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AJAX SYSTEMS

AJAX SYSTEMS TurretCam Wired Security IP Camera



Product Usage Instructions

TurretCam is an IP camera with a smart infrared (IR) backlight and an object recognition function. The user can view archived and live videos in Ajax apps. To store the captured data, install a microSD card or connect the camera to an NVR with an installed hard disk. The camera is connected to the network via Ethernet, using the appropriate connector.

The camera is available in several versions

- TurretCam (5 MP/2.8 mm)
- TurretCam (8 MP/2.8 mm)
- TurretCam (5 Mp/4 mm)
- TurretCam (8 Mp/4 mm)

Buy TurretCam

• Camera versions with other enclosures are also available. All Ajax cameras are available here.

Functional elements



1. Camera holder.

- 2. Camera enclosure.
- 3. Camera lens.
- 4. IR backlight. Used to record videos in dark and low-light conditions.
- 5. Faceted lens. Covers the infrared LEDs and diffuses the rays.
- 6. Microphone.
- 7. Holes for attaching the camera to the surface.
- 8. Slot for microSD card.
- 9. Reset button.
- 10. QR code with the device ID. Used to add TurretCam to an Ajax system.
- 11. Cable connector.

Operating principle

- TurretCam is an IP camera that uses artificial intelligence (AI) for object recognition.
 Its algorithms can identify moving objects, distinguishing between humans, animals, or vehicles.
- The device features a smart IR backlight, ensuring the capture of high-quality images
 even in low-light conditions. The camera automatically adjusts the backlight intensity in
 real time to prevent overexposure, enabling clear visibility of objects that are either far
 away or too close to the camera in low-light conditions.
- TurretCam has an IP65 protection class, making it suitable for outdoor installation. Its robust metal enclosure protects the device against sabotage.
- You can install a microSD card with a memory capacity from 32 GB to 256 GB (not included in the complete set of the camera). The memory card should be Class 30 or faster. Additionally, the device can operate without a memory card or via NVR.
- Using the <u>video storage calculator</u>, you can calculate the NVR or camera required storage capacity and estimated recording time based on the video stream settings.

TurretCam enables you to:

- 1. Watch the video in real time with the ability to zoom in for a closer look.
- 2. Access archived videos, navigating through them based on recording chronology and calendar (this feature is available if a microSD memory card is installed in the camera, or it is connected to NVR with an installed hard disk).

- 3. Configure motion detection zones and adjust the sensitivity level.
- 4. View the Video wall that combines images from all connected cameras.
- 5. <u>Create video scenarios</u> that send a short video from the selected camera to the Ajax app when the security detector is triggered.
- 6. Download the required segments of video recordings from the archive to smartphones or PCs (this feature is available if a microSD memory card is installed in the camera, or it is connected to the NVR with an installed hard disk).

The video recording segments downloaded from TurretCam with firmware 2.309 and later have the Ajax digital signature that verifies the integrity of the exported video. To verify the authenticity of the downloaded video recordings, use the Ajax media player software.

Learn more about the Ajax media player

- How to download videos from the archive in Ajax apps
- How to configure temporary camera video access

Video scenarios

The Ajax system offers the capability to use IP cameras for alarm verification. Video scenarios enable the substantiation of alarm triggers with the corresponding video from cameras installed at the facility. Cameras can be configured to respond to alarms from a single device, multiple devices, or all connected devices. Combined detectors can register various types of alarms, allowing you to configure responses to a wide range of alarm types, whether it's just one, several, or all of them..

Learn more

Video wall

The user can manage videos on the Video wall tab, accessible once at least one camera has been added. This feature ensures quick access to all connected cameras, displayed according to privacy settings.

In mobile Ajax apps, you can:

1. Switch between cameras.

- 2. Search for the desired camera by name.
- 3. Manage a PTZ camera.

In PRO Desktop, you can:

- 1. Switch between cameras.
- 2. Search for the desired camera by name.
- 3. Organise cameras by room, NVR, or group.
- 4. Manage a PTZ camera.
- 5. Save customised layouts for displaying video from cameras.
- 6. Change the order in which the camera video is displayed.
- 7. Create templates for displaying videos in a slide show.
- How to use the video wall widget in PRO Desktop
- What keyboard shortcuts are available in PRO Desktop

Privacy zones

The system allows hiding parts of the frame. For instance, if a safe is in view, activity around it can be recorded without revealing its contents by setting up the right zone. No motion or object will be detected and recorded in the privacy zone.

To do this, in Ajax apps

- 1. Go to the Devices tab.
- 2. Select the camera from the list. If it is connected to the network video recorder, select NVR and tap on Cameras.
- 3. Go to Settings by tapping on the gear icon twice.
- 4. Select the Privacy zones menu.
- 5. Go to the Configure privacy zones menu. Select the required area.
- 6. Tap on the icon. Return to the camera settings.

The user can create up to four private zones.

Selecting the installation site

When choosing the optimal location to install TurretCam, consider the camera's viewing

angle and any potential obstacles that might obstruct its view.

How to install an Ajax camera for better Al recognition

Consider the placement recommendations when designing the security system project for your object. The security system should be designed and installed by professionals. A list of recommended partners is <u>available here</u>

The camera should not be installed

- 1. In indoor or outdoor locations where the temperature and humidity levels do not align with the specified operating parameters.
- 2. In locations where objects or structures might obstruct the camera's view.

Installation and connection

- 1. Using the bundled hexagon key (Ø 2 mm), loosen the two screws and detach the camera enclosure from the holder. Ensure to support the enclosure to prevent the camera from falling.
- 2. Remove the screws holding the QR code cover. Insert a microSD card (not included) into the appropriate slot. Replace the QR code cover and tighten the screws.



- 3. Use the installation template to mark the locations for the drill holes on the surface where you plan to mount the camera. Secure the template to the chosen installation location with tape and drill three holes as indicated on the template.
- 4. Route the cable through the camera holder and secure the holder to the surface using the bundled screws.



- 5. Place the camera enclosure in the holder, ensuring that the camera lens faces the protected area. Secure it in place by tightening the two screws in the holder using the bundled hexagon key (Ø 2 mm).
- 6. Connect the Ethernet cable to the camera. If it is powered by PoE, no external power supply is needed; otherwise, connect both the external power supply and the Ethernet cable. Install a waterproof connector if the camera will be used in indoor areas with humidity levels outside the operating parameters, or outdoors.



7. Turn on the power supply of the camera. The LED indicator on the cable connector lights up green.

Adding to the system

Before adding a device

- 1. Install the Ajax app and log in to your account.
- 2. Create <u>space</u>, configure its settings, and create at least one <u>virtual room</u>.

The space functionality is available for apps of such versions and later.

- Ajax Security System 3.0 for iOS;
- Ajax Security System 3.0 for Android;
- Ajax PRO: Tool for Engineers 2.0 for iOS;
- Ajax PRO: Tool for Engineers 2.0 for Android;
- Ajax PRO Desktop 4.0 for macOS;

• Ajax PRO Desktop 4.0 for Windows.

If the app's version is earlier, add an Ajax hub to the app. A hub is only required for adding the device to the Ajax system.

The device is compatible with all <u>hubs</u>. Connection to <u>radio signal range</u> and <u>UART</u>
 <u>Bridge</u> Plus is not supported.

Ensure the space is disarmed.

How to add TurretCam

- Without NVR in the system:
- With NVR in the system:

Resetting to the default settings

To reset the camera to the default settings:

- 1. Turn off the camera by disconnecting the external power supply or Ethernet cable (if it is powered by PoE).
- 2. Press and hold the reset button.
- 3. Power the camera while the reset button is pressed, and wait until the button's LED indicator lights up violet. This will take about 50 seconds.
- 4. Release the button.

The button's LED indicator lights up blue for 20 seconds after powering the camera with a pressed reset button. Then it turns off for 30 seconds and lights up violet. This means that the camera has been restored to the default settings.

Icons

The icons in the app display some device states. To access them:

- 1. Select a space in the Ajax app.
- 2. Go to the Devices tab.

3. Find TurretCam in the list.

Icon	Value
•	Live view is available.
Ø	Live view is not available.
దిపి	Other users have access to view camera video. Learn more
₫	The camera has an archive.
	The microSD card is not installed.
	The microSD card is installed.
	Malfunction of the microSD card is detected. Formatting the microSD card is recommended.
	The microSD card is being formatted.

States

The states display information about the device and its operating parameters. You can find out about the states of the camera in Ajax apps:

An error was detected during the firmware update.

The new firmware version is available.

- 1. Select a space in the Ajax app.
- 2. Go to the Devices tab.
- 3. Select TurretCam from the list of devices. If TurretCam is connected to the video recorder, select NVR and then click Cameras.

Parameter	Value
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	Displayed when the firmware update is av ailable:
	Downloading — The firmware downlo ading is in progress. Shown in percentages.
Firmware update	Installing — the firmware installation is in progress.
	The camera connection status to the inter net via Ethernet:
	Online — the camera is connected to the network. Normal state.
	Offline — the camera is not connected to the network. Please check your wired inte rnet connection.
Connection	Clicking the icon displays the network par ameters.

	Displayed when the camera is connected to the NVR.
	The camera connection status to the NV R:
	Online — the camera is connected to the network via NVR. Normal state.
Connection to NVR	Offline — the camera is not connected to the network via NVR. Please check your wired internet connection.
	Clicking the icon displays the network par ameters.
	•

Displays the list of storage devices conne cted to the camera:
Cloud (in progress);
Memory card — data is recorded on a m emory card (not included) installed in the camera.
NVR hard drive — data is recorded on the NVR hard disk.
Clicking the icon displays the network par ameters.

	The memory card connection status to the camera:
	OK — the memory card is communicating with the camera. Normal state.
	Error — there is an error in the memory c ard operation. Check details by clicking ic on . Follow the instructions provided in th e app.
	Not installed — the memory card is not installed in the camera.
Memory card	Requires formatting — the memory car d formatting is recommended. If the mem ory card contains data, it will be permane ntly deleted.
	Formatting — the memory card is bein g formatted.
Resolution	The current camera resolution.
Frame rate	The current camera frame rate.
Bit rate	The current camera bit rate.

	The current video codec:	
Video codec	H.265;	
	H.264.	
	The Motion detection function status:	
Motion detection	On, Off.	
	The Object detection function status:	
Object detection		
	On;	
	Off.	
Uptime	The camera's operating time since the las t reboot.	

	Displays the number of users who have a ccess to view video from the camera.
	Clicking the icon displays the list of users, installers, and companies with access un der certain conditions.
Camera access available to (in progress)	Learn more
Firmware	Firmware version of the camera.
ID	TurretCam ID/Serial Number. Also availab le on the back part of the casing and the packaging.

Settings

To change camera settings, in an Ajax app:

- 1. Go to the Devices tab.
- 2. Select TurretCam from the list. If TurretCam is connected to the video recorder, select NVR and click Cameras.
- 3. Go to Settings by clicking on the gear icon.
- 4. Set the required parameters.
- 5. Click Back to save the new settings.

Settings	Value

	Camera name. Displayed in the list of dev ices, SMS text, and notifications in the ev ents feed.
	To change the camera name, click on the text field.
Name	The name can contain up to 12 Cyrillic ch aracters or up to 24 Latin characters.
	Selection of the camera virtual room.
Room	The room name is displayed in SMS text and notifications in the events feed.
	When this option is enabled, the camera will switch to the armed mode whenever the system is set to Night mode .
Arm in Night mode	Learn more

	Selection of the Recording mode for each storage device:
	On detection or scenario, Continuous; Never.
	Selection of the armed mode when the ca mera records video:
Recording preferences	When armed, always.
	Opens a menu with Notifications from c amera detector settings.
Notifications from camera detectors	<u>Learn more</u>

Camera settings

	When the Motion detector toggle is enabled, the camera detects motion using its built-in software.
	When the Object detection toggle (in progress) is enabled, the camera distingu ishes between specific objects. In the camera video, a human, a pet, and a vehicle are highlighted with colored rectangles.
Detection	The setting also allows the user to define an activity zone where the camera detects motion. When triggered, the system se nds a notification to the user.
	Settings for mainstream and substream p arameters.
Video stream	<u>Learn more</u>
	Settings for camera image quality.
Image	<u>Learn more</u>

	Allows the user to customise the display of additional information on the camera i mage:
On-screen display (OSD) (in progress)	Camera name; Timestamp; Parameters of the displayed text.
	Settings for audio capture and playback.
Audio	Audio capture and playback — turn on to watch and record videos with audio.
	Audio codec.
	Bit rate. Sample rate.
	Microphone gain — configure the microphone sensitivity level based on the installation location.

Privacy zones

Allows the user to select zones that are n

ot displayed on the camera video. Instead

, the user sees a black rectangle.

Firmware update	Allows the user to check for a new firmwa re version and download it.
Connection	
	The setting for selecting the camera's con nection type to the Ajax Cloud service via Ethernet.
	Available connection types:
	DHCP;
Connection type	Static.
	Selection of the maximum archive depth. It can be set in the range of 1 to 360 days or can be unlimited.
Memory card	Allows the user to format the memory car d.
Service	

	Time zone selection.
Time zone	Set by the user and is displayed when vie wing video from IP cameras.
Server connection	
Delay of cloud connection loss alarm, sec	The delay helps to reduce the risk of a fal se event due to the lost connection with the
	Server.
	OCI VCI.
	The delay can be set in the range of 30 to 600 seconds.
	The frequency of polling the Ajax Cloud s erver is set in the range of 30 to 300 seco nds.
NVR-cloud polling interval, sec	The shorter the interval, the faster the clo ud connection loss will be detected.
Report a problem	Allows the user to describe a problem an d send a report.
User guide	Opens the camera user manual.

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Unpair the TurretCam from the space.

Notifications from camera detectors

Settings	Meaning
	The user can select the type of object or motion, and when it's recognised, a notification is received:
	Human Pet Vehicle Any motion (by frame analysis)
	Note that the corresponding types of obje ct or motion should be enabled in the Det ection settings.
Notify if detected	

	Selecting how long an object should remain in the camera's field of view so the system sends a notification about the detected object. The available values are Notify instantly or 2 , 3 , 4 , or 5 seconds .
Duration of object detection for notification	The default time is 2 seconds.

	Selecting the time interval in reporting si milar events: from 30 seconds to 8 hour s.
	The default interval is 3 minutes .
Interval in reporting similar events	Selected time applies for each detection t ype separately and helps to avoid repeat ed informing of the same triggering reaso n.
	Selection of the mode when the camera s ends notifications:
Notification terms	When armed Always

Video stream settings

Settings for mainstream and substream parameters.

Settings	Value
Mainstream	

	Selecting the video compression standard:
Video codec	H.264;
	H.265.

	Selecting the mainstream resolution:
	1024 × 576;
	1920 × 1080;
	2304 × 1296;
	2560 × 1440;
	2592 × 1944;
	2880 × 1620;
Decelution	2944 × 1656;
Resolution	3072 × 1728;
	3840 × 2160.

Frame rate	Selecting the frame rate: from 3 to 25 with an increment of 1 frame/s.
	Selecting the bit rate type:
Bit rate type	Variable (VBR); Constant (CBR).
Bit rate	Setting the bit rate in kbit/s.
GOP length	Selecting the GOP length: from 1 to 250 with an increment of 1 frame.
VBR quality / CBR quality	Selecting the compression quality: from 0 to 100 with an increment of 1.
Substream	
	Selecting the video compression standard:
Video codec	
	H.264;
	H.265.
	11.200.

	Selecting the substream resolution:
	720 × 480;
Resolution	720 × 576;
nesolution	1024 × 576.
Frame rate	Selecting the frame rate: from 3 to 25 with an increment of 1 frame/s.
	Selecting the bit rate type:
Bit rate type	Variable (VBR); Constant (CBR).
Bit rate	Setting the bit rate in kbit/s.
GOP length	Selecting the GOP length: from 1 to 250 with an increment of 1 frame.
VBR quality / CBR quality	Selecting the compression quality: from 0 to 100 with an increment of 1.

Image settings

Settings for camera image quality.

Settings	Value
Brightness	Adjusting the image brightness.
Color saturation	Adjusting the image color saturation.
Sharpness	Adjusting the image sharpness.
Contrast	Adjusting the image contrast.

	Selecting whether to rotate the image:		
	Default view — the image is not rotated;		
Image rotation	180° — The image is rotated by 180°. This paramet er is recommended for devices that have an inverte d or upside-down image due to installation specifics .		
	Enabling or disabling the WDR.		
Wide dynamic range (WDR)	When WDR is enabled, it helps to enhance the cam era images, with too dark or too bright areas.		

	Adjusting the exposure:
	1–2.9 — adjusting WDR levels;
	3–5 — Activating and adjusting HDR levels.
Lighting stabilization	This setting is available if Wide Dynamic Range (WDR) is enabled.
	Selecting the camera vision mode depending on the light conditions:
	Day — IR backlight is always off;
	Night — IR backlight is always on;
Day/Night mode (IR-cut filter)	Auto —IR backlight automatically switches according to the Lighting threshold for mode switching settings.
Lighting threshold for mode swi tching	Selecting the lighting threshold for switching between the day and night mode: Early, Medium, Late.

	This setting is available if Day/Night mode (IR-cut filter) is set to Auto.
	Adjusting the intensity of the IR backlight:
	Auto; Custom; Off.
	The setting is used for capturing clear images at nig ht or
Infrared illumination (IR)	In low light, and ensures visibility using IR LEDs wh en conventional lighting is ineffective.
	Adjusting the IR backlight intensity.
IR intensity	This setting is available if Infrared illumination (IR) is set to Custom .

	Selecting the frame area on which the exposure is b ased:
	Entire frame; Frame's centre; Frame's top; Frame 's right; Frame's bottom; Frame's left.
Set the exposure based on	
	Selecting the exposure mode:
	Auto;
Exposure mode	Manual setup.
	Adjusting the shutter speed for less motion blur or f or less noise in the image.
Image preferences	This setting is available if Exposure mode is set to Auto .

	Selecting the shutter speed to ensure correct expos ure for the image.
Shutter speed	This setting is available if the Exposure mode is set to Manual setup .
Exposure compensation	Ability to override automatic exposure settings to m anually control the image brightness.
Noise reduction	Enabling or disabling the noise reduction.
	Adjusting the noise reduction level.
Parameter value	This setting is available if Noise reduction is enabl ed.

	Selecting the power grid frequency to reduce the im age flickering. This setting is used if the camera is c apturing the video in low-light conditions, and lamps are flickering on the camera image with the power g rid frequency. Available parameters:
Anti-flicker (Power frequency)	50 Hz;
	60 Hz;
	Disabled — anti-flicker is off.

Indication

The green LED indicator is placed on the cable connector.

Event	Indication	Note
The camera has power.	Lights up green.	

Malfunction

When the camera has a malfunction, such as a loss of internet connection, you can see it in the Devices tab in the Ajax app. The malfunction counter is displayed to the left of the camera icon (a white number on a red background).

All malfunctions can be seen in the camera States. Fields with malfunctions will be

highlighted in red.

Maintenance

Regularly check the functioning of the camera. If you notice any image degradation, loss of clarity, or darkening, check the camera for dirt. Clean the device's enclosure to remove dust, cobwebs, and other contaminants as they emerge. Use soft, dry wipes suitable for cleaning electronic equipment.

Avoid using substances that contain alcohol, acetone, petrol, and other aggressive solvents when cleaning the camera. Wipe the lens gently: scratches can result in poorquality images and camera failure.

Technical specifications

Technical specifications for TurretCam (5 Mp/2.8 mm)

Technical specifications for TurretCam (5 Mp/4 mm)

Technical specifications for TurretCam (8 MP/2.8 mm)

Technical specifications for TurretCam (8 Mp/4 mm)

Compliance with standards

Warranty

- Warranty for the Limited Liability Company "Ajax Systems Manufacturing" products is valid for 2 years after the date of purchase.
- If you encounter any issues with the device's functionality, we recommend contacting Ajax Technical Support first. In most cases, technical issues can be resolved remotely.
 - Warranty obligations
 - User Agreement

Contact Technical Support:

- support@ajax.systems
- <u>Telegram</u>

Frequently Asked Questions

How can I verify the authenticity of downloaded video recordings?

To ensure the integrity of downloaded videos, use the Ajax media player software that verifies the Ajax digital signature present in video recordings exported from TurretCam with firmware 2.309 and later.

Can I use TurretCam for outdoor installations?

Yes, TurretCam has an IP65 protection class, making it suitable for outdoor use. Its robust metal enclosprotects againstinst sabotage.

What memory card specifications should I consider for TurretCam?

The device supports microSD cards with a capacity ranging from 32 GB to 256 GB. Ensure that the memory card is Class 30 or faster for optimal performance.

Documents / Resources



AJAX SYSTEMS TurretCam Wired Security IP Camera [pdf] User Manual 5 Mp-2.8 mm, 8 Mp-2.8 mm, 5 Mp-4 mm, 8 Mp-4 mm, TurretCam Wired S ecurity IP Camera, Wired Security IP Camera, Security IP Camera, IP Camera

References

- User Manual
- Ajax

Systems

▶ 5 Mp-2.8 mm, 5 Mp-4 mm, 8 Mp-2.8 mm, 8 Mp-4 mm, Ajax Systems, IP Camera, Security IP Camera, TurretCam Wired Security IP Camera, Wired Security IP Camera

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