is always connected). You can switch from one slave to another  one by pressing on the App.

How to use the App as a remote control

Record ON/OFF: when a remote control is paired, the REC orders sent by the watches are ignored and the light of the watch blinks as follows: 

Use the  button on the App to start and stop the video recording for each camera.


Auto Zoom: tap on  to modify the frame of the automatic zoom.

Manual Zoom: tap on  to modify the frame of the camera. On manual zoom mode, the robot DOES NOT zoom IN and OUT automatically.

Auto Track: the robot automatically turns right & left to follow the watch.

Manual Track: use the slider  to turn the robot on the right or on the left.

Brightness: use the cursor to  increase or reduce the brightness of the lights of the watch and beacons.

Selection of the tracked TAG: on each robot menu, tap  on to select the watch tracked by the selected robot.

NOTICE

The remote control bluetooth range depends on your smartphone model. The range is generally about 160 ft (50m).

Conferences, ceremonies, classrooms special settings

CONFERENCES CEREMONIES CLASSROOMS Special settings

Refer to the latest version of the User Manual to set up your PIXIO, download and connect the app. to the robot(s).

STEP 1. Press « Settings »

STEP 2. Press « Stop Mode Enable » (it's not a sliding button, press it)

STEP 3. Press « Tracking Smoothness »

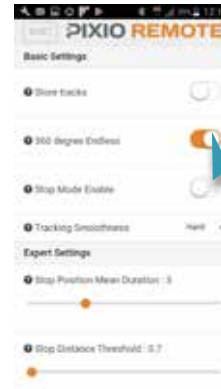
STEP 4. Press «Soft»

STEP 5. Test your PIXIO and change the settings to obtain the result you prefer

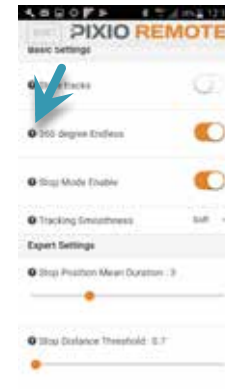
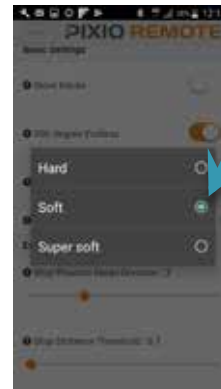


MOVE 'N SEE
YOUR PERSONAL ROBOT CAMERAMAN

PIXIO YOUR INDOOR & OUTDOOR
PERSONAL CAMERAMAN



Watch the help by pressing the question marks



How to restrict the rotation of the robot (useful when an external device is plugged to the robot)?

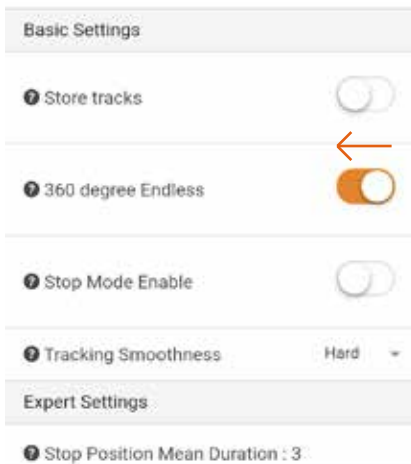
You may need to connect an external equipment (streaming dongle, charger, etc.) to the robot or the camera during operation. To prevent the cables from wrapping around the robot, you can restrict the rotation of the robot to +/- 180° from to the beacon n°1 thanks to an adjustable option in the PIXIO_Remote application.

To do this, launch the PIXIO_Remote application on your phone / tablet (refer to page 16).

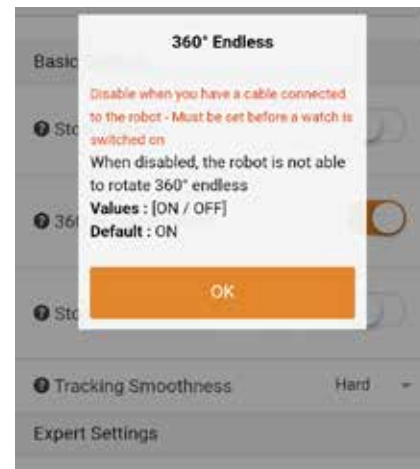
► click on «Settings»



► Disable the option
-- 360 Degree Endless --



► Validate by pressing «OK»



TIPS & TRICKS



1. HOW TO INCREASE THE AUTONOMY

2. ZOOM SETTINGS

3. CAMERA SETTINGS

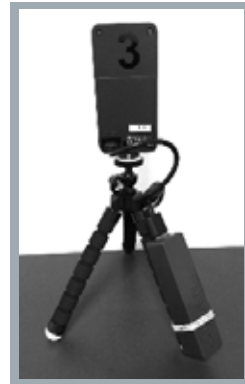
4. HOW TO ATTACH A HEAVY CAMERA

5. FILM FROM AN ELEVATED LOCATION

How to increase the autonomy

1. Use powerbanks

Beacons and robot are designed to be powered while using. You can plug power banks to the robot and the beacons to increase the autonomy of your PIXIO. A powerbank with a capacity of 3000mAh will extend the autonomy by 4 or 5h.



2. Use the mains outlets

You can plug the PIXIO robot and the beacons to the sockets. This is useful to film longer, and to install your system in a fixed position.

> For the beacons, use 3 micro-USB chargers 5V DC, 700 mA min.



> For the PIXIO robot, use a micro-USB charger 5V DC, 2A min (or the one which is provided).

Zoom settings

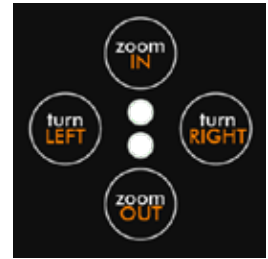
Initialisation of the zoom

When you switch ON the PIXIO robot, and also when it starts tracking you, the (supported) camera zooms out totally, and then zooms in automatically.

Personal settings

When the tracking is started, you can modify the automatic zoom level of the robot. Just press **zoomIN** or **zoomOUT** by successive short pressing. The new settings are automatically recorded for future use.

Those buttons only work when the tracking is started, and when the zoom is not blocked in the wide setting.



Zoom behavior

For quality reasons, the automatic zoom changes with small successive increments. When the automatic zoom is very busy, a complete zoom out sometimes occurs, and the zoom command rapidly comes back to the normal value.

Camera settings

It is recommended to activate the «anti-vibration» features of the camera (called «steadyshot®» for Sony cameras), and to deactivate the digital zoom. Depending on what you prefer, check all parameters related to image quality and size: 16:9 is often preferred to 4:3; 50p or 60p is better for slow motion; biggest image size and best recording quality give better results.

Be careful with the energy economy options that may switch off the camera when the REC is OFF during a long time.

How to attach a heavy camera

You can lock the TILT axis by tightening the 2 screws apart the rotation. You can use a hexagonal screwdriver with diameter 2.5mm. Do not exceed a torque of 2 Nm. Release the screws in order to release the TILT rotation.

You can use a long quick release mounting plate to move forward the center of gravity of the camera to prevent it from tilting backwards.

*Tighten the 2 screws
apart the rotation to
lock the screws*

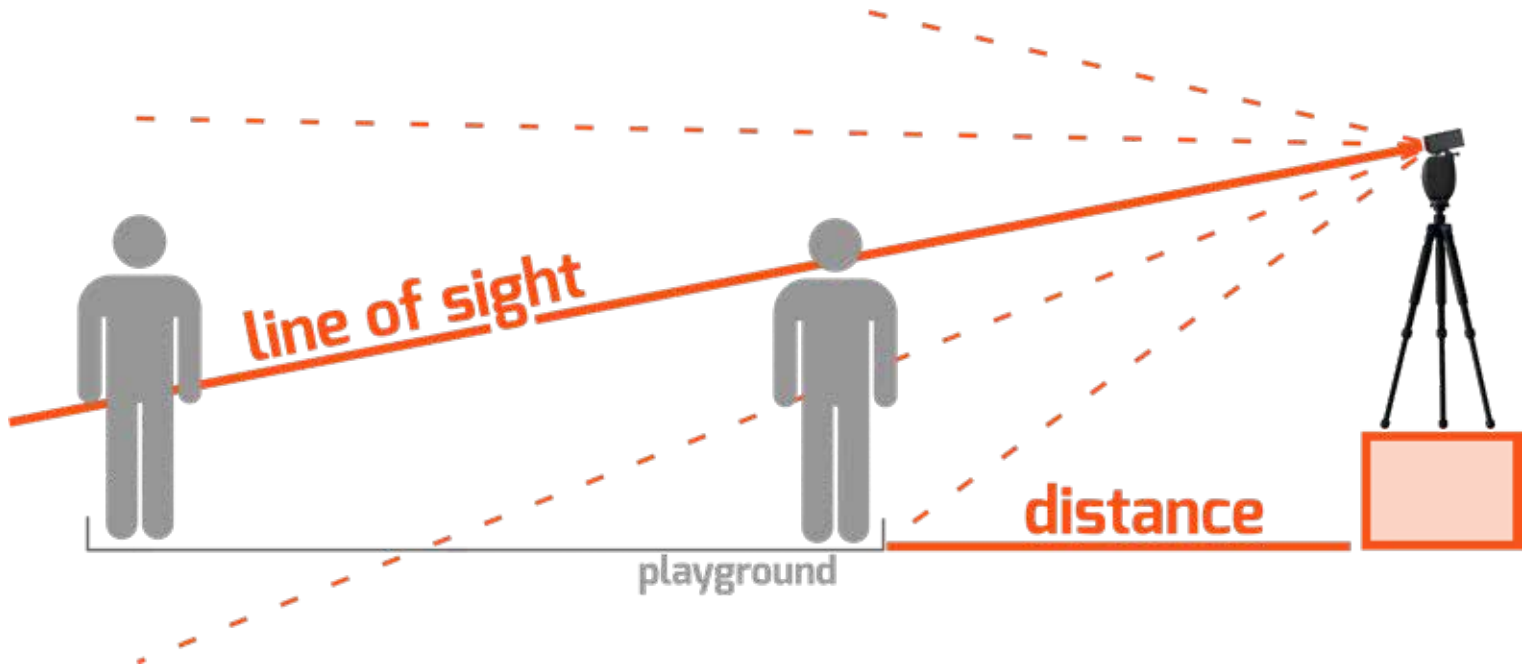


*Use a long quick release
mounting plate to move
forward the camera*



Film from an elevated location

PIXIO can be used to film from an elevated location. Just set the TILT axis with the screw at the rear of the TILT axis, and chose the distance between the camera and the area you want to film, as shown below. With appropriate settings, the auto-zoom will keep you in the frame.



The best settings depend on the configuration of the premises, of the auto-zoom level, and of the kind of framing you prefer. So there is no hard and fast rule for those settings.



MULTI-USER MODE

Connect one or more watches to
one or more robots.

(if you use a single robot and
a single watch, you are not
concerned by this chapter)

1. PAIRING PROCEDURE

2. MULTI-USER OPERATION

Pairing procedure: pair your devices (robots, watches and beacons)

- if you have a single robot and several watches, your robot will become the **master**.
- if you have several robots, you have to choose one to become the **master**.

While filming, the **master** robot should always be ON. The master collects data from the other devices to run MULTI-USER mode.

1. Start your PIXIO robot into the pairing mode

Check that all devices (robots, watches and beacons) are OFF.

Press and hold the **zoomIN** button on the **master** robot, then press briefly



Release the **zoomIN** button when the **green** and **red** lights blink together.

The **master** robot enters into the pairing mode and the green light flashes twice intermittently **🟢🟢 — 🟢🟢 —**. Do not turn OFF the **master** before pairing all devices.

You must pair at least one watch and 3 beacons to the **master**.

You can add up to 15 additional robots (slaves) and film up to 16 people.

1. Press on hold
ZoomIN button

3. Release ZoomIN
button when the
green and red lights
blink together

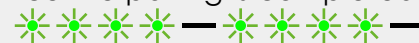


2. Briefly press POWER
ON

2. Pair a device (robot, watch or beacon) to the *master*

The **master** robot must be running in pairing mode to pair a new device (see the previous paragraph).

To pair a new device (slave robot, watch or beacon), start the device closer than 1 meter (3 ft) from the **master** robot. The green light of the device blinks 4 times intermittently once the pairing is completed.



You must restart all the devices before starting the tracking.

The pairing is saved for future use.

NOTICE

You must pair at least one watch and 3 beacons to the **master** before starting the tracking.

3. How to recognize a slave robot and a master robot ?

During ignition (before the start of the tracking), the **green** and **red** lights of a **slave** robot blink alternately.


Only the **green** light blinks on a **master** robot.

MULTI-USER operation



1. Multi watches tracking

All devices must be paired together to be able to run into the MULTI-USER mode (see the «Pairing procedure: pair your devices (robots, watches and beacons)», page 24).

Turn OFF all watches. Follow the PIXIO set up procedure, until the beginning of the tracking (page 8). The PIXIO robot starts to track the first watch ON.

Once the tracking begins, turn ON the additional watches by pressing the  button. The **green** light of each watch starts to blink. The blinking is slow if there is no remote control connected to the device.

The robot will film the last watch turned on. You can switch from one watch to another using Pixio Remote Control app. on your phone while filming (see page 14).

If there is no remote control connected, press the  button of a watch to be tracked and filmed. The light is **full green** when the watch is filmed. Stop recording by pressing the  button again. The **green** light flashes when the camera is not recording.



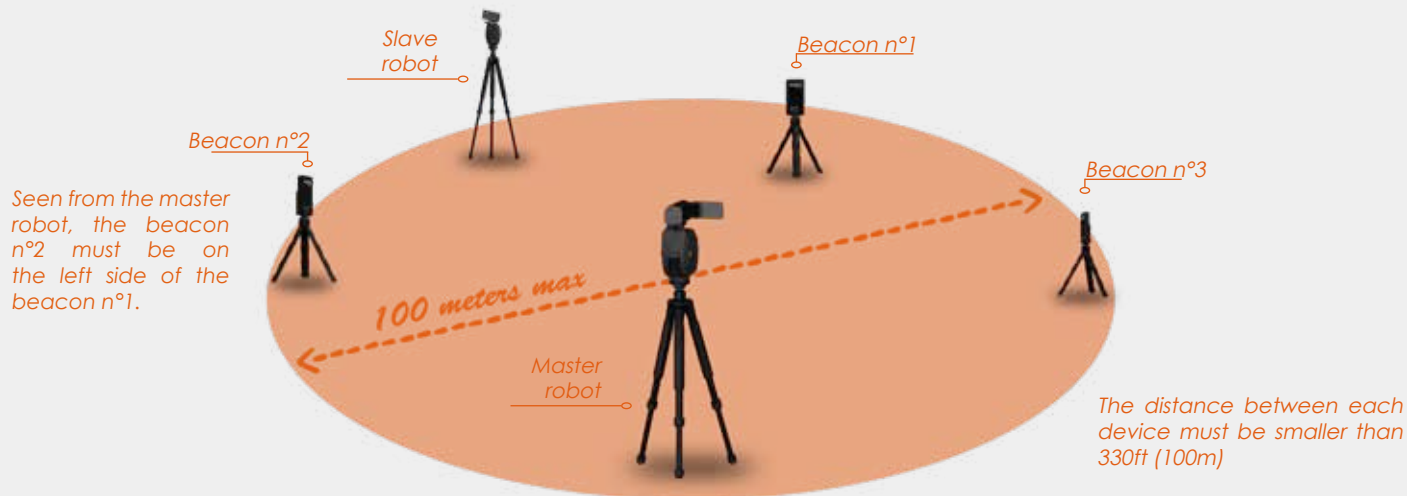
2. Multi robot tracking

All devices must be paired together to be able to run into the MULTI-USER mode (see the «Pairing procedure: pair your devices (robots, watches and beacons)», page 24).


Each robot must point at the beacon n°1 before turning ON the first watch and starting the tracking.

Turn ON each beacon by pressing the  button until the **green** light turns ON.

Place the PIXIO robot and the 3 beacons around the area you want to film, **in such a way that beacon n°2 is on the left of the beacon n°1, as seen from the master robot**. The beacon n°3 can be placed on the left or on the right of other beacons. The distance between the beacons, and the distance between the robot and the beacons, must be smaller than 330ft (100m).




Turn ON your cameras.

Check that all watches are OFF. Power ON PIXIO robots by pressing the  button for 2 seconds.

By rotating the tripod, or with the robot buttons  and , place the **beacon n°1 at the center of each camera screen**. What is important is the right / left position of the beacon. Use the manual ZOOM on the camera to improve the precision. It's OK with a precision of about 50cm (20 inches).

Your PIXIO robots are ready!

Remain in the area and switch ON the watch by pressing  about 2 or 3 seconds. The system initializes during about 10 to 30 seconds. When the watch LED is blinking regularly, the initialisation is finished and the robot is tracking the watch.



TECHNICAL INFORMATION

1. INSTALLING A NEW FIRMWARE VERSION
2. CONFIGURING YOUR PIXIO TO WORK WITH YOUR OWN CAMERA
3. DESCRIPTION OF LEDS
4. SPECIFICATIONS
5. INFORMATIONS ABOUT BATTERIES
4. F.A.Q
5. TROUBLESHOOTING
6. CUSTOMER SUPPORT
7. PRECAUTION & SAFETY

Installing a new firmware version on your PIXIO

Firmware v2.9 is already installed on your PIXIO. To take advantage of the latest improvements, install any new firmware version available from: <https://shop.moveensee.com/ccc>

We recommend to upgrade all devices (the robot, the watch and the 3 beacons) at the same time. Make sure that all devices are fully charged before starting the procedure.

1. Download the last firmware version

Download the latest firmware version at <https://shop.moveensee.com/ccc>

Save the firmware on a micro-SD card formatted with the FAT32, FAT16 format (*usually, micro-SD cards with a capacity lower than 32Gb are with a correct format*). The file must be saved in the root directory of the memory card, not in a sub-directory. This file is meant to be opened directly on and by PIXIO (do not try to open it from your computer).

Check that the name of the file is update.mnp without any ...(1) or ...(2) at the name.

Insert the micro-SD card in the robot slot on the robot side.



2. Start the UPGRADE mode

Press and hold **TurnRight** button on the robot, then briefly press on power button.

Release **TurnRight** button when the **red** light starts to blink.

1. Press on hold
turnRIGHT button

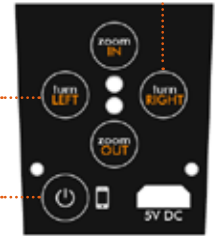
3. Release turnRIGHT
button when the red
light starts to blink

3. UPGRADE each device

Next, you have to upgrade each element one after the other (not all at the same time):

4. Press turnLEFT
button to upgrade
the robot

2. Briefly press POWER
ON



For the robot: Press briefly **TurnLeft** button. The green LED blinks rapidly during the upgrade, and stops when it is finished.

For a watch or a beacon (switched OFF before the procedure):

- Start the « upgrade » mode: press its started button during several seconds, until its green LED blinks
- Release the button, and press it again briefly to launch the upgrade. The green LED blinks rapidly during the upgrade, and turns full green when it is finished.

Is there a problem? Don't panic....

- ▶ If the upgrade is aborted (error, switch OFF,...), you can start again the procedure.

If during step 2, the red LED does not blink:

- ▶ Check that the micro-SD card capacity is lower than 32Gb and formatted with the FAT32, FAT16, or FAT12 format;
- ▶ Check that the upgrade file is stored at the root of the card and not in a sub-directory;
- ▶ Check that the card is inserted correctly in the robot slot.

Configuring your PIXIO to work with your own CAMERA

By default, your PIXIO is configured to work with a SONY HDR-CX450 camera. Follow these instructions to update the camera parameters kept in the memory of the robot.

First, download the file corresponding to your camera model at <https://shop.movee.com/ccc>. The file is meant to be opened directly on and by PIXIO robot so do not open the file directly from your computer.

Record the PIXCAM.cfg file on a micro-SD card formatted with the FAT32, FAT16 or FAT12 format (*usually, micro-SD cards with a capacity lower than 32Gb are formatted with a correct format*). The file must be saved in the root directory of the memory card, not in a sub-directory. This file is meant to be opened directly on and by PIXIO (do not try to open it from your computer).

Check that the name of the file is PIXCAM.cfg without any ...(1) or ...(2) at the end of the name. If needed, rename the file PIXCAM.cfg

Insert the micro-SD card in the robot slot. Switch ON the robot (*do not press any other button than the switch ON button*). A few quick flashes of the LEDs occur, and the file has disappeared from the micro SD card. The parameters of the robot have been updated and stored in its memory.





The micro SD card goes into the robot slot



Description of LEDs




start procedure

LED status		Description
●	LEDs off	The robot is off
	green LED blinking slowly	The robot (master) is initializing
	green and red LEDs blinking alternatively	The robot (slave) is initializing

tracking






LED status		Description
	green LED blinking slowly	the camera is on standby
	green LED blinking quickly	the watch requests the start or stop of the REC
●	green LED ON	the camera is recording

recharging

LED status		Description
●	red power LED is ON	The robot is recharging
	red power LED is blinking	The recharge is ending
●	red power LED is off	The battery is full







upgrade procedure

	LED status	Description
	red LED blinking	The robot is in upgrade mode
	red LED ON	The robot is in upgrade mode but the robot cannot read the «update.mnp» file
 	green LED blinking quickly red LED blinking slowly	The robot is upgrading
	red LED blinking slowly (after the previous step)	The upgrade has been done



remote control

	LED status	Description
	blue LED off	Bluetooth is off
	blue LED blinking quickly	The robot is ready to be paired with a remote
	blue LED blinking slowly	The robot has already been paired with a remote, but the remote is not currently connected
	blue LED ON	A remote is connected with PIXIO robot



tracking

LED status		Description
●	LEDs off	The watch is off
✱	green LED blinking slowly	The watch is ON but not filmed by the camera
✱	green LED blinking quickly	The watch requests the start/stop of the REC
●	green LED ON	The watch is ON and filmed by the camera
— ✱ —	solid green with quick flashes	A remote is connected with the robot



recharging

LED status		Description
●	red LED ON	The watch is recharging
✱	red LED blinking	The recharge is ending
●	red LED is off	The battery is full

upgrade procedure

LED status		Description
✱	green LED blinking slowly	The watch is in upgrade mode
✱	green LED blinking quickly	The watch is upgrading
●	green LED ON	The upgrade is completed



tracking

	LED status	Description
●	LEDs off	The beacon is off
●	green LED ON	The beacon is ON

recharging

	LED status	Description
●	red LED ON	The beacon is recharging
☀	red LED blinking	The recharge is ending
●	red LED is off	The battery is full

upgrade procedure

	LED status	Description
☀	green LED blinking slowly	The beacon is in upgrade mode
☀	green LED blinking quickly	The beacon is upgrading
●	green LED ON	The upgrade is completed

Specifications

INDOOR and OUTDOOR use

PIXIO can track a watch with the same performance inside or outside

RANGE

330ft (100m)

Automatic ZOOM

With supported cameras <https://shop.movensee.com/ccc>. Fixed otherwise.

REC control from the watch

With supported cameras

Rotations

PAN (horizontal): 360° endless (it's very long to check). 120°/s max (45mph at 30ft; 72km/h at 10m). Manual TILT adjustment (vertical)

Can support cameras

up to 5lbs (2,5kg)

Motor noise

Very silent motor. You can use a bluetooth microphone (not provided) or any similar accessory to capture any distant voice.

Weight

Watch 1.9 Oz (50g). Robot 1,2 lbs (550g.)

Transport

Designed to be very easy to pack and to take with you everywhere in any photo bag > 22x10x15cm (8.7x3.9x5.9in).

Multi-user

With your PIXIO, you can film up to 16 people. You can also use up to 16 robots to film from different angles. Whatever the number of watches, a maximum of 3 different watches can be filmed at the same time by the 16 robots; It means that several robots will sometime have to film the same watch.

Autonomy

PIXIO approx. 4h, WATCH approx. 3h, Micro-BEACON approx. 3h.

Li-Ion batteries. All chargers included: wireless for the watch. USB standards for the robot and the micro-beacons.

The robot and the micro-beacons can be plugged to the mains. This allows to film longer or to install PIXIO at the same place for months.

You may increase the autonomy of the robot or the beacons by plugging an external 'power bank'. For example, a power bank with a capacity of 10000mAh increase the autonomy of the device up to 5h to 10h.

Warranty

2 years

More information about PIXIO batteries

The robot, the watch and the three beacons include a Lithium-Ion battery you need to charge before starting to use PIXIO. The devices need about 2 hours to be fully charged if completely unloaded. Once charged, the robot is able to run for more than three hours. The watch and the beacons batteries can run between 2 and 3 hours and a half.

1. Battery charge capacity tends to decrease over time and use.
2. Lithium-ion batteries typically have a lifespan of between 300 to 500 charge cycles and are expected to retain around 80% of their original battery capacity after 300 charge cycles, or after about one year of use.
3. High or low ambient temperatures may negatively affect battery performance, resulting in a loss of up to 70% of charge capacity. The batteries should be stored at a temperature between 10° to 30°C.
4. If you do not use your PIXIO for an extended period, the batteries should be charged between 40% to 60% every two months.
5. To avoid self-discharge of the robot, unplug the robot after the end of the robot charge, turn the robot ON for a few seconds and then turn it OFF before storing it.

Normal drop in battery capacity over time and use is not covered by the warranty

F.A.Q

What kind of tripod do I need?

You need a tripod with a 3/8" screw. It is bigger than the usual 1/4" screw generally used for cameras. Do not use a tripod with a head, because of poor stability (except very high cost tripods!) and because it has a 1/4" screw.

Is it possible to plug PIXIO and the micro-beacons to a wall socket ? Do they work or do they only recharge?

PIXIO and the micro-beacons can be plugged in a wall socket, and they work. It is a solution for filming all day long, and also to install PIXIO at a fixed place.

Does PIXIO have an automatic tilt?

PIXIO has a manual tilt you can set before filming. For most activity on a level ground, you don't need the automatic tilt. As an example, refer to this video taken with PIXIO from the stadium stands, above the arena:

https://youtu.be/ILNN-ya_llw

Is it possible to live stream the video taken with PIXIO?

Yes, the HDMI plug of the camera can be used to have the video in real time, and many providers can live stream this video. Recent cameras also have a live stream option through your smartphone.

What is the connection needed on camera to have the automatic zoom and the REC control from the watch?

The camera plug is called «Multi» or «LANC» or «A/V-R» depending on the model. The models listed on the

website are compatible with Pixio, the others may not be compatible. Some non-listed models are compatible due to their similarities with compatible models, do not hesitate to ask us and we will check.

I have a DSLR; Is it compatible with PIXIO?

Any DSLR can be mounted on Pixio. But DSLRs do not have a motorized zoom. The zoom will remain fixed. Be carefull that DSLRs generally do not have autofocus in video mode, so the video may be blurry.

Where do I get the mechanical interface to allow smartphone and tablet to be used for filming?

You need a common adaptor between Pixio and the smartphone or tablet. It is generally called «smartphone/tablet tripod adaptor». It costs a few dollars and can be found easily.

With a tablet or smartphone, do I have the automatic zoom and the REC control from the watch?

No. A tablet or smartphone does not have any plug for zoom and record remote control by PIXIO.

Is it possible to use the HDMI port of the camera for video recording or streaming, or is it disturbed by the zoom and REC control from PIXIO?

It is possible to use the HDMI port while PIXIO is controlling the zoom and the REC through the specific plug (multi, LANC, or A/V-R). HDMI plug is not used by PIXIO.

Is it necessary to measure everything manually in detail to set-up the beacons at precise locations?

No. It is like the GPS: you don't need to know the position of each satellites, it is automatic. Just put the 3 micro-beacons somewhere around your playground, switch them on, and you are done.

Is it an issue if I go outside the area set-up by the beacons?

No. You can go outside the area set up by the beacons and still be framed. And of course if you are going too far the camera will lose you, and it will find you again when you come back.

Can I use PIXIO in a building with metallic walls?

Yes. Just take care to have all the elements of PIXIO a few inches (a few centimeters) away from the metal.

Can I use PIXIO robot without the three beacons?

The three easy to set up beacons included with the PIXIO allows the robot to be responsive, precise and to film from 330ft (100meters): it is exactly what makes PIXIO a unique technological product. The three beacons are used by the watch to calculate 10 times per second the position of the robot which explains exactly why you need the beacons to enjoy your PIXIO experience.

How long does the beacon battery last?

What if I need to film for a longer period?

The beacons battery lasts about 3 hours. If you still need more time to film, you can always use a power bank (not included). Just plug the power bank to the beacon and that's it!

What are the maximum and minimum operating temperatures?

As any electronic devices, PIXIO operation is not guaranteed at temperatures below 0°C or temperatures above 40°C. In real life we have many customers using PIXIO since more than one year in cold countries, Canada, Sweden, Iceland, Norway, Finland etc., and they never had any problem in cold weather. And in our lab we tested PIXIO at -18°C.

Batteries usually have less autonomy in the cold, this is probably the main consequence.

Troubleshooting

NOTICE

We recommend that you regularly update PIXIO firmware to enhance PIXIO behaviour. Refer to the complete update procedure page 30.

TRACKING		
PROBLEM	CAUSE	SOLUTION
The PIXIO robot does not start tracking whereas the watch LED blinks irregularly.	The robot, the watch, and the beacons cannot start their radio communications correctly.	Place the robot and the beacons following the instructions page 12 «Micro-beacons location» and start again the system. If the tracking does not start after about 20 seconds, you can help by holding the watch above your head a few seconds. As soon as the tracking starts, you can put your hand down.
The PIXIO robot does not start tracking whereas the watch LED blinks regularly.	The watch starts on the upgrade mode.	Turn ON the watch by pressing the button until the green light turns ON the release the button immediately.
The PIXIO robot does not start tracking whereas the green and red lights of the robot are blinking alternately.	The robot is a slave (refer to page 25).	When OFF, press the ON/OFF button of the robot during 13 seconds (until the green light blinks alone).
The PIXIO robot does not start tracking whereas a beacon LED blinks regularly.	The beacon starts on the upgrade mode.	Turn ON the beacon by pressing the button until the green light turns ON the release the button immediately.
The PIXIO robot rotations are always in the wrong direction of rotation.	The beacons are not placed correctly.	The beacon n°2 must be on the left of the beacon n°1, as seen from the robot. Follow the instructions given page 12 «Micro beacons set-up» and start again the system.
Sometimes, the robot is shaky, and/or too late.	Distances are too long, and/or an external element is perturbing the system.	Place the beacons and the robot following the instructions given page 12 «Micro-beacons location» and start again the system.

TRACKING		
PROBLEM	CAUSE	SOLUTION
The PIXIO works well at short range but malfunctions at long range	The radio communication malfunctions	<ol style="list-style-type: none"> 1. Verify that the beacons are not placed on the ground. The beacons must be settled at 1m to 2m from the ground. 2. Place the robot and the beacons following the instructions page 12 «Micro-beacons location» and start again the system.
The PIXIO robot always films on my side.	The beacon n°1 was not well at the center of the frame before starting the watch, and/or the beacon n°1 was much closer to the camera than the whole area you want to film, and/or the robot is not screwed enough to the tripod	<ol style="list-style-type: none"> 1. Re-start the system, checking that the beacon n°1 is well at the center (right-left) of the camera screen before starting the watch. Check that the distance between the beacon n°1 and the camera is similar to the maximum distance of the area you want to film (half this distance is a minimum). 2. Check that the robot is well screwed to the tripod.

ZOOM / REC		
PROBLEM	CAUSE	SOLUTION
I cannot start recording from the watch and the zoom is fixed	<ol style="list-style-type: none"> 1. the camera cable is not properly plugged. 2. the robot is not parameterized for your camera model. 	<ol style="list-style-type: none"> 1. Replug the camera cable on both side. 2. Upgrade the camera parameters of your robot. See procedure page 7
The REC stops automatically or the video is split into many short videos.	The camera battery is empty or the camera memory is full.	<p>Recharge the camera battery.</p> <p>Format the microSD card with the «setup menu» of the camera.</p> <p>Format the internal memory of the camera (if applicable).</p>

ZOOM / REC

PROBLEM	CAUSE	SOLUTION
The REC stops automatically.	You are asking for recording with the REC button on the camera.	The PIXIO is not designed to operate by pressing on the REC button on the camera. To start and / or stop recording the video, use the button on the watch or use the PIXIO_Remote application from a tablet or a phone.

RECHARGE

PROBLEM	CAUSE	SOLUTION
The watch does not recharge (the red LED is OFF)	The watch battery is already charged or The watch is not properly placed on the charger	<ol style="list-style-type: none"> 1. Check that the watch is not already charged. 2. Check that the watch is positioned on the right side of the charge (the side without marks). 3. Check that the watch is in direct contact with the charger.
The robot or a beacon does not recharge (the red LED is OFF)	The battery device is already charged	Check that the device is not already charged (the red LED does not turn ON if the battery is charged).
The robot discharges when OFF	The robot is self-discharging	To avoid self-discharge of the robot : unplug the robot after the end of the robot charge, turn the robot ON few seconds and then turn it OFF before store it.

FIRMWARE UPDATE / SAVE OF THE CAMERA PARAMETERS

PROBLEM	CAUSE	SOLUTION
I cannot upgrade my system (the red led remains ON)	The PIXIO robot cannot read the file.	<ol style="list-style-type: none"> 1. Check that the micro-SD card has been formatted with FAT32 option. 2. Check that the file is in the root directory of the micro-SD card and not in a sub-directory. 3. Check that the microSD card is inserted into the PIXIO robot slot (not in the camera). 4. Check that the name of the file does not include any ...(1) or ...(2) at the end of the name or does not include the file extension twice (eg update.mnp.mnp). If so, rename the file update.mnp or update if your computer does not display the extension files.
I cannot not upgrade the camera parameters. The PIXCAM.cfg does not disappear from the memory card at the end of the procedure.	The robot cannot read the parameters file.	<ol style="list-style-type: none"> 1. Check that the micro-SD card has been formatted with FAT32 option. 2. Check that the file is in the root directory of the micro-SD card and not in a sub-directory. 3. Check that the microSD card is inserted into the PIXIO robot slot (not in the camera). 4. Check that the name of the file does not include any ...(1) or ...(2) at the end of the name or does not include the file extension twice (eg PIXCAM.cfg.cfg). If so, rename the file PIXCAM.cfg or PIXCAM if your computer does not display the extension files.

FIRMWARE UPDATE / SAVE OF THE CAMERA PARAMETERS

PROBLEM	CAUSE	SOLUTION
I cannot save the PIXCAM and/or update files on my microSD card	The microSD card is write-protected	Remove the write-protection from the microSD card by lowering the protective tab
After an update, the PIXIO malfunctions	You did not updated all the devices (robot, watch and the 3 beacons)	Update all devices (robot, watch and the 3 beacons)

BLUETOOTH

PROBLEM	CAUSE	SOLUTION
The blue LED «bluetooth» does not turn ON when briefly press on ON/OFF button.	You did not update your PIXIO	Update all devices (robot, watch and the 3 beacons) with the latest firmware version

Customer support

Our qualified team will guarantee you fast support in case of questions or problems with your equipment. Our objective is to have your product in a good working order.

If you need help, please check carefully the manual, the FAQ, and if necessary contact MOVE 'N SEE by phone, e-mail or mail.

Phone (France): +33 (0) 9 70 75 13 15 (no additional charge)

E-mail (after-sales): ccc@movensee.com

Mail (after sales): MOVE 'N SEE - SAV, 38 rue Jim SEVELLEC, 29200 BREST

MOVE 'N SEE products have a 2 years legal warranty against hidden defects originating from a materials defect, or from a design or manufacturing defect affecting the products delivered and rendering these unfit for use. Opening the product or a part of the product voids the warranty.

To return a product, you must first contact MOVE 'N SEE to explain the problem.

If the technical department at MOVE 'N SEE decides that the product needs to be returned to them, you will be given a return code.

You can then return the product along with the accessories in its original packaging. The return code must be clearly marked on the exterior of the packaging.

As soon as we receive your package, our technicians will inspect and analyse the problem item. If the guarantee detailed in the conditions of sale are applicable, it will be repaired or replaced free of charge.

In all other cases, you will be sent a free quote for repairs. You will then have the choice:

-to refuse the quote, in which case the product will be returned to you at your own expense.

-to accept the quote. In this case, repairs will begin on reception of your payment. The product will then be returned to you once the repairs have been completed.

Precautions and safety

Batteries:

If the internal batteries are mishandled, the batteries can burst, cause a fire or even chemical burns. Observe the following cautions. Do not disassemble. Do not crush and do not expose the batteries to any shock or force such as hammering, dropping or stepping on it. Do not short circuit and do not allow metal objects to come into contact with the batteries terminals. Do not expose to high temperature above 60°C (140°F) such as in direct sunlight or in a car parked in the sun. Do not incinerate or dispose of in fire. Do not handle damaged or leaking lithium ion batteries. Be sure to charge the batteries using the chargers provided or a device that can charge the batteries. Keep the batteries out of the reach of small children. Keep the batteries dry. Don't replace the batteries yourself. Dispose of used batteries promptly.

To reduce the risk of fire or electric shock, do not expose the unit to rain or moisture. Do not place objects filled with liquids, such as vases, on the apparatus. Do not expose the batteries to excessive heat such as sunshine, fire or the like.

The product includes small parts. Keep it out of the reach of small children.

Cables may cause strangulation. Keep it out of the reach of small children.

The PIXIO watch, wherever it is on the subject or a vehicle, is a prominence that may cause injury for the subject itself or other people around him. The armband can interact with other equipments. The user is fully responsible for the use of the product and for security of its activities. The responsibility of MOVE 'N SEE cannot be engaged in case of injury or death.



For customers in the European Union

PIXIO conforms to the CE norm.

It conforms to the IEEE 802.15.4 standard UWB PHY with the following details:

- band: 5 (central frequency : 6489.6MHz bandwidth : 499.2 MHz)
- Power: $\leq -41.3\text{dBm/MHz}$ PIRE
- Modulation: BPM-BPSK

The importer is responsible for checking conformance with local norms of the country of use.

Disposal of Old Electrical & Electronic Equipment

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.



For customers in the USA



RECYCLING LITHIUM-ION BATTERIES:

Lithium-Ion batteries are recyclable. You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you. For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.call2recycle.org/>



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.

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 supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Any changes or modifications to this equipment not expressly approved by MOVE 'N SEE S.A.S may cause, harmful interference and void the FCC authorization to operate this equipment

For the robot and the beacons:

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions :

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/ nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

For the watch:

This portable equipment with it's antenna complies with FCC's radiation exposure limits set forth for an

uncontrolled environment. To maintain compliance, follow the instructions below :

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. Avoid direct contact to the antenna, or keep contact to a minimum while using this equipment.