PIXEM 2

User manual



User manual v1.0

MOVE'N SEE

Congratulations!

You have purchased the PIXEM 2, the high-performance and easy-to-use robot cameraman, for high-quality videos of indoor and outdoor activities and outdoor activities up to 100m.

This manual describes the contents of the box, how to install the system, start it, and make the most out of it.

With PIXEM 2, you can now film sports, training courses, conferences, ceremonies, shows, rehearsals... and much more!

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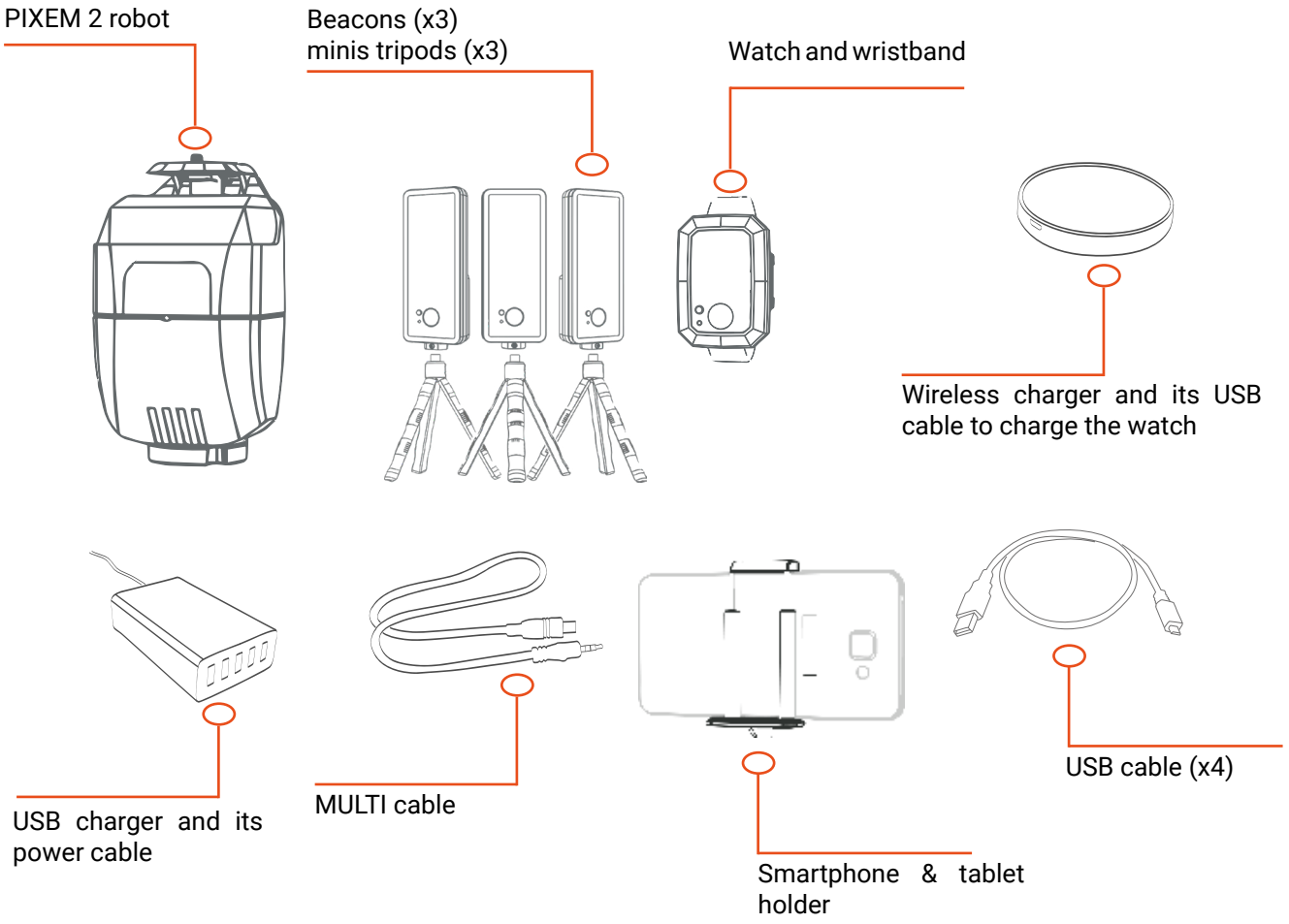
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Before starting

1. Included items



2. 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

Charging the PIXEM 2 robot:
Plug one of the USB cables to the plug «5V DC» at the back of the robot.
At the end of charging, remember to activate the self-discharge protection by disconnecting the robot from the power supply and switching it on for a few seconds before switching it off for storage.

Charging the PIXEM 2 beacons:
Plug USB cables in each one of the micro beacons plug located behind.

Charging the PIXEM 2 watch:
Plug the wireless charger to one of the USB cables connected to the USB charger. Simply place the watch on the wireless charger to initiate charging.



The red LED of the watch, beacons and robot lights up during the recharge, and goes down when devices are charged.

You can also recharge the PIXEM 2 devices with a computer. Connect the USB cable to a USB port on your computer. Caution, it is recommended not to leave the batteries in charge for more than 24 hours, as this could damage the batteries and/or the electronic components.

[1]the red LED may also flash at the end of charging. If this happens, you can unplug the device, as it is now fully charged.

Getting started

1. 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.

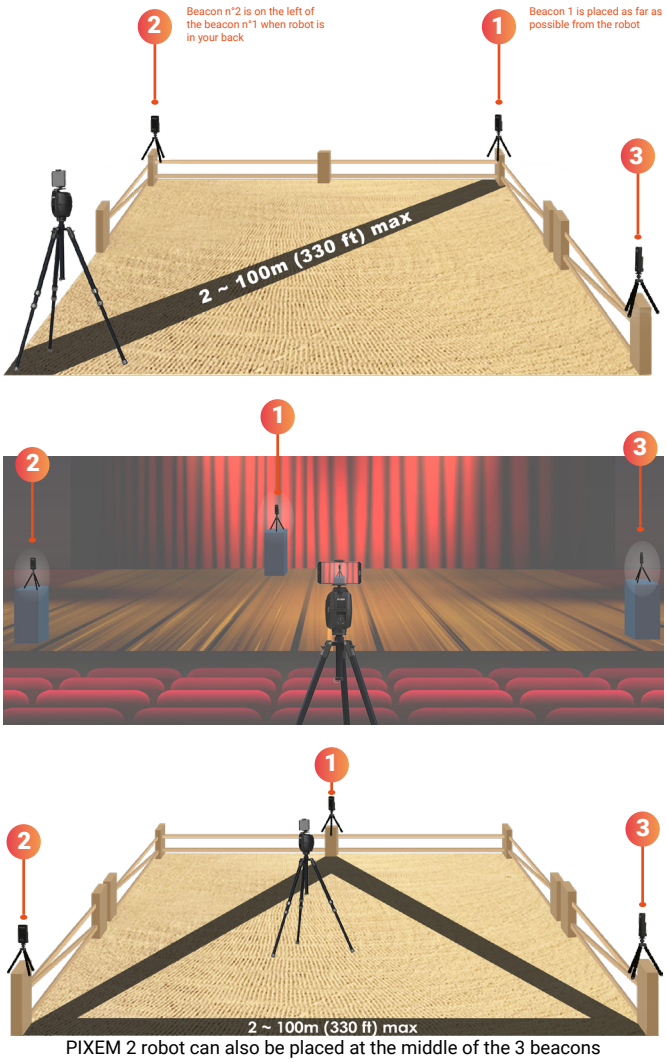
After screwing the beacons on the mini-tripods, switch ON each beacon by pressing its button until the green light turns ON.

Place the PIXEM 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).

• Place the beacons n°2 on the left of the beacon n°1 when robot is in your back

• The beacon n°3 can be placed on the left or on the right of other beacons.



PIXEM 2 robot can also be placed at the middle of the 3 beacons

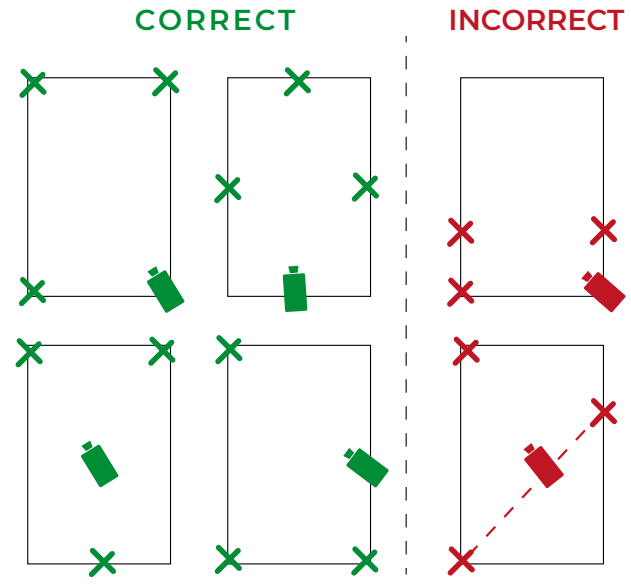
The positions of the beacons are very flexible, but tracking and accuracy are better with proper configurations:

• 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 beacons and robot more than 30 cm away from any possible sources of interference (electrical devices or electronic equipment, powerful antennas, nearby mirrors, etc.).

• The best height for the beacons is 1 to 2m (3 to 6 ft) from the ground.

• The distance between the beacons, and the distance between the robot and the beacons, must be smaller than 330ft (100m).




Optimal orientation

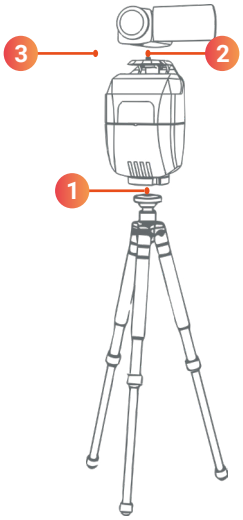

Bad orientation

2. Film with a camera

Refer to the brochure supplied with your PIXEM to identify the camera model configured in your robot. Follow the instructions page 21 to change the camera model used with the PIXEM 2 robot.

Installation

Check that the robot is off before screwing or unscrewing the robot.



1 Screw the PIXEM 2 on a tripod equipped with a standard 3/8”

2 Screw your camera on the robot with the 1/4” screw of the PIXEM 2 robot.

3 If you are using a compatible camera model (check the list here), plug the camera to the jack output on the side of the PIXEM 2 robot thanks to the adapted cable. There are 3 cable models depending on the camera:


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 shop.movensee.com

Start the tracking



Make sure the watch is off.
Turn the camera on.

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. 4

Switch ON the PIXEM 2 robot by pressing the power button for about 2 seconds .

By moving the tripod or by pressing the Turn Right and Turn Left buttons , center beacon 1 in the screen of your camera. 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.





Place yourself in the filming area and press the power button of the watch until its green led blinks. The device will initialisation during 10 to 30 seconds. When the green led of the watch blinks regularly, the initialisation is over and the PIXEM 2 robot will start tracking you.

Start or stop the recording

You can start/stop recording by pressing BRIEFLY the watch button .

- ► **Recording in progress:** The green LED is steady
- ► **Recording stopped:** The green LED is blinking

The LED on the watch will start blinking if your order has not been taken into account. In that case, you might want to check that your camera is ON with enough memory and battery.



Start and stop the recording by pressing the button on the watch

Recording in progress: The green LED is steady
Recording stopped: The green LED is blinking

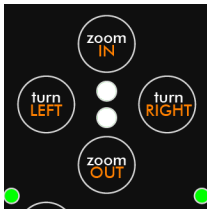
If you are using a non compatible camera, you can start the recording direclty from the REC button on the camera.

Zoom level adjustement

Zoom initialisation

When you switch ON the PIXEM 2 robot, and also when it starts tracking you, the (supported) camera zooms out totally, and then zooms in automatically.

Personal settings



Once the tracking has started, you can modify the automatic zoom level of the PIXEM 2 robot. Just press **zoomIN** or **zoomOUT** buttons by successive short pressing until the frame suits you. The new settings are automatically recorded for future use so you don't need to it again. Those buttons only work when the tracking has started, and when the zoom is not blocked in the wide setting.

Zoom behavior

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 rapidely comes back
to the normal value.

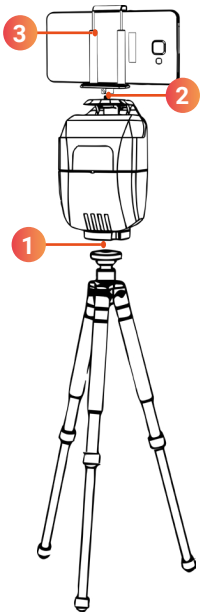
3. Film with a smartphone/tablet

Install the PIXEM CAMERA application

The PIXEM CAMERA app allows you to film with a smartphone or tablet on the robot and benefit from automatic zoom & start/stop recording from the watch, as well as access to streaming functionalities. It is compatible with the latest Android and iOs devices.

GET IT ON Google Play

Available on the App Store



Robot installation

1. Screw the PIXEM 2 on a tripod equipped with a standard 3/8”
(Check that the robot is off before screwing or unscrewing the robot).

2. Screw the smartphone & tablet holder onto the robot with the 1/4” screw of the PIXEM robot.

3. Clip your smartphone or tablet into the holder. Make sure that the clip does not press the buttons on the side of your smartphone or tablet.

Connect the PIXEM CAMERA app to your smartphone or tablet

Check that the watch is off.

Turn the PIXEM 2 robot by pressing its power button located at the back of the device for about 2 seconds.

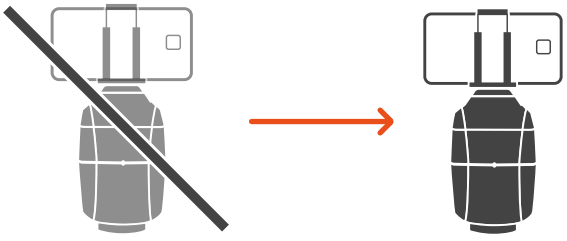
Turn your smartphone or tablet and activate the bluetooth. Do not Switch your smartphone or tablet ON. Activate the bluetooth on your smartphone or tablet. Do not try to connect the phone with the robot at this time. The connection is made through the PIXEM camera application.

Start the PIXEM CAMERA app and select «Film with your PIXEM».

Connect the MOVE ‘N APP to the robot by pressing briefly the pairing button at the rear of the robot .

The PIXEM 2 robot and your smartphone or tablet are now connected. The uncrossed robot logo is now visible in the upper right corner of the MOVE ‘N APP. 4





Start the tracking



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. 1

By rotating the tripod, or using robot buttons or using the Turn Right and Turn LEFT , and , place the **beacon n°1** at the center of the screen of your smartphone or tablet 2.

What is important is the right-left position of the beacon. Use the manual ZOOM slider 3 to improve the precision. A 50cm (20 inches) precision is enough.



Place yourself in the filming area and press the power button of the watch until its green led blinks. The device will initialisation during 10 to 30 seconds. When the green led of the watch blinks regularly, the initialisation is over and the PIXEM 2 robot will start tracking you.

Start or stop the recording

You can start/stop recording by pressing BRIEFLY the watch button .

- **Recording in progress:** The green LED is steady
- **Recording stopped:** The green LED is blinking

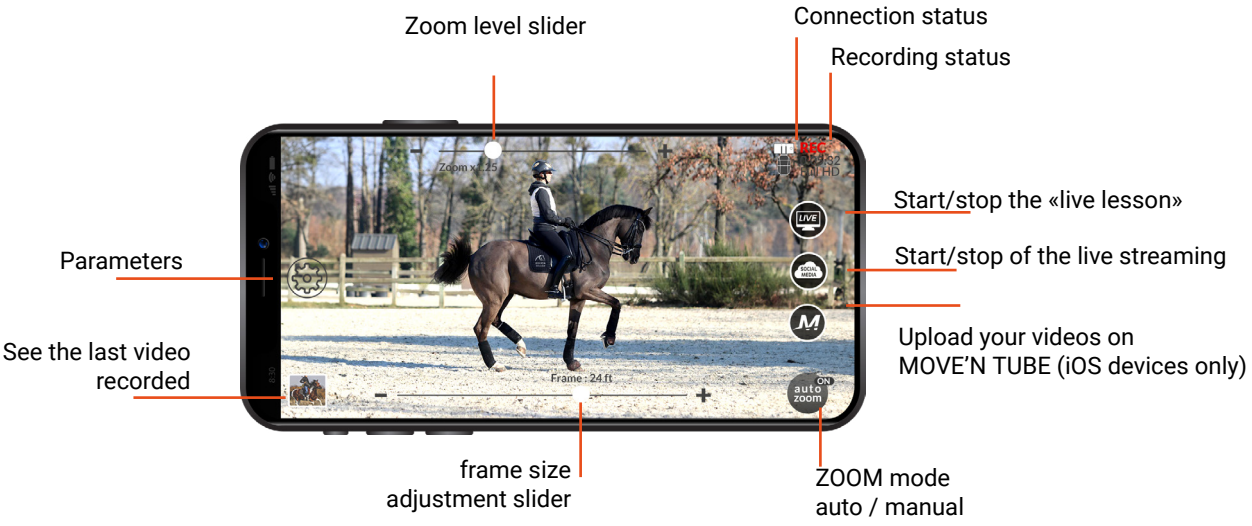
The LED on the watch will start blinking if your order has not been taken into account. In that case, you might want to check that your smartphone/tablet is ON with enough memory and battery.



Start and stop the recording by pressing the button on the watch

Recording in progress: The green LED is steady
Recording stopped: The green LED is blinking

PIXEM CAMERA application overview & features



Robot PIXEM 2 connected to the app

Robot PIXEM 2 not connected

STBY — Standby (recording paused)
01h 42m — Recording time available (depends on your device's memory)
Full HD — Video resolution

REC — Recording in progress
0:05:32 — Video duration
Full HD — Video resolution

Automatic zoom

the app automatically zooms in & out according to your movements

You can set the size of the frame using the frame size selection slider on the bottom of the app

Frame : 24 ft

Manual zoom

The app automatically does not zoom in & out according to your movements

You can set the zoom level using the zoom level selection slider on the top of the app

Zoom x1.25

Live lesson
for streaming with a delay of less than 1 second

Open the parameters

Live streaming on facebook (not connected)

Live streaming on youtube **not connected**

Live streaming on facebook **connected**

Live streaming on youtube **connected**

Live streaming on facebook **live in progress**

Live streaming on youtube **live in progress**

Check the last video recorded

Parameters

Video resolution	Select the resolution of the video FULL HD (1080p), HD (720p) or DVD (420p)
Live Lesson resolution	Select your video streaming resolution to stream on the LIVE LESSON service: HIGH, MED ou ECO.
Zoom limit	By default, the zoom level is limited to ensure optimal image quality. Above a certain limit, a zoom level too high may affect the quality of the recorded image. The limit depends on each phone / tablet. You can change this default limit. In this case, the application will zoom to the limit you have chosen. The image quality may be affect if the limit is too high.
Default auto zoom	If ON, the auto zoom will be activated each time the application is connected to a PIXEM 2 robot. If OFF, the manual zoom will be activated each time the application is connected to a PIXEM 2 robot.
Frame unit	Select the unit of the frame size (meter or foot).
Store tracks	If ON, the watch tracks are stored on the microSD card (requires a micro SD card with format FAT32 in the PIXEM 2 robot).
360° Endless	if ON, the robot is able to rotate 360° endless. If OFF, rotation is limited to 360°. This limit can be useful when a cable is connected to the robot (must be set before a watch is switched ON).
Stop Mode	if ON, tracking becomes insensitive to small movements
Tracking Smoothness	HARD - reactive tracking, ideal for sports filming. SOFT - the right compromise between reactivity and softness. Ideal for filming a person in motion on stage. SUPER SOFT - softest tracking mode. Ideal for filming a conference when the speaker remains still or moves slowly

Robot Expert Settings

MOVE 'N SEE recommend that you keep the default parameters. MOVE 'N SEE will not support users for the following parameters adjustment. These options allow you to stop the robot rotation under certain conditions, which is useful for avoiding undesirable robot movements when the subject is practically immobile.

The motor stops if the subject stays [N] seconds inside a radius of [D] meters

Stop Position Mean Duration	Set the time duration [N] in seconds from 0 to 10 seconds. Default value: 3 seconds
Stop Distance Threshold	Set the radius length [D] in meters from 0,7 to 3 meters. Default value: 0,7 meters.

4. Live stream on social media

Thanks to PIXEM 2, you can stream your videos on the social networks Facebook, Twitch and YouTube.

To do so, press the LIVE SOCIAL icon in the PIXEM CAMERA application and choose the social network on which you want to live stream your video.

5. Take remote lessons

Thanks to your PIXEM 2 robot, you can take remote lessons with your coach in real time! There are 2 options:

Option 1: a subscription to the Live Lesson service if you are filming with a SMARTPHONE / TABLET on your PIXEM 2 robot.

The video is sent live to the coach via the PIXEM CAMERA application thanks to the Live Lesson subscription. The smartphone / tablet used to film must be connected to the internet (4G, 5G or Wifi).

Option 2: Live Lesson pack for filming with a CAMERA

We have created a LIVE LESSON pack that allows you take live lessons remotely, filming yourself with a camera mounted on the PIXEM 2 robot. This pack includes a video capture device that to receive the video filmed by the camera mounted on the PIXEM 2 robot on your computer and in real time. The video is sent live to your coach from your computer via Skype, Facetime, etc. (the computer must be connected to the Internet).

There are 2 options to talk to your coach during the lesson: a standard phone call (the rider must have a phone with earphones on), or with a CEECOACH device and our connection cable that transmits sound between the rider and the PIXEM CAMERA computer/application.

Advanced settings

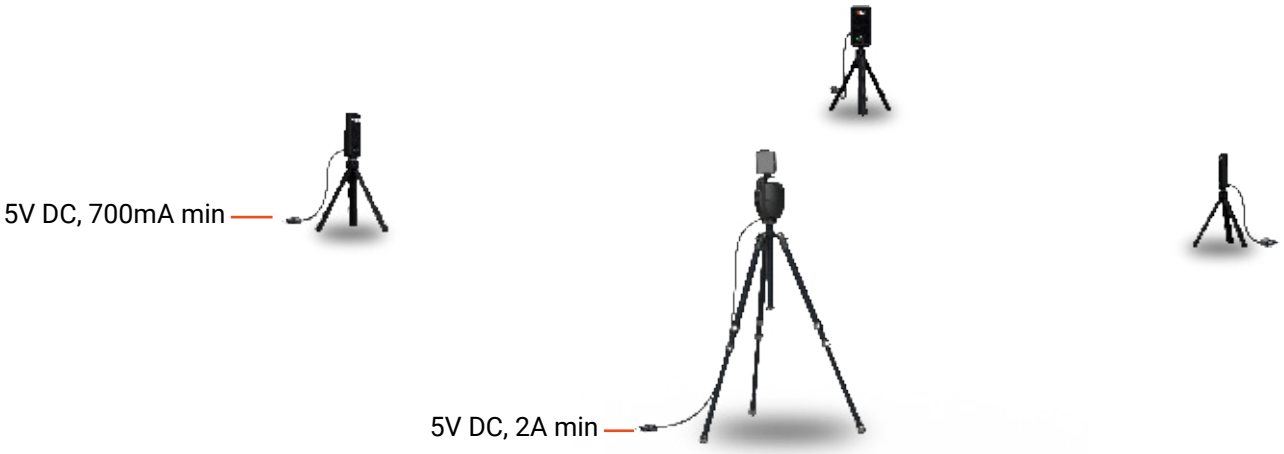
1. How to increase the autonomy?



With 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 PIXEM. A powerbank with a capacity of 3000mAh will extend the autonomy by 4 or 5h.

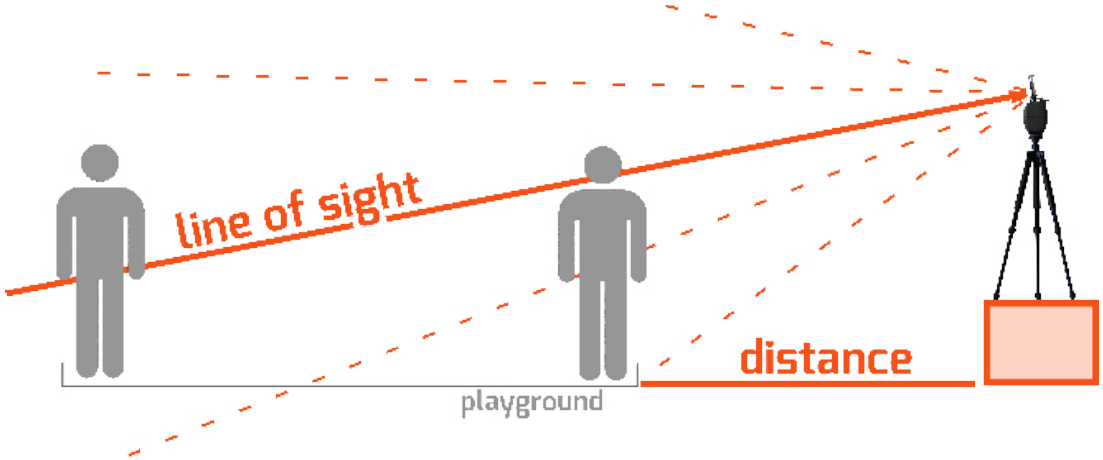
Use the mains outlets
You can plug the PIXEM 2 robot and the beacons to the sockets. This is useful to film longer and to install your system in a fixed position.

> For the beacons, use 3 micro-USB chargers 5V DC, 700 mA min.
> For the PIXEM robot, use a micro-USB charger 5V DC, 2A min (or the one which is provided).



2. How to film from an elevated location

PIXEM 2 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.

3. Set up the camera on the PIXEM 2

Set up your camera

We recommend activating image stabilization (called "steadyshot®" for Sony cameras), and deactivating digital zoom.

Depending on your camera lens, make sure to set all image quality and size parameters (16:9 is often better than 4:3, for example), and recording speed (50p for better slow-motion shots, for example). Deactivate the camera's "power save mode" option.

Mounting a heavy camera

You can fix the camera's horizontal adjustment by tightening the 2 screws on either side of the rotation axis. To do this, use a 2.5mm hexagonal screwdriver. Be careful not to exceed a tightening torque of 2 Nm. This allows you to install cameras weighing up to 2.5 kg. To release the axis rotation, loosen the 2 screws. You can also use a large quick-release plate to move the camera's center of gravity forward to prevent it from tipping backwards.

Tighten the 2 screws apart the rotation to lock the screws





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

4. The PIXEM REMOTE application to control your robot

You can take control of your PIXEM 2 robots from your smartphone thanks to the "PIXEM REMOTE" application.

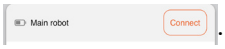








Connect a smartphone or a tablette to your PIXEM 2
Turn on the robot and briefly press on the power button  to activate the bluetooth. The blue light starts blinking rapidly during one minute. Your robot is ready to be connected with your smartphone/tablet.

> Activate bluetooth on your smartphone.
> Launch the «PIXEM Remote» App
> Connect the «Main robot» by pressing the connect button 

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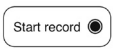
Follow the same procedure as above to connect your smartphone/tablet to other PIXEM 2 extra-robots you own. You can use as many
extra-robots as you want with your App.

Note : The PIXEM 2 robot can be connected to one smartphone/tablet at a time. If you use the PIXEM camera app, you won't be able to connect to the PIXEM remote application at the same time on this robot.

How to use the App as a remote control

Record ON/OFF: When a remote is paired, it will take over on the control of the start/stop of the recording of the video. Orders sent by watches will be ignored and displayed as shown below:



Tap the Start record button 

of the app to start/stop the recording of the video

Auto Zoom: Tap the 

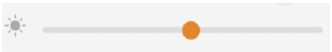
button to adjust the automatic zoom level.

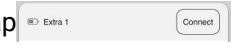
Manual Zoom: Tap the 

to modify the frame of the camera. When manual zoom mode is ON, the PIXEM 2 robot won't zoom in/out automatically.

Auto Track: When Auto Track mode is ON, the robot will automatically track the watch.
Manual Track: When Manual Track is ON, use the slider 

to have the robot moving from left to right.

Brightness: Use the slider  to increase or reduce the brightness of the lights of the watch and beacons.

Selection of the tracked TAG: on each robot menu, tap 

to select which watch to track.

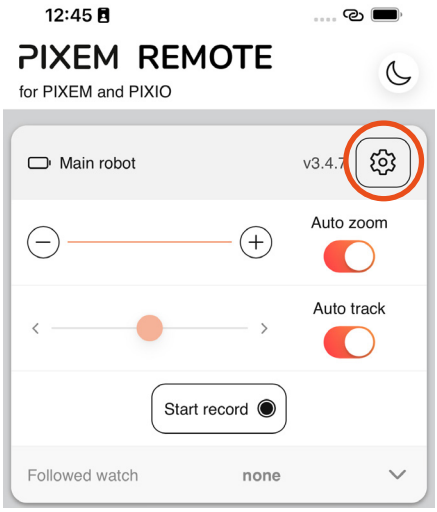
NOTICE

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

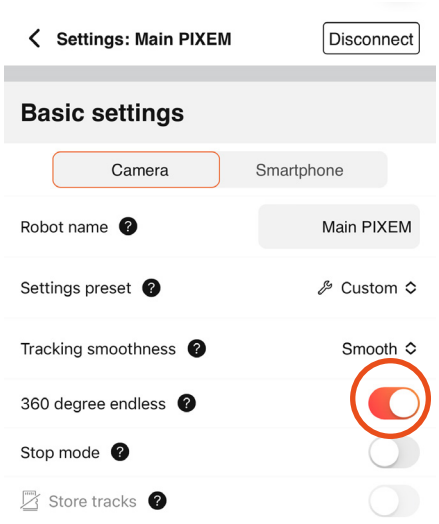
Restrict the rotation of the robot

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 PIXEM Remote application.

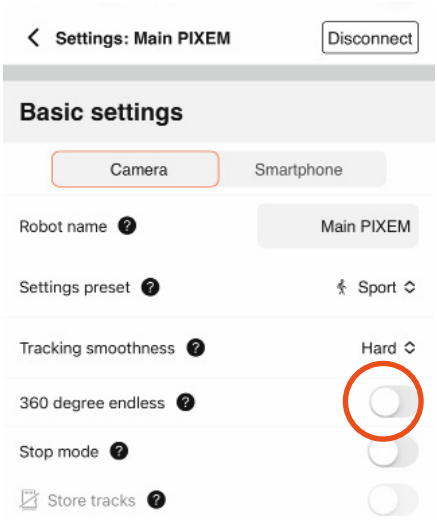
Click on «Settings»
Disable the option 360° endless



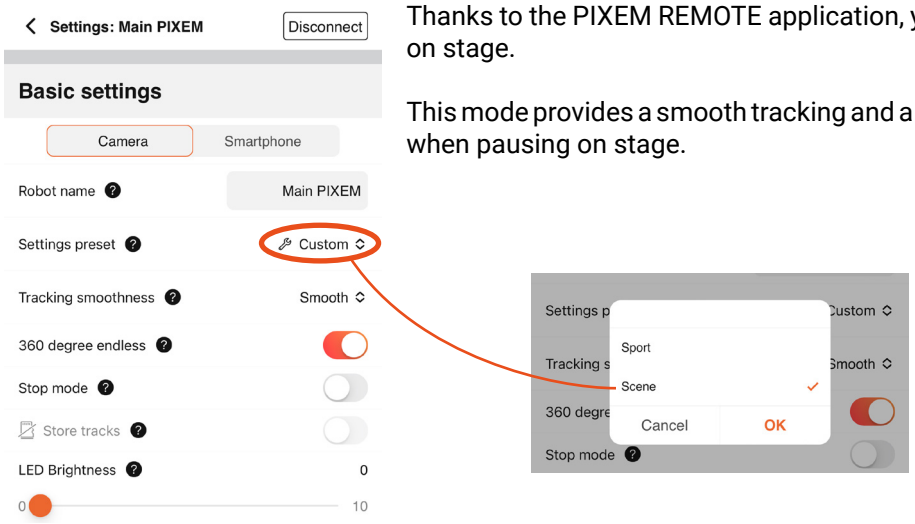
Validate by pressing «OK»



-- 360 Degree Endless --
Validez en appuyant sur «OK»



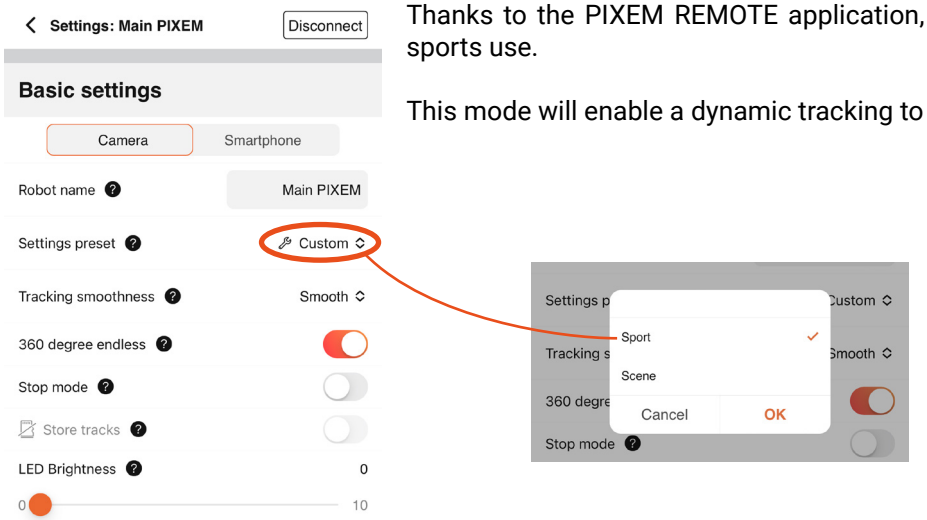
5. Scene and conference mode



Thanks to the PIXEM REMOTE application, you can define a specific mode for use on stage.

This mode provides a smooth tracking and a "stop" mode to avoid robot movements when pausing on stage.

6. Sport mode



Thanks to the PIXEM REMOTE application, you can define a specific mode for sports use.

This mode will enable a dynamic tracking to react to the slightest movement.

Multi-users

Film one or several watches with one or several robots. This chapter doesn't apply to you if you only own one watch and one robot.

1. Pairing procedure

Here's how to link your elements, i.e. robots, watches and tags.

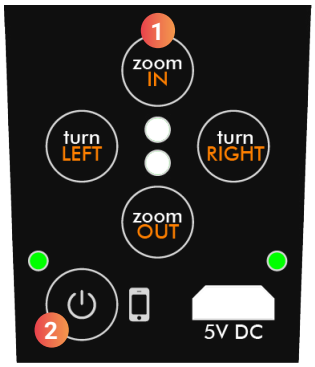
- If you have a single robot (and several watches), the robot is automatically the Main robot.
- If you have several robots, choose one to become the Main robot, while the others will be Extra.

The Main robot should always be on when you're filming, as it centralizes information from the other elements while tracking.

Start the pairing procedure

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

On the Main robot, Press and hold the **zoomIN button** 1 then press briefly on the power button 2.



Release the **zoomIN** button when the green and red lights blink together 1.

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

You must pair at least one watch and 3 beacons to the Main robot to enjoy the tracking feature.
You can add up additional extra robots and watches.

Pair a device (robot, watch or beacon) to the Main robot

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

To pair a new device (extra 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.

L'association du robot ***Principal*** et des autres éléments reste enregistrée pour les prochaines utilisations.

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

How to recognize a Main robot from an Extra robot ?

During the initialisation of the robot (before the start of the tracking), if the green blinks on its own, then the robot is a Main robot.

If the green and red lights of a slave robot blink alternately, the robot is an Extra robot.

2. MULTI-USER operation

Multi watches tracking

The watches, beacons and PIXEM 2 robot you'll be using must all have been associated to operate in Multi-user mode. If this has not yet been done, please follow the "Pairing procedure: associate your elements (Pair a device (robot, watch or beacon) to the Main robot".

Check that all watches are switched off. To start tracking, follow the regular PIXEM 2 installation procedure (page 5), up to the start of tracking step (page 8). The PIXEM 2 robot then starts tracking the first watch switched on.

Once tracking has started, switch on the additional watches near the tracking area by pressing the button. The green light of each watch starts to blink slowly.

Each watch can then request to be tracked and filmed by briefly pressing the button . The green light stays on to indicate that the watch is being filmed. Stop video recording by pressing the button again . The watch's green light starts flashing again.



Use several robots

The principles are the same as before; each robot must aim towards beacon n°1 before switching on the watch(es) to begin tracking.

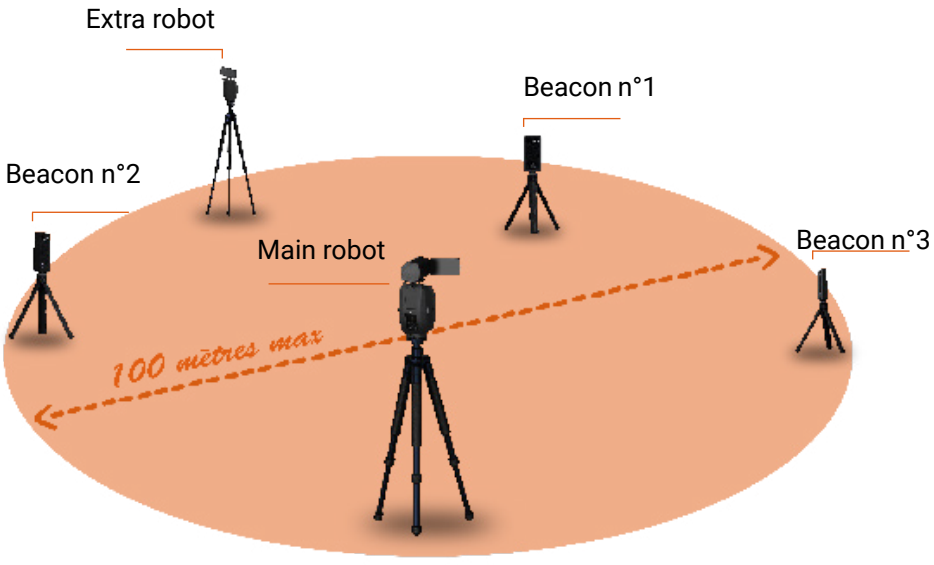
The PIXEM 2 watches, beacons and robots you will be using must all have been associated to operate in Multi-user mode. If this has not yet been done, please follow the "Association procedure: associate your elements (robots, watches and beacons)".

Switch on each beacon by pressing the power button until the green light comes on.

Position the PIXEM 2 robots and the three beacons around the area to be filmed, so that from the Main robot, beacon n°2 is seen to the left of beacon n°1. Beacon n°3 can be on the left or right of the other beacons. The distance between each element must be between 2 and 100m.

Seen from the position of the Main robot, beacon n°2 must be placed to the left of beacon n°1.

The distance between each element must be between 2 and 100 meters.



Turn on your cameras.

Check that all watches are switched off. Switch on the PIXEM 2 robots by pressing the power button for about 2 seconds. .

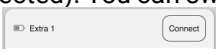
By moving the tripod, or using the TurnRIGHT and TurnLEFT buttons, position beacon #1 at the center of each camera's screen. Use your cameras' ZOOM buttons to center the beacon as precisely as possible. The robots are now ready!

Stand in the area to be filmed and press the power button on a PIXEM 2 watch. The system will initialize for approximately 10 to 30 seconds. When the LED on the watch flashes regularly, initialization is complete and the PIXEM 2 robots start tracking you.

If you have several watches, you can now switch them all on.

NOTICE

1. If you do not connect an Extra robot to the remote control following the procedure described above, the robot will still appear in the PIXEM REMOTE application (thanks to the information provided by the main robot), but the remote control will not be able to control this robot

2. Due to the limitations of phones and tablets, only one Extra robot can be connected to the application at a time (the Main robot must always remain connected). You can switch from one Extra robot to another by pressing the connect button on the application. 

Technical information

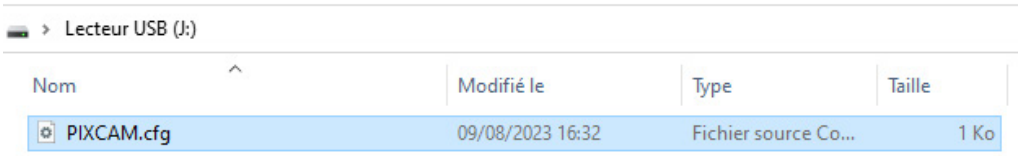
1. Configuring your PIXEM 2 to work with your own CAMERA

Refer to the brochure supplied with your PIXEM to identify the camera model configured in your robot. Follow the instructions below to change the camera model used with the PIXEM 2 robot.

Download the settings file for your camera from shop.movensee.com/ccc.

Save the PIXCAM.cfg file on a micro-SD card previously formatted in FAT32, FAT16 or FAT12 format *(most micro-SD cards with a capacity of 32Gb or less are already correctly formatted)*. The file must be saved in the root of the memory card, not in a directory.

Check that the file name does not include numbers in brackets (e.g. ...(1) or ...(2)). If this is the case, rename the file PIXCAM.cfg



Insert this micro-SD card into the slot on the side of the robot.

Switch on the robot by pressing the ON/OFF button, without touching the other buttons. The LEDs flash briefly, and the file disappears from the microSD card. The PIXEM 2 robot parameters are updated and saved for future use.



The microSD card is inserted on the slot on the side of the robot.

2. LEDs description

Of the PIXEM 2 robot

LEDs Status		Description
During the start of the robot		
	LEDs off	Robot is off
	Green LED blinking slowly	Main robot initialization
	Green and red LEDs blinking alternately	Extra robot initialization
During tracking		
	Green LED blinking slowly	Recording has stopped
	Green LED blinking quickly	Watch has sent the order to start or stop the recording
	Green LED ON	Recording running
During the charge		
	Red LED above 5V socket on	Robot is off
	Red LED above 5V socket blinking	Charge is ending
	Red LED above 5V socket off	Charge is over
During the update process		
	Red LED blinking	Robot has entered the update mode
	Red LED ON	Robot has entered the update mode but cannot access the update.mnp file
	Green LED blinking quickly Red LED blinking slowly	Robot is being updated
	Red LED blinking slowly(after previous step)	Update is completed
Bluetooth		
	Blue LED Off	Bluetooth is deactivated
	Blue LED blinking quickly	The robot is ready to be connected to a remote control
	Blue LED blinking slowly	The robot has already been paired with a remote control, but the latter is not connected.
	Blue LED ON	An app is connected with the robot

Of the watch

LEDs description		Description
During tracking		
	LEDs off	Watch is off
	Green LED is blinking slowly	Watch is ON, camera does not record
	Green LED is blinking quickly	Watch has required the start/stop of the recording
	Green LED ON	Watch is ON, tracked & filmed by the camera
	LED ON with fast blinking	A remote control is connected and controls the start and stop of recording.
During the charge		
	Red LED ON	Watch is charging
	Blinking red LED	Watch has reached the end of its charging cycle
	Red LED off	Charging is complete
During the update procedure		
	Green LED flashing slowly	Watch is in update mode
	Green LED flashing quickly	Watch is updating
	Green LED ON	The update is completed

Of the beacons

LEDs description		Description
During the tracking		
	LEDs OFF	Beacon is OFF
	Green LED ON	Beacon is ON
During the charge		
	Red LED is ON	Beacon is charging
	Blinking red LED	Charge is ending
	Red led OFF	Charge is over
During the update procedure		
	Green LED blinking slowly	Beacon is upgrading
	Green LED blinking quickly	Beacon is upgrading
	Green LED is steady	Update is complete

4. Specifications

INDOOR and OUTDOOR use
PIXEM 2 can film with the same performance both indoors and outdoors.

Range
100 meters.

Automatic zoom
With compatible smartphones/tablets and cameras (see list). Fixed on other devices.

Video recording control from the watch
With compatible smartphones/tablets and cameras

Rotations
360° infinite PAN (horizontal). 120°/s max (45mph at 30ft; 72km/h at 10m). No TILT (vertical axis) rotations.

Maximum load
PIXEM 2 can accommodate cameras weighing up to 2.5kg.

Motor
Very quiet motor. To pick up distant sound, use a Bluetooth microphone or similar accessory.

Transport
Designed for easy storage and transport. Fits in any photo bag 22x10x15cm (8.7x3.9x5.9in).

Multi-user
PIXEM 2 can be used with 1 to 16 watches. And 1 to 16 cameras can film the watches. But a maximum of 3 watches can be tracked at the same time by the robot set. In other words, if there are more than 3 robots, some will be filming the same watch.

Autonomy
PXIEM 2 approx. 4h, WATCH approx. 3h, Micro-BEACON approx. 3h.
Li-Ion batteries. All chargers included: wireless for the watch. USB standards for the PIXEM 2 robot and the microbeacons.

The PIXEM 2 robot and the micro-beacons can be plugged to the mains. This allows to film longer or to install PIXEM 2 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.

Weight
Watch 50gr. Robot 550gr.

Warranty
2 years

5. Battery information

The robot, the watch and the three beacons are equipped with Lithium-Ion batteries which you must recharge before starting to use PIXEM 2. The devices need around 2 hours to fully recharge. Once charged, the robot can operate for over three hours. The watch and beacon batteries can operate for between 2 and 3.5 hours.

1. Battery capacity tends to decrease with time and use.

2. Lithium-ion batteries generally have a life of 300 to 500 charge cycles, and should retain about retain around 80% of their initial capacity after 300 charge cycles, or around one year's use.

3. High or low ambient temperatures can adversely affect battery performance, resulting in a loss of charge capacity of up to 70%. Batteries should be stored at temperatures between 10° and 30°C.

4. If you are not using your PIXEM 2 for an extended period, the batteries should be charged to between 40% and 60% every two months.

5. To avoid self-discharging, unplug the robot after charging, switch it on for a few seconds, then switch it off again before storing.

6. We recommend that you do not leave the cells on charge for more than 24 hours, as this may damage the batteries and/or electronic components.

The normal decrease in battery capacity over time is not covered by the warranty.

6. F.A.Q

What type of tripod should I use?
You need a tripod with a 3/8" screw. This is a larger screw than those used to attach cameras, which are 1/4" screws. Don't use a tripod with a ball-and-socket joint, as this generates small parasitic movements (except for very high-end tripods) and they have a 1/4" screw.

Is it possible to connect the PIXEM 2 and the beacons to the mains? Does this work, or does it just put them on charge?
PIXEM 2 and the beacons can be plugged into the mains. This is a good solution for filming all day long, and for installing PIXEM 2 in a fixed position.

Does PIXEM 2 have automatic TILT (vertical movement)?
PIXEM 2 has a manual TILT that can be set before filming. For almost all activities taking place on flat terrain, an automatic TILT is not necessary, as the zoom already does the job of keeping you in the frame. As an example, take a look at this show jumping video filmed by PIXEM 2 from the heights of a grandstand: https://youtu.be/lLNN-ya_lIw

Is it possible to stream video from a camera mounted on the PIXEM 2 in real time?
Yes, the camera's HDMI port is free and can be used to send live video to a streaming service. There are a number of real-time streaming service providers. Some simply use a smartphone, with quality often rated as fairly average, while others use special boxes with a wide range of prices and quality.

Which camera socket is used by PIXEM 2 to control zoom and REC from the watch?
Depending on the model, the camera socket is called "multi" or "LANC" or "A/V-R". The models listed on the site are compatible, while others can be mounted on PIXEM 2, but without the automatic zoom and remote REC control functions. It's possible that models not listed are still compatible, due to identical optical characteristics: don't hesitate to ask us.

I have a DSLR. Is it compatible with PIXEM 2?
DSLRs can be mounted on PIXEM 2, but they don't have a camera-equivalent socket and no motorized zoom. You should also bear in mind that DSLRs generally don't have autofocus when filming, so the image may become blurred. With these caveats, DSLRs allow you to take beautiful images with your PIXEM 2.

With a smartphone or tablet installed on the PIXEM 2, can I zoom in automatically?
Yes, if you use the PIXEM CAMERA application.

Is it possible to use the camera's HDMI port for live streaming, or does it interfere with zoom and REC control?
It is possible to use the HDMI port, but it is not used or interfered with by PIXEM 2.

Do I have to place the microbeacons precisely and measure them by hand?
No. It's like GPS, where you don't need to know exactly where the satellites are - the system is automatic. Just place the microbeacons roughly around the area where you want to be filmed, switch on, and off you go for hours.

Is it a problem if I go outside the beacon zone?
No, it's not a problem. In general, you're always filmed, unless of course you go too far, in which case the camera loses you, then finds you when you come back.

Can I use PIXEM 2 in a building with metal walls?
Yes, you just need to space the beacons and the PIXEM 2 robot a few centimetres away from large metal masse**s.**

What are the maximum and minimum operating temperatures for PIXEM 2?
Like all electronic devices, PIXEM 2 is not guaranteed to work properly at temperatures below 0°C or above +40°C. Many of our customers use PIXEM 2 in "cold" countries such as Canada, Sweden, Iceland, Norway, Finland, etc., without encountering any problems. What's more, we have successfully tested PIXEM 2 in laboratories at temperatures as low as -18°C. It should be noted that battery life is generally shorter in cold conditions.

7. Troubleshooting

Issue	Origin	Solution
Connection		
I can't connect the robot to my phone or tablet	You are trying to connect your devices in your phone's Bluetooth settings instead of using the PIXEM REMOTE application	1. Activate Bluetooth on your smartphone or tablet. Do not try to connect the robot at this point. 2. Launch the PIXEM CAMERA application. 3. Switch on the robot, then briefly press the button on the back of the robot. Je n'arrive pas à connecter le robot avec mon téléphone ou tablette
Tracking		
PIXEM 2 robot does not start tracking, watch LED flashes irregularly.	Robot, watch and beacons not communicating properly	Position the robot and beacons as instructed (page 5), then restart the system. If tracking doesn't start after about 20 seconds, you can help by holding the watch over your head for a few seconds. As soon as tracking starts, you can put your hand down.
The PIXEM 2 robot does not start tracking, the watch LED flashes regularly.	The watch is starting up in "upgrade" mode because the button has been pressed too long.	When the watch is switched off, press the watch button until the green light comes on, then release the button immediately.
The PIXEM 2 robot does not start automatic tracking (the robot's green and red LEDs flash alternately).	The robot is an Extra	When the robot is switched off, press the ON/OFF button for 12 seconds, until the green LED flashes alone.
Robot turns in wrong direction.	Beacons not positioned correctly	Repeat the start-up procedure, positioning beacon no. 2 correctly in relation to beacon no. 1, see "Beacon positioning" (page 5).
The PIXEM 2 works well at short range but poorly at long range.	The radio communication between the various devices is lowered	1. Check that the beacons are not placed directly on the ground. Place the beacons at a height of between 1m and 2m. 2. Position the beacons and the PIXEM 2 robot according to the advice given (page 5).
Sometimes, the robot shakes and/or is late	Distances are too long and/or an external element disturbs the system.	Position the beacons according to the instructions (page 5), centering on beacon 1.
The PIXEM robot is always filming on the side.	Beacon n°1 is not in the center of the frame before starting the watch, and/or beacon n°1 is much closer to the robot than the whole area you want to film, and/or the robot is not properly screwed to the tripod.	1. Restart the system, checking that beacon n°1 is in the center (right-left) of the camera screen before starting the watch. Check that the distance between beacon n°1 and the camera is similar to the maximum distance of the area you wish to film. 2. Check that the robot is securely screwed onto the tripod.
Zoom / Rec		
I can't start recording from the watch and the zoom is fixed.	The PIXEM CAMERA application is not connected to the robot	1. activate Bluetooth on your smartphone or tablet 2. launch the PIXEM CAMERA application 3. Switch on the robot, then briefly press the button on the back of the robot.
I can't control the REC. The zoom is fixed.	1. The camera control cable is incorrectly connected or not connected. 2. The robot is not set up for my camera	1.Reconnect the camera control cable. 2. Set up the robot for your camera (page 19).

Issue	Origin	Solution
The camera records several short video sequences of 1 to 2 seconds. or The camera stops recording.	Camera has insufficient memory or the camera battery is almost empty.	1. Fully recharge the camera. 2. Free up space on the camera's memory card.
Recording stops automatically	Press the REC button on the camera to start recording.	The PIXEM 2 is not designed to operate by pressing the REC button on the camera. To start and/or stop video recording, use the button on the watch, or use the PIXEM REMOTE app from a tablet or phone.
Recharge		
Watch is not charging (red LED is off)	Watch battery is already charged or The watch is not correctly placed on the charger	1. Check that the watch is not already charged. 2. Check that the watch is correctly positioned on the charger (PIXEM 2 logo visible). 3. Check that the watch is in direct contact with the charger.
Robot or beacon not charging (red LED is off)	Device already charged	Check that device is not already charged (red LED does not light up if battery is charged).rouge ne s'allume pas si la batterie est chargée).
Robot discharges when stopped	Robot self-discharges.	To prevent self-discharging: unplug the robot after charging, switch it on for a few seconds and then off again before storing.
Save of the camera parameters on the robot		
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	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 PIXEM 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.
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. 

8. Customer Support

Our qualified team guarantees you responsive support in the event of questions or problems with your equipment. Our aim is to ensure that your product is in good working order at all times. For help, check the manual, the FAQ, and if necessary contact MOVE 'N SEE by phone, e-mail or post.

Customer support phone in France : +33 (0) 9 70 75 13 15 (non surtaxé)
E-mail SAV : ccc@movensee.com
Letter SAV : MOVE 'N SEE - SAV, 15 rue Johannes KEPLER, 29200 Brest, FRANCE

MOVE 'N SEE products are guaranteed for two years under normal use without opening the instrument. Any opening of the instrument voids the warranty.

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

If MOVE 'N SEE's technical services decide that the product should be returned, you will be given a return code. You can then return the product and all its accessories in the original packaging. The return code must be clearly marked on the packaging. Upon receipt of the package, our technical services will analyze the product. If the warranty mentioned in the general sales conditions applies, it will be repaired or exchanged free of charge. If not, a repair estimate will be sent to you free of charge. You will then have the choice :
- Refuse the estimate, in which case the product will be returned to you at your expense.
- Accept the quotation. The repair will be initiated upon receipt of your payment. The product will be returned to you once the repair has been completed.

9. Warning

Use of batteries: do not crush or shock them; do not short-circuit the terminals; do not expose to temperatures above 60°, especially direct sunlight or the living space of a vehicle parked in the sun; do not incinerate or throw into a fire; do not handle a damaged or leaking battery; use only the charger supplied; keep out of the reach of small children; keep batteries dry; dispose of batteries at an appropriate collection point, ask your local council, waste disposal center or point of sale.

To reduce the risk of fire or electric shock, do not expose the PIXEM 2 robot or PIXEM 2 beacons to rain or moisture.

Contains small objects, keep out of reach of small children.

Cables can cause strangulation, keep out of reach of small children.

The PIXEM 2 watch worn by the subject to be filmed, whether on the arm, elsewhere on the body, or on a machine, is a protrusion likely to impede or injure the subject during falls, or any other subject (e.g. teammate) struck by this armband. The cuff is also likely to interact with the subject's other equipment (lines, cables, ropes, etc.).

In all cases, the user is solely responsible for using the equipment for his or her activity. MOVE 'N SEE cannot be held responsible in the event of injury.

For European Union customers

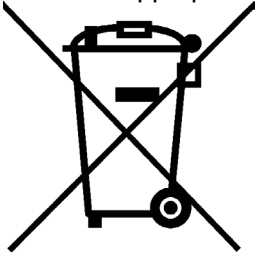
The PIXEM 2 system complies with the CE standard.

It complies with IEEE 802.15.4 standard UWB PHY with the following characteristics:
- channel: 5 (center frequency: 6489.6MHz bandwidth: 499.2 MHz)
- power: ≤ -41.3dBm/MHz EIRP
- Modulation: BPM-BPSK

It is the user's responsibility to ensure compatibility with the regulations of the country of use.

Disposal of electrical and electronic equipment at end-of-life (Applicable in European Union countries and other European countries with selective collection systems)

This symbol, affixed to the product or its packaging, indicates that this product must not be disposed of with household waste. It must be handed in to an appropriate collection point for the recycling of electrical and electronic equipment. By ensuring that this product is disposed of properly, you are playing an active part in preventing the negative consequences that its improper handling could have on the environment and on human health. Recycling materials also helps preserve natural resources. For further information on recycling this product, please contact your local



municipality, your local waste disposal center or the point of sale where you purchased the product.

For customers in the USA:
Recycling lithium-ion batteries:
Lithium-ion batteries can be recycled. You can help protect the environment by taking used batteries to your nearest collection and recycling point.

For more information on battery recycling, call toll-free 1-800-822-8837 (USA and Canada only), 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, including interference that may cause undesired operation.

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 under certain conditions. If this equipment does cause harmful interference to radio or television reception
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 distance between the device 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 radio/TV technician.

The supplied interface cable must be used with this device in order for it to comply with the requirements for a digital device, pursuant to Subpart B of Part 15 of the 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 robot and beacons:
This equipment complies with FCC radiation
FCC radiation exposure limits established for an uncontrolled environment under the following conditions:

1. This equipment must be installed and operated in such a way that a minimum separation distance of 20 cm is maintained at all times between the radiator (antenna) and the body of the user or nearby person.

2. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

For the watch :
This portable equipment and its antenna comply with FCC radiation exposure limits established for an uncontrolled environment.
FCC radiation exposure limits established 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 with the antenna or minimize contact when using this equipment.