

MotionCam Outdoor User Manual

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MotionCam Outdoor is a wireless outdoor motion detector with a camera for alarm verification. Detects movement at a distance of 3 to 15 meters. Has anti-masking protection, ignores animals when correctly configured and installed.



The detector only works with [Hub 2](#) and [Hub 2 Plus](#). Connecting to other hubs, ReX range extenders, and ocBridge Plus and uartBridge integration modules is not supported!

MotionCam Outdoor works as part of the Ajax security system by connecting to the hub via [Jeweller](#) and [Wings](#) encrypted radio protocols. The communication range without obstacles is up to 1,700 meters.

[Buy MotionCam Outdoor](#)

1. Hood visor to protect camera and masking sensors from snow and rain
2. Camera
3. LED indicator
4. Motion detector lens
5. Infrared (IR) backlight for taking pictures in the dark
6. SmartBracket mounting plate. To remove the plate, slide it down



The perforated part is necessary to trigger a tamper in case of any attempt to detach the detector from the surface. Do not detach it!

7. The hole for attaching SmartBracket mounting panel with a screw
8. Power button
9. Tamper button. Triggers when an attempt is made to detach the detector from the surface or remove the mount
10. Detector QR code. Is used to connect to the Ajax security system
11. Scrollbar for adjusting the detection range

Operating principle

MotionCam Outdoor is an outdoor motion detector with a camera. IR sensors of the detector identify intrusions by detecting moving objects with temperatures close to that of the human body. Visual verification helps you instantly assess the situation, relieving users of unnecessary anxiety, and security companies – from false calls of patrols.

[Learn more about Ajax motion detectors](#)

In the armed mode, the detector constantly reads signals from infrared (IR) sensors. When motion is detected, MotionCam Outdoor transmits an alarm to the

An alarm is detected if both IR sensors detect a movement. The detector takes 1 to 5 photos at a time (depending on the settings) and transmits them to the hub. You can enable the Send Photo in Case of Alarm function in the [detector settings](#).

When triggered, the hub activates sirens, starts scenarios, and notifies users and the security company. In case of an alarm, photos are transmitted to the monitoring station of the security company and to all users of the system who have access to the hub's event feed. All alarms, photos, and events of MotionCam Outdoor are recorded in the event feed of the Ajax app.



The detector doesn't go into the armed mode instantly. The time for switching to armed mode depends on two factors: exit delays (specified in the detector settings) and the hub – detector ping interval (Jeweller settings, the default value is 36 seconds). In the first case, the delay is set by the user. In the second case, the delay is caused by the fact that the hub notifies the detector about the transition to the armed mode not instantly, but within one ping interval.

The range of motion detection is set manually – with a scrollbar on the detector body – and is from 3 to 15 meters. This allows you to accurately set the detection area and avoid false triggerings on bushes, trees, or other objects.

Users know exactly where motion is detected. The notifications contain the name of the hub (name of the guarded object), the name of the device, and the virtual room to which the detector is assigned.

Photo verification of alarms

When the detector is triggered, the built-in MotionCam Outdoor camera can take 1 to 5 images with a resolution of 320 × 176 and up to 3 images with a resolution of 640 × 352 pixels. The detector has infrared illumination for shooting in the dark, which is activated only when an alarm is raised.

A series of photos are played back in the app as animation, which allows you to evaluate the incident in dynamics. Photos are available both in Ajax apps and in the monitoring station software of the security company. MotionCam Outdoor uses the

The delivery time of a photo to Ajax apps depends on the selected image resolution, Jeweller and Wings signal strength, and the internet speed at the hub. The alarm signal is transmitted in 0.15 seconds.

Photo resolution	Delivery time of one photo
320 × 176 (default)	Up to 9 seconds
640 × 352	Up to 20 seconds

The table shows the delivery time for one photo when the signal strength between the hub and MotionCam Outdoor is 2–3 bars and the hub is connected via Ethernet.

Temperature compensation

The detector perceives a person and other objects as heat spots. The device monitors these heat spots and, if they move, signals an alarm. MotionCam Outdoor reacts to the movement of heat spots with the temperature close to that of the human body.

In the case where the ambient temperature is about the temperature of the human body, the correct operation of the detector is not guaranteed unless temperature compensation is applied. Owing to it, the detector identifies movement over the entire operating temperature range.

Temperature compensation is used in all Ajax motion detectors. This way they effectively detect movement over the entire operating temperature range of the detector.

[Learn more](#)

Pet immunity

If installed correctly, animals will only enter the detection zone of one of the detector's sensors. This way, MotionCam Outdoor eliminates false alarms. And for additional protection against false alarms, the detector uses the LISA software algorithm.

Why motion detectors react to animals and how to avoid it

Anti-masking system

Masking is an attempt to block the view of the detector by painting over it, covering it, placing an obstacle in front of the detector's lens, or otherwise.

MotionCam Outdoor detects the following types of masking:

1. Obstacle in front of the detector's lens at a distance of up to 10 centimeters (the limit distance depends on the type of material).
2. Painting over the detector lens.
3. Sticking over the detector lens.

Masking type	Time to alarm, seconds	Time to restore, seconds
Obstacle in front of the detector's lens (at a distance of up to 10 centimeters from the lens)	7	20
Painting over the detector lens	100	20
Sticking over the lens or detector's side	100	20

The system informs the users and the monitoring station of the security company about masking. For additional protection and notification, enable the reaction of sirens to masking (you can do this in the detector [Settings](#)).



Note that the anti-masking system is always active and works regardless of the detector or system security mode.

For additional protection of the camera or the masking detection system from false alarms on heavy rain or snow, a Hood visor is provided.

Anti-masking and its implementation in Ajax outdoor detectors

Protection against false triggering

MotionCam Outdoor features two independent IR sensors, the signals of which are analyzed by a two-stage LISA algorithm. As soon as both IR sensors detect movement, LISA performs correlation and spectral analysis of the signals, which allows you to instantly distinguish between real threats and interference.

Correlation analysis

Each time a motion is detected, the LISA algorithm analyzes and compares the waveforms of two signals in real-time. If the waveforms are similar, the detector triggers an alarm.

Spectral analysis

When both sensors detect motion, but correlation analysis does not reveal sufficient similarity of waveforms, LISA compares the frequency components of the signals from the two sensors.

Sending events to the monitoring station

The Ajax security system can transmit alarms to the central monitoring station

The device ID and the loop (zone) number can be found in [its states](#). Note that photos are sent to the monitoring station of the security company only if the CMS software supports the transmission of photo verifications. The list of CMSs that support Ajax photo verification is [available here](#).



Photo verifications are available in the [Ajax PRO Desktop CMS](#) without additional setup.

Adding to the system



The detector is incompatible with Hub and Hub Plus hubs, ReX radio signal range extender, third-party security central units, as well as ocBridge Plus and uartBridge integration modules.

Before adding a device


1. Install the [Ajax app](#). Create an [account](#). Add a hub to the app and create at least one virtual room.
2. Make sure that the hub is on and has access to the internet (via Ethernet cable, Wi-Fi, and/or mobile network). You can do this in the Ajax app or by checking the hub logo on the faceplate. The logo should light up white or green if the hub is connected to the network.
3. Make sure the hub is disarmed and does not start updates by checking its status in the Ajax app.



Only a user or PRO with administrator rights can add a device to the hub.

[Types of accounts and their rights](#)

to which you want to add MotionCam Outdoor.

2. Go to the **Devices**  tab and click **Add Device**.
3. Name the detector, scan or type in the QR code (placed on the detector body and the packaging), select a room and a group (if group mode is enabled).
4. Click **Add**; the countdown will begin.
5. Switch on the device by holding the power button for 3 seconds.




To make sure MotionCam Outdoor is connected to the hub, the detector must be located at the same secured facility as the system (within the range of the hub's radio network).









The detector connected to the hub will appear in the list of hub devices in the Ajax app. Updating the statuses of devices in the list depends on the Jeweller settings; the default value is 36 seconds.

If the connection fails, try again in 5 seconds. Note that if the maximum number of devices has already been added to the hub (depending on the hub model), you will be notified when you try to add a new one.

MotionCam Outdoor only works with one hub. When connected to a new hub, the detector stops sending commands to the old hub. Once added to a new hub, MotionCam Outdoor is not removed from the device list of the old hub. This must be done through the Ajax app.

Icons

The icons represent some of MotionCam Outdoor statuses. You can see them in the **Devices**  tab in the Ajax app.

	The detector operates in Always Active mode <u>Learn more</u>
 	Entry and/or exit delay is enabled <u>Learn more</u>
	MotionCam Outdoor will work when Night Mode is enabled <u>Learn more</u>
	MotionCam Outdoor has detected motion
	MotionCam Outdoor is temporarily disabled <u>Learn more</u>
	MotionCam Outdoor has been disabled due to the exceeding of the number of alarms <u>Learn more</u>
	MotionCam Outdoor has temporarily disabled tamper triggering events <u>Learn more</u>

States

The states include information about the device and its operating parameters. The states of MotionCam Outdoor can be found in the Ajax app:

1. Go to the **Devices**  tab.

<p>Temperature</p>	<p>Detector temperature, which is measured on the processor and changes gradually.</p> <p>Acceptable error between value in the app and room temperature: 2–4°C</p>
<p>Jeweller Signal Strength</p>	<p>Signal strength between the hub and MotionCam Outdoor. Recommended values – 2-3 bars.</p> <p>Jeweller is a protocol for transmitting MotionCam Outdoor events and alarms</p>
<p>Battery Charge</p>	<p>The battery charge level of the device:</p> <ul style="list-style-type: none"> ● OK ● Battery low <p>When the batteries are discharged, the Ajax apps and the security company will receive appropriate notifications.</p> <p>After sending a low battery notification, the detector can work for up to 2 months.</p> <p><u>How the battery charge is displayed</u></p> <p><u>Battery life calculator</u></p>
<p>Lid</p>	<p>The status of the detector’s tamper that responds to detachment or removal attempts:</p> <ul style="list-style-type: none"> ● Opened ● Closed


Delay When Leaving, s	<p>Delay time when leaving (5 to 120 seconds).</p> <p>Delay when leaving (arming delay) is the time the user has to leave the secured area after arming</p> <p><u>Learn more</u></p>
Connection	<p>Connection status between the hub and the MotionCam Outdoor detector:</p> <ul style="list-style-type: none">● Online – the detector is connected● Offline – no connection to the detector
Wings Signal Strength	<p>Wings signal strength between the hub and MotionCam Outdoor. Recommended values – 2-3 bars.</p> <p>Wings is a protocol for transmitting MotionCam Outdoor photo verification in case of an alarm</p>
Camera	<p>MotionCam Outdoor camera status:</p> <ul style="list-style-type: none">● Online – camera is enabled and can take photos● Offline – there is no connection with the detector camera on Wings frequencies
Sensitivity	<p>Sensitivity level of the motion detector:</p> <ul style="list-style-type: none">● Low● Medium

Always Active	<p>If active, the detector is always in the armed mode and detects motion</p> <p><u>Learn more</u></p>
Temporary Deactivation	<p>Shows the status of the device temporary deactivation function:</p> <ul style="list-style-type: none"> ● No – the device operates normally and transmits all events ● Lid only – the hub administrator has disabled notifications about triggering on the device body ● Entirely – the hub administrator has entirely excluded the detector from the system. The device does not execute system commands and does not report alarms or other events ● By number of alarms – the device is automatically disabled when the number of alarms is exceeded (specified in the <u>Devices Auto Deactivation</u> settings). The feature is configured in the Ajax PRO app <p><u>Learn more</u></p>
Firmware	Detector firmware version
ID	Detector ID. Also available on the QR code on the detector body and the packaging
Device №	Number of the device loop (zone)

3. Go to **Settings** by clicking on the gear icon .

4. Set the parameters.

5. Click **Back** to save the new settings.

Settings	Value
First field	<p>Detector name. Displayed in the list of hub devices, SMS text, and in notifications in the event feed.</p> <p>To change the detector name, click on the pencil icon .</p> <p>The name can contain up to 12 Cyrillic characters or up to 24 Latin characters</p>
Room	<p>Selecting the virtual room to which the MotionCam Outdoor is assigned. The name of the room is displayed in the SMS text and in notifications in the event feed</p>
Sensitivity	<p>Choosing the sensitivity level of the motion detector:</p> <ul style="list-style-type: none">● Low● Normal (default)● High <p>The sensitivity level is selected based on the results of the <u>detection zone test</u>. If during the test the detector doesn't react to motion in 5</p>

Alarm LED indication	Allows you to disable the flashing of the detector LED in case of alarm, tamper triggering, or masking detection
Image resolution	<p>Selecting the image resolution (in pixels):</p> <ul style="list-style-type: none">● 320 × 176● 640 × 352 <p>The higher the resolution, the more detailed the image is. However, keep in mind that high resolution will increase the delivery time of photos to the hub</p> <p><u>Learn more</u></p>
Send photo in case of alarm	<p>Selecting the number of photos in case of alarm:</p> <ul style="list-style-type: none">● No photo● 1 photo● Series of 2● Series of 3● Series of 4 (only available at 320 × 176 resolution)● Series of 5 (only available at 320 × 176 resolution)
	Selecting the number of alarms that are

Delay When Entering, s	<p>the time the user has to disarm the security system after entering the secured area</p> <p>Learn more</p>
Delay When Leaving, s	<p>Delay time when leaving (5 to 120 seconds).</p> <p>Delay when leaving (arming delay) is the time the user has to leave the secured area after arming</p> <p>Learn more</p>
Delays in Night Mode	<p>If active, the delays when entering and leaving apply to the Night Mode.</p> <p>The field is displayed and active if delays are enabled, as well as the Arm in Night Mode feature</p> <p>Learn more</p>
Arm in Night Mode	<p>If active, the detector switches to the armed mode when Night Mode is enabled</p> <p>Learn more</p>
Alert with a siren if motion is detected	<p>If active, sirens added to the system are activated when motion is detected by the MotionCam Outdoor detector</p>
	<p>If active, sirens added to the system are</p>

Detection Zone Test	<p>Switches the detector to the detection zone test mode.</p> <p>The test checks how the detector responds to motion and masking and determines the optimum installation place.</p> <p>4 test types are supported:</p> <ul style="list-style-type: none">● Upper sensor of the detector● Lower sensor of the detector● Masking sensors● All motion sensors together <p>Learn more</p>
Wings Signal Strength Test	<p>Switches the detector to the Wings signal strength test mode.</p> <p>The test checks the signal strength between the hub and the detector at Wings frequencies to determine the optimum installation place</p> <p>Learn more</p>
	<p>Switches the detector to the signal attenuation test mode.</p>

Temporary Deactivation	about the triggering of the device tamper only <u>Learn more</u> The system can also automatically deactivate devices when the set number of alarms is exceeded <u>Learn more</u>
User Manual	Opens the MotionCam Outdoor User Manual in the Ajax app
Unpair Device	Unpairs the detector, disconnects it from the hub, and deletes its settings

Photo verification of alarms in Ajax apps

If the **Send photo in case of alarm** option is enabled for MotionCam Outdoor, alarms in Ajax apps will be accompanied by a series of photos (the number depends on the settings). To view the photos, click on the alarm notification in the events feed.

A series of photos are played back in the application as animation, so the user is able to evaluate the unfolding of the incident over time.



Indication	Event
Lights up red while the button is pressed	Pressing the power button when the detector is on
Lights up green while the device is being activated	Turning on
First lights up red, then flashes three times and goes off	Turning off

Active detector indication

Indication	Event
Lights up green for 1 second	Alarm, masking, or tamper triggering
Flashes red after the first power on	Hardware error. The detector needs to be repaired, please contact Support Service
Flashes red a few minutes after being installed in the mount	<p>Calibration failed – something was obstructing the detector’s view during calibration, or it was not installed correctly.</p> <p>Recalibrate the detector. To do this, remove the device from the mount and reinstall it. Recalibration will start automatically. Make sure that nothing obstructs the view of the detector</p>
Lights up green for a few seconds	Connecting the detector to the hub

- Wings Signal Strength Test
- Detection Zone Test
- Signal Attenuation Test

To run a test, in an Ajax app:

1. Select the hub if you have several of them or if you are using a PRO app.
2. Go to the **Devices**  menu.
3. Select MotionCam Outdoor.
4. Go to **Settings** .

Detector placement

MotionCam Outdoor is suitable for the protection of the area around the secured site. It may guard a courtyard of a private house, a parking, unheated premises, and other sites. The detector can be installed both outdoors and indoors.

The detector is placed 0.8 – 1.3 meters above ground level. This height is a prerequisite for the effective work of the pet immunity function. Placement at a

Locate MotionCam Outdoor in a place with stable Jeweller and Wings signal strength (2-3 bars in the Ajax app). When choosing a place for installation, consider the distance between the detector and the hub and the presence of any obstacles between the devices hindering the radio signal passage: walls, intermediate floors, or large-size objects located in the room.



Be sure to check the Jeweller and Wings signal strength at the installation site. If the signal strength is low (a single bar), we cannot guarantee stable operation of the security system! At the very least, relocate the device as repositioning even by 20 cm can significantly improve the signal reception.

Note that MotionCam Outdoor does not work with ReX radio signal range extenders, so connect it directly to the hub.

Detection zone

The detection distance is adjusted using the **Detection Distance** scrollbar on the rear panel of the detector. When choosing the installation location, consider the maximum detection range of the detector. It depends on the sensitivity, the position of the Detection Distance scrollbar, the type and speed of the person's

When choosing where to place the detector, be sure to use the [Detection Zone Test](#) to determine the sector in which the detector recognizes motion as accurately as possible.

Make sure that no obstacles block the view of the detector. Note that MotionCam Outdoor does not detect movement behind the glass. Therefore, do not install the detector in locations where an open window or door can obstruct its view.

When installing, also consider the width of the detection zone. Incorrect detector placement can lead to false alarms.

Detection distance	Detection zone width
3 meters	4.7 meters
6 meters	9.4 meters
9 meters	14.1 meters
12 meters	18.9 meters
15 meters	23.6 meters

centimeters high or above. This can lead to false alarms in warm weather.

- In places with low or unstable signal strength.
- Closer than 1 meter to the hub.

Detector installation



Before installing MotionCam Outdoor, be sure to select the optimal location following the requirements of this manual! Before installation, be sure to set up the desired detection distance of the detector (Detection Distance scrollbar).

To install MotionCam Outdoor:

1. Temporarily attach the SmartBracket panel with the bundled ties (or other temporary fasteners, such as double-sided adhesive tape). Installation height is 0.8 – 1.3 meters from the ground.

unstable or one bar is displayed, move the detector or hub.

5. Run **detection zone tests**, first for the lower sensors and then for the upper ones. This will help determine and set the required maximum detection distance of the detector (determined by the lower sensor). Then, run the detection zone test for both sensors simultaneously, as well as the masking sensors test. If there is no response to movement, select the appropriate sensitivity level, detection distance (Detection Distance scrollbar), and check the tilt angle of the detector.
6. Attach the SmartBracket mounting panel to the surface using the bundled screws. When attaching, use at least two fixing points. To make the tamper react to attempts to detach the device, be sure to fix the perforated corner of SmartBracket.



Ties or double-sided adhesive tape should be used for temporary attachment only. The device attached by adhesive tape may come unstuck from the surface and fall at any time. In addition, the device may fail if hit. Note that while the device is secured with ties or adhesive tape, the tamper will not trigger if the detector is detached from the surface.

checks is once every three months. Clean the detector body from dust, cobwebs, and other contaminants as they emerge. Use a soft dry cloth suitable for equipment care.

Do not use substances that contain alcohol, acetone, gasoline or other active solvents to clean the detector. Wipe the lens gently as scratches may impair the detector sensitivity.

The pre-installed batteries provide up to 3 years of battery life at the rate of 1 alarm per day with the standard Jeweller settings (ping period – 36 seconds). If the detector batteries are nearly depleted, the security system will send an appropriate notification, and the LED will light up and go out gradually when the detector detects any movement or if the tamper triggers.

MotionCam Outdoor can work up to 2 months after the low battery signal. However, we recommend that you replace the batteries immediately upon notification. It is advisable to use lithium batteries. They have a large capacity and are less affected by temperatures.

3. Hood visor
4. Four CR123 batteries (pre-installed)
5. Installation kit
6. Quick Start Guide

Warranty

The warranty for the AJAX SYSTEMS MANUFACTURING Limited Liability Company products is valid for 2 years after purchase and does not apply to the bundled batteries.

If the device does not function correctly, please contact the Support Service first. In half of the cases, technical issues can be solved remotely!

