

MotionCam Outdoor User Manual

Updated August 19, 2021



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.

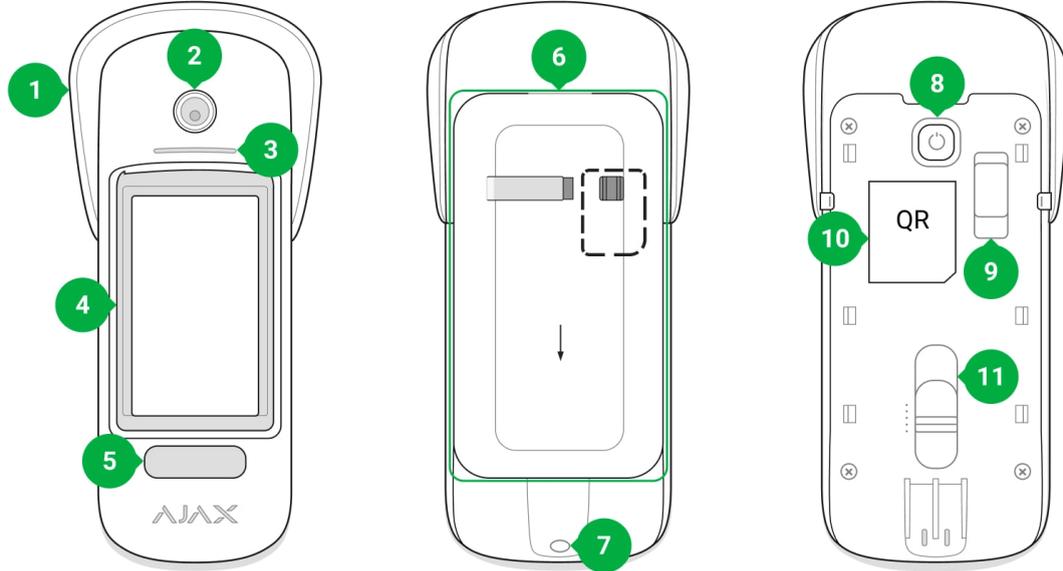


The detector only works with [Hub 2](#) and [Hub 2 Plus](#). Connecting to other hubs, ReX range extenders, and ocBridge Plus and uartBridge integration modules is not supported!

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](#)

Functional elements



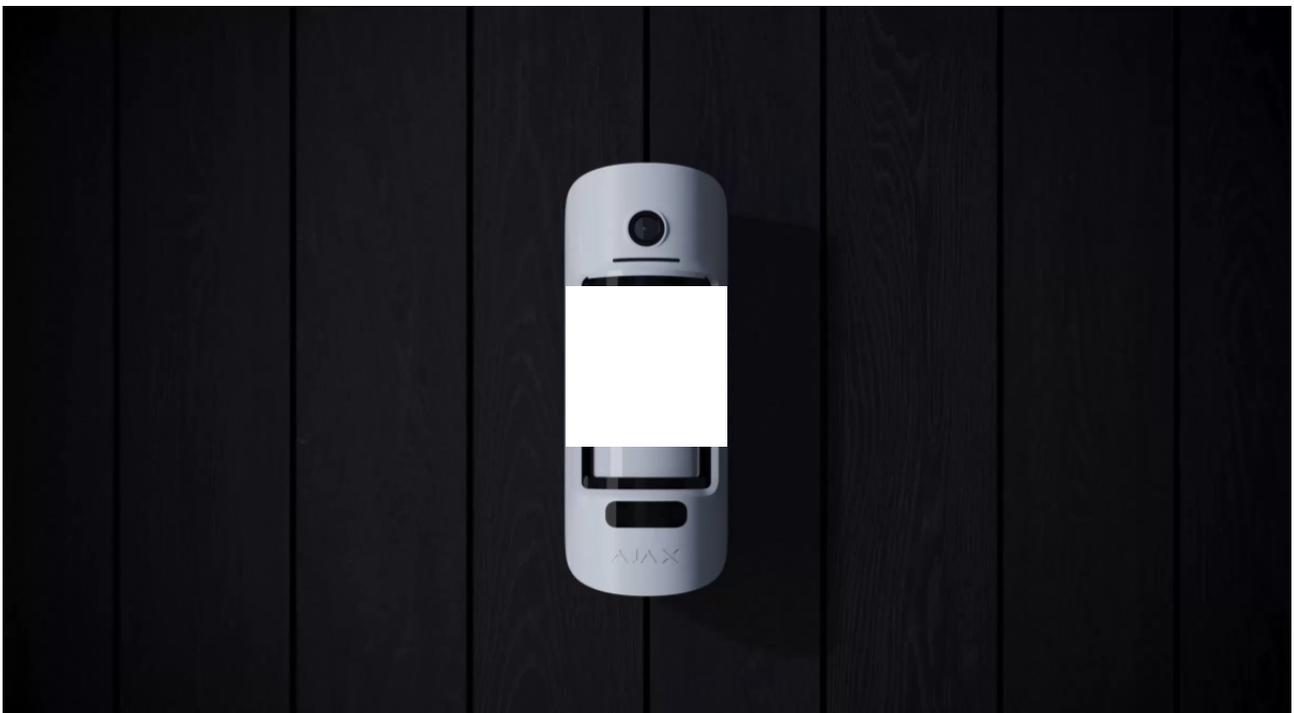
1. Hood visor to protect camera and masking sensors from snow and rain
2. Camera
3. LED indicator
4. Motion detector lens
5. Infrared (IR) backlight for taking pictures in the dark
6. SmartBracket mounting plate. To remove the plate, slide it down



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



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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 hub and signals it by flashing the LED indicator (if indication is enabled).

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.

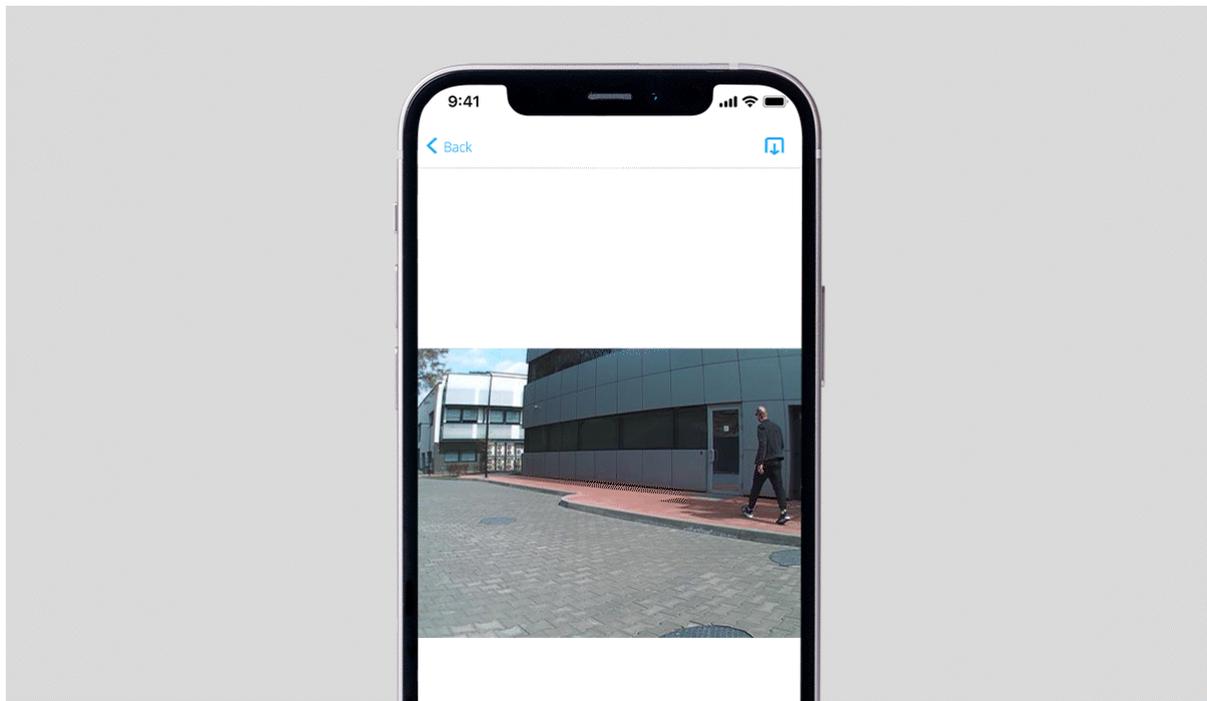


case, the delay is set by the user. In the second case, the delay is caused by the fact that the hub notifies the detector about the transition to the armed mode not instantly, but within one ping interval.

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 **Wings** radio protocol to transmit photos.

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

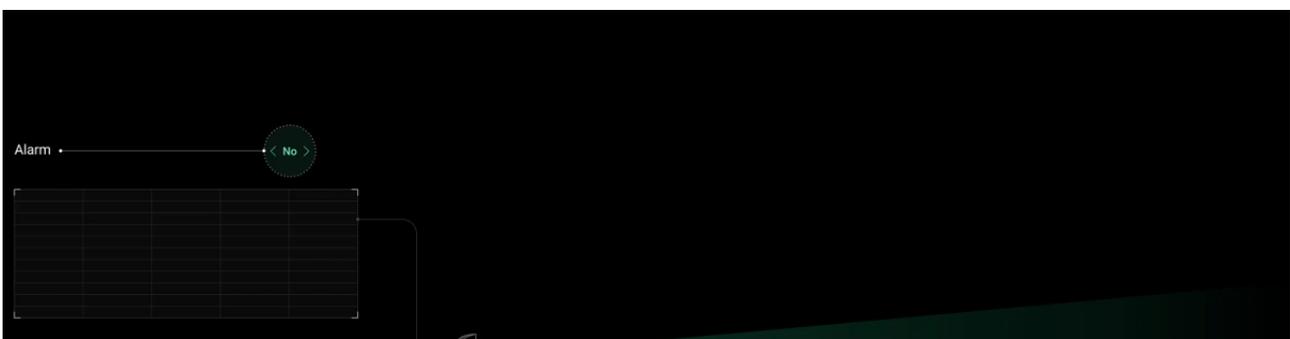
The detector perceives a person and other objects as heat spots. The device monitors these heat spots and, if they move, signals an alarm. MotionCam Outdoor reacts to the movement of heat spots with the temperature close to that of the human body.

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



When set up and installed correctly, MotionCam Outdoor ignores animals up to 80 centimeters tall. The detector has two IR sensors and raises an alarm only when movement is detected by both sensors.

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

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

The maximum time of masking detection is 180 seconds (depends on the type of obstacle and the distance to it).

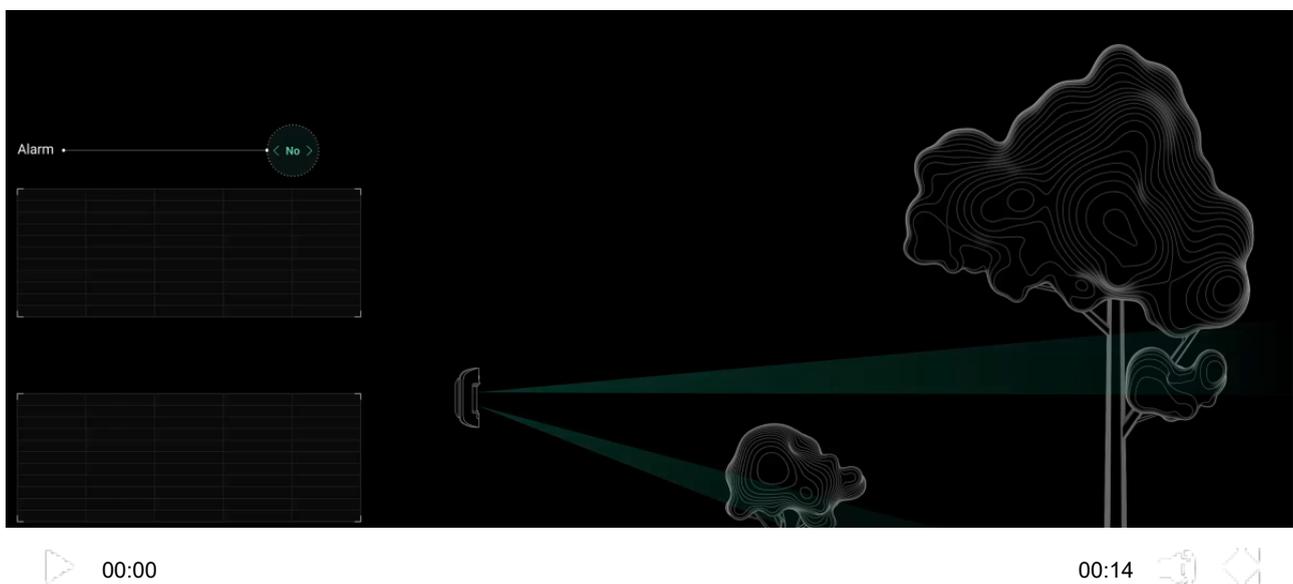


Note that the anti-masking system is always active and works regardless of the detector or system security mode.

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.

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 (CMS) in such protocol formats as **Sur-Gard (ContactID)**, **SIA DC-09**, and other proprietary protocols. A complete list of supported protocols is [available here](#).

Which CMSs can the Ajax security system be connected to

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

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](#)

How to add MotionCam Outdoor to the system

1. Open the [Ajax app](#). If your account has access to multiple hubs, select the one 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.

ICONS

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

Icon	Value
	Jeweller signal strength – displays the signal strength between the hub and the detector
	MotionCam Outdoor battery level
	Malfunction detected. A list and description are available in the detector states
	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

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

2. Select MotionCam Outdoor from the list.

Parameter	Value
Malfunction	<p>Clicking on  opens the MotionCam Outdoor malfunctions list.</p> <p>The field is displayed if a malfunction is detected</p>
Temperature	<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>
Jeweller Signal Strength	<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>
Battery Charge	<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>

	<ul style="list-style-type: none"> • Closed <p><u>Learn more</u></p>
Delay When Entering, s	<p>Delay time when entering (5 to 120 seconds).</p> <p>Delay when entering (alarm activation delay) is the time the user has to disarm the security system after entering the secured area</p> <p><u>Learn more</u></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><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>
	<p>MotionCam Outdoor camera status:</p>

	<ul style="list-style-type: none"> • High
Anti-masking	<p>Detector masking state:</p> <ul style="list-style-type: none"> • Alarm – masking detected • On – the anti-masking system is on • Off – the anti-masking system is off <p><u>Learn more</u></p>
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

Settings

Note that the motion detection range is set using a switch on the detector body.

To change the detector settings in the Ajax app:

1. Go to the **Devices**  tab.
2. Select MotionCam Outdoor from the list.
3. Go to **Settings** by clicking on the gear icon .
4. Set the parameters.
5. Click **Back** to save the new settings.

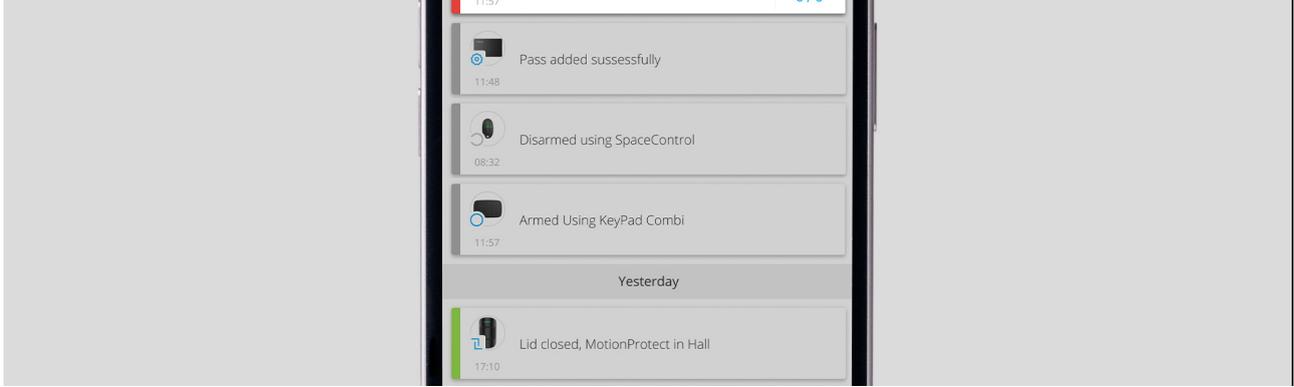
Settings	Value
First field	<p>Detector name. Displayed in the list of hub devices, SMS text, and in notifications in the event feed.</p> <p>To change the detector name, click on the pencil icon .</p> <p>The name can contain up to 12 Cyrillic characters or up to 24 Latin characters</p>
Room	<p>Selecting 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>

	<ul style="list-style-type: none"> • High – there is no interference in the protected area, the maximum detection range and speed of alarm detection are important. For example, if the detector is installed in a narrow passage. <p>The sensitivity level is selected based on the results of the detection zone test. If during the test the detector doesn't react to motion in 5 cases out of 5, the sensitivity can be increased</p>
Anti-masking	<p>When this option is enabled, MotionCam Outdoor detects masking</p> <p>Learn more</p>
Always Active	<p>If active, the detector is always in the armed mode and detects motion</p> <p>Learn more</p>
Alarm LED indication	<p>Allows you to disable the flashing of the detector LED in case of alarm, tamper triggering, or masking detection</p>
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</p>

	<ul style="list-style-type: none"> • Series of 4 (only available at 320 × 176 resolution) • Series of 5 (only available at 320 × 176 resolution)
Alarms with photo verification	<p>Selecting the number of alarms that are accompanied by photos. You can specify 1 to 10 alarms or set up the transmission of a photo each time the device is triggered.</p> <p>The limit is reset once the security system is disarmed.</p> <p>The setting is available only when the Always Active option is disabled. In this mode, the detector will always transmit photos in case of alarm</p>
Delay When Entering, s	<p>Delay time when entering (5 to 120 seconds).</p> <p>Delay when entering (alarm activation delay) is the time the user has to disarm the security system after entering the secured area</p> <p><u>Learn more</u></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>

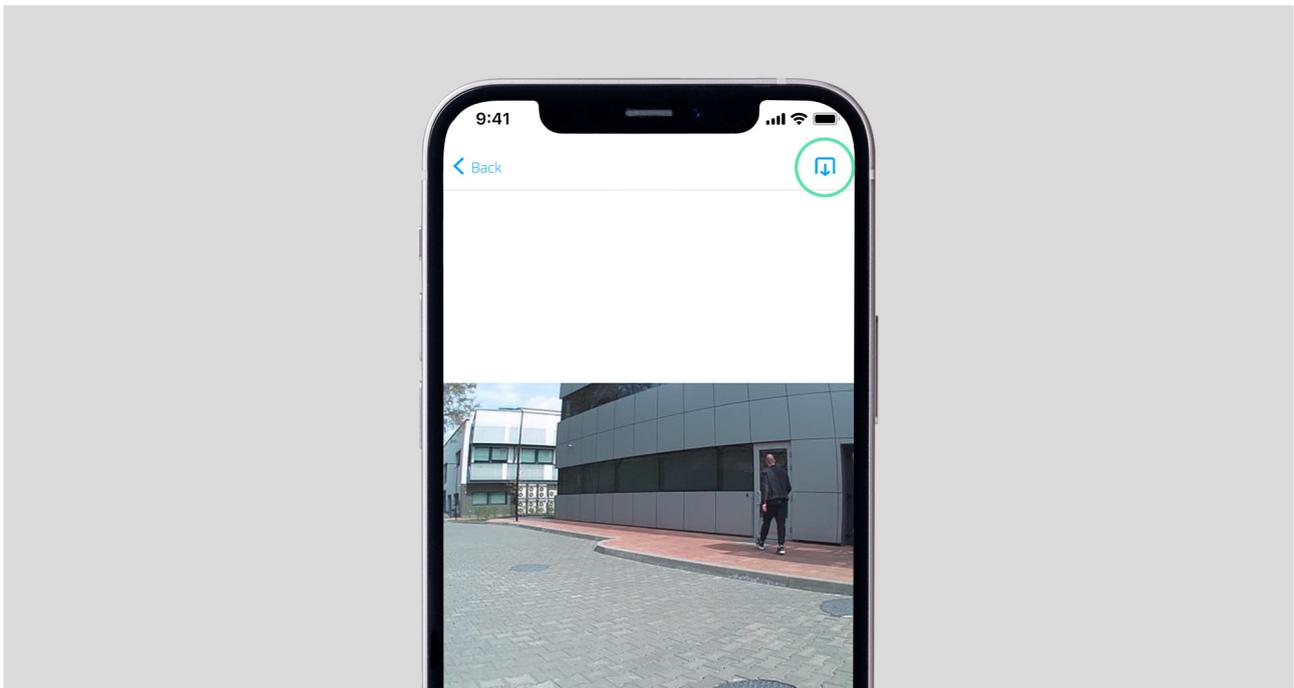
Alert with a siren if motion is detected	If active, sirens added to the system are activated when motion is detected by the MotionCam Outdoor detector
Alert with a siren if masking is detected	If active, sirens added to the system are activated when the sensors of the MotionCam Outdoor detector are masked. The field is displayed and active if the Anti-masking option is enabled
Jeweller Signal Strength Test	Switches the detector to the Jeweller signal strength test mode. The test checks the signal strength between the hub and the detector at Jeweller frequencies to determine the optimum installation place Learn more
Detection Zone Test	Switches the detector to the detection zone test mode. The test checks how the detector responds to motion and masking and determines the optimum installation place. 4 test types are supported: <ul style="list-style-type: none">• Upper sensor of the detector

Signal Attenuation Test	<p>Switches the detector to the signal attenuation test mode.</p> <p>The test decreases or increases the radio transmitter power to simulate a change in the environment to check the stability of communication between the detector and the hub</p> <p><u>Learn more</u></p>
Temporary Deactivation	<p>Allows the user to disconnect the device without removing it from the system. Two options are available:</p> <ul style="list-style-type: none">• Entirely – the device will not execute commands or participate in automation scenarios. The system will ignore device alarms and other notifications• Lid only – the system will ignore notifications about the triggering of the device tamper only <p><u>Learn more</u></p> <p>The system can also automatically deactivate devices when the set number of alarms is exceeded</p> <p>Learn more</p>



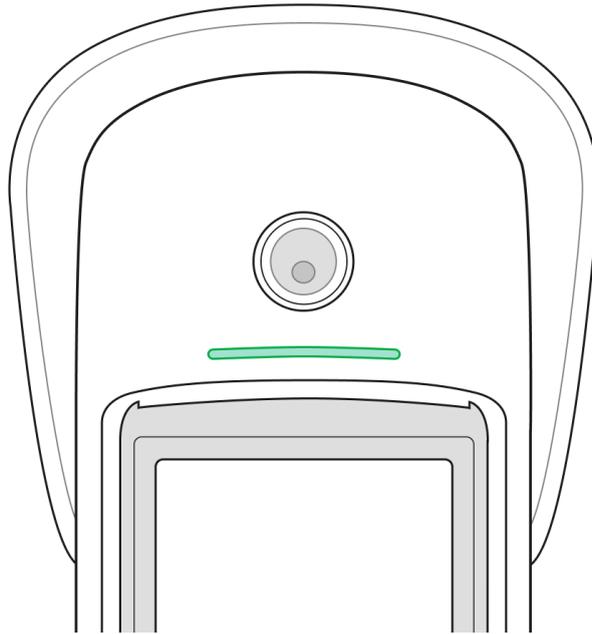
If the **Send photo in case of alarm** option is enabled for MotionCam Outdoor, alarms in Ajax apps will be accompanied by a series of photos (the number depends on the settings). To view the photos, click on the alarm notification in the events feed.

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

The MotionCam Outdoor LED indicator may light up red or green, depending on the status of the detector.



Indication when pressing the power button

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	

	Installation will start automatically. Make sure that nothing obstructs the view of the detector
Lights up green for a few seconds	Connecting the detector to the hub
In case of alarm, masking, or tamper triggering, slowly lights up and goes out in green	Detector batteries need to be replaced.

Functionality testing

The Ajax security system has several tests for choosing the right installation place for the devices. MotionCam Outdoor tests do not start straight away but not later than over a single hub-detector ping period (36 seconds under default settings of the hub). You can change the ping period of devices in the **Jeweller** menu of the hub settings.

There are 4 tests available for MotionCam Outdoor:

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



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 different height can lead to false alarms due to pets or to poor detection of human movement.

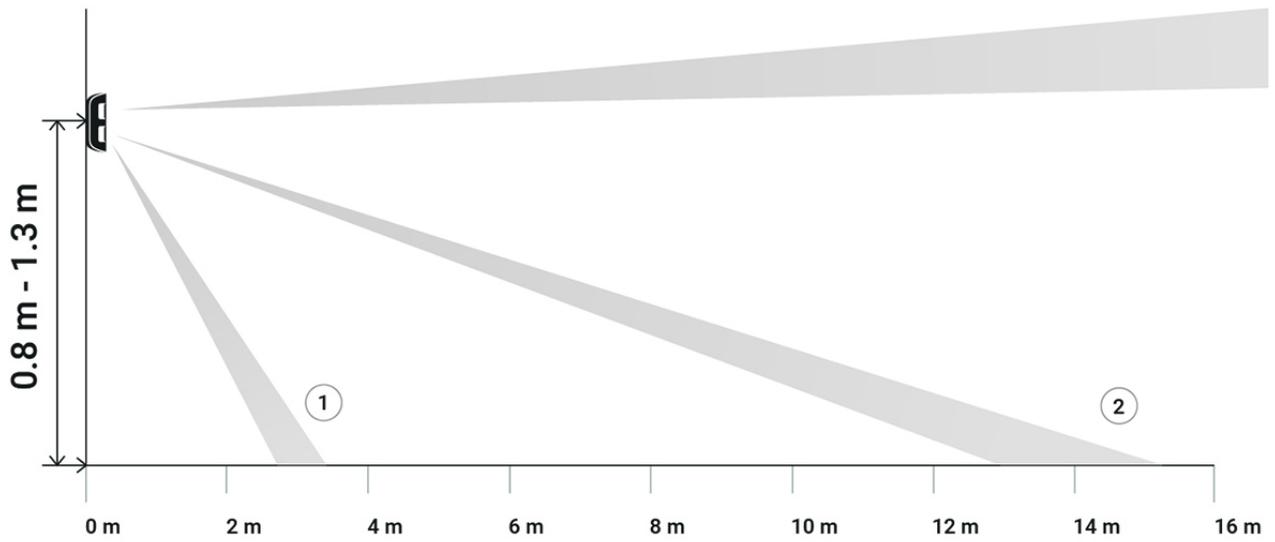
The detector should be installed on a flat stable surface, for example on the wall of a house or on a fence. If the detector is installed on an unstable surface, this may lead to false alarms.



The top beam of the detector should be aimed parallel to the ground. If the area is not

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

Detection zone



Scrollbar position	Motion detection distance
First bar (corresponds to the near inscription on the detector body)	Up to 4 meters
Second bar	Up to 5 meters
Third bar	Up to 7 meters
Fourth bar	Up to 12 meters
Fifth bar (corresponds to the far inscription on the detector body)	Up to 15 meters



The detection distance was tested at the medium sensitivity level, the ambient temperature of +23°C, and clear weather. Motion type – walking. Other conditions may produce different results.

When choosing where to place the detector, be sure to use the Detection Zone

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



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Near the metal objects and mirrors. They can shield and attenuate the radio signal.

- Opposite the trees with leaves in the detection zone of both IR sensors of the detector. This can lead to false alarms in warm weather.
- In places where the detection zone of the detector might include bushes 80 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).

operation of the proximity function. To install the SmartBracket mount on the detector, first make holes in it.

2. Install the detector on the SmartBracket panel.
3. Leave the detector detection zone (horizontal angle of view – 90°) and make sure there is no movement within the detector field of view. This is necessary for correct calibration of the masking sensors. During the calibration, the detector will flash green around once per second. Calibration takes up to 2 minutes.



The masking sensors calibration starts automatically as soon as the detector body is attached to SmartBracket.

4. Perform **Signal Strength** and **Attenuation** tests. If the signal strength is unstable or one bar is displayed, move the detector or hub.

dismantling.

8. Once the detector is attached firmly to SmartBracket, the LED will flash to indicate that the tamper has been triggered. If the LED does not light up after the device is attached to SmartBracket, check the tamper status in the Ajax app and then make sure the panel is firmly attached.



The Hood visor is used to protect the camera and to avoid false alarms of the masking detection system in heavy rain or snow.

Maintenance

Check the functioning of the detector on a regular basis. The optimal frequency of 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.

Installation method	Outdoors and indoors
Type of detector	Wireless
Jeweller radio protocol	Transmission of events and alarms Alarm delivery time: 0.15 s
Wings radio protocol	Transmission of a series of photos Photo delivery time under default settings: up to 9 seconds
Compatibility	Hub 2, Hub 2 Plus Doesn't work with ReX range extenders
Sensing element	Two IR sensors

Infrared backlight for shooting in the dark	Yes
Protection against false triggering	+
Tamper protection	+
Protection against masking	+
Temperature sensor	+
CMS compatibility	<p>Motion alarms are transmitted to CMSs that support SIA (DC-09) and Contact ID protocols</p> <p><u>CMS software with support for photo-verification of alarms</u></p>
Frequency band	868.0–868.6 MHz or 868.7–869.2 MHz, depending on the sales region

Warranty

[Learn more](#)

Compliance with standards

Complete set

1. MotionCam Outdoor
2. SmartBracket mounting plate
3. Hood visor
4. Four CR123 batteries (pre-installed)

