Hub 2 User Manual

Updated September 28, 2021

Ajax is a wireless security system that protects against **intrusions**, **fires**, and **floods**, and allows users to **control electrical appliances** directly from a **mobile app**. The system responds immediately to threats informing you and the security company about any incident. Is used inside premises.

visual alarm verification, that developed only for indoor use. Representing a key element of the security system, Hub 2 controls the operation of Ajax devices and, in the event of a threat, communicates the alarm signals immediately informing the owner and the central monitoring station of the incidents.

Hub 2 requires Internet access to communicate with the cloud server Ajax Cloud—for configuring and controlling from any point of the world, transferring event notifications, and updating the software. The personal data and system operation logs are stored under multilevel protection, and information exchange with Hub 2 is carried out via an encrypted channel on a 24-hour basis.

Communicating with Ajax Cloud, the system can use the Ethernet connection and GSM network (two 2G SIM cards). Please use all these communication channels to ensure more reliable communication between the hub and Ajax Cloud.

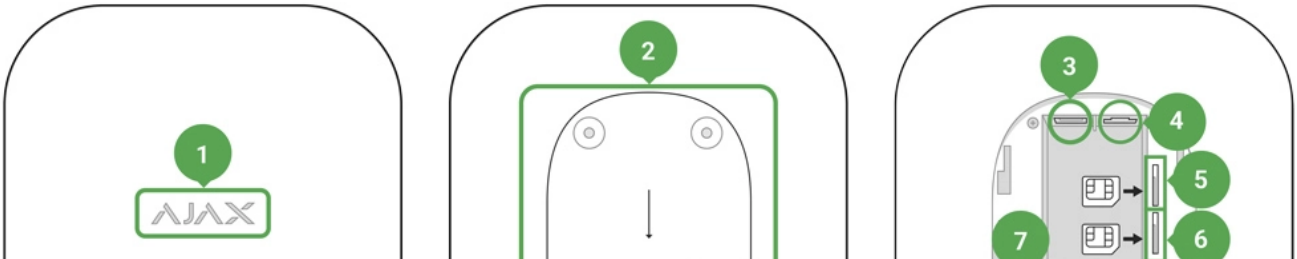
Hub 2 can be controlled via the **app** for iOS, Android, macOS, or Windows. The app allows responding promptly to any notifications of the security system. The user can customize notifications in the hub settings. Choose what is more convenient for you: push notifications, SMS, or calls. If the Ajax system is connected to the central monitoring station, the alarm signal will be sent directly to it, bypassing Ajax Cloud.

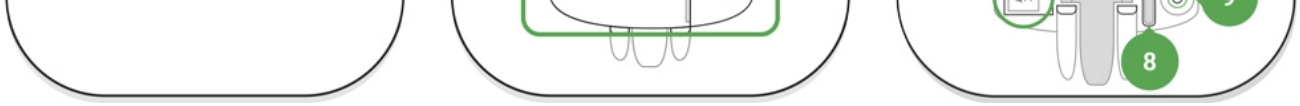
Use scenarios to automate the security system and decrease the number of routine actions. Adjust the security schedule, program actions of automation devices (Relay, WallSwitch or Socket) in response to an alarm, pressing of the Button or by schedule. A scenario can be created remotely in the Ajax app.

How to create and configure a scenario in the Ajax security system

Buy intelligent security control panel Hub 2

Functional elements





1. LED logo
2. SmartBracket attachment panel (perforated part is required for actuating the tamper in case of any attempt to dismantle the hub)
3. Socket for the power supply cable
4. Socket for the Ethernet cable
5. Slot for the micro SIM
6. Slot for the micro SIM
7. QR Code
8. Tamper button
9. Power button

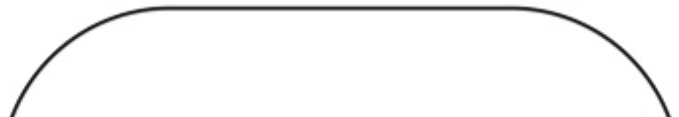
Operational Principles

The hub collects information regarding the operation of the connected devices in an encrypted form, analyzes the data and, in the case of an alarm, informs the system owner of the danger in less than a second and communicates the alarm directly to the central monitoring station of the security company.

In order to communicate with the devices, monitor their operation, and respond quickly to threats, Hub 2 uses the **Jeweller** radio technology. For visual data transmission, Hub 2 uses Wings: a high-speed radio protocol based on the Jeweller technology. Wings also uses a dedicated antenna to improve channel reliability.

All Ajax devices

LED Indication



The LED logo can light up red, white or green depending on the status of the device.

Event	Light indicator
Ethernet and at least one SIM card are connected	Lights up white
Only one communication channel is connected	Lights up green
The hub is not connected to the internet or there is no connection with the Ajax Cloud service	Lights up red
No power	Lights up for 3 minutes, then blinks every 10 seconds. The color of the indicator depends on the number of the connected communication channels.

Ajax Account

Hub 2 can be controlled via the **app** for iOS, Android, macOS, or Windows.

To configure the system, install the Ajax app and create the Ajax account. We recommend using the Ajax Security System app to manage one or several hubs. If you plan to manage over one hundred hubs, we recommend using **Ajax PRO: Tool for Engineers** (for iOS or Android) or **Ajax PRO Desktop** (for Windows or macOS). You will need to confirm your email address and your phone number as part of the process. Note that you can use your phone number and your email address to

An account with information regarding the added hubs is uploaded to the cloud-based Ajax Cloud service in an encrypted form.

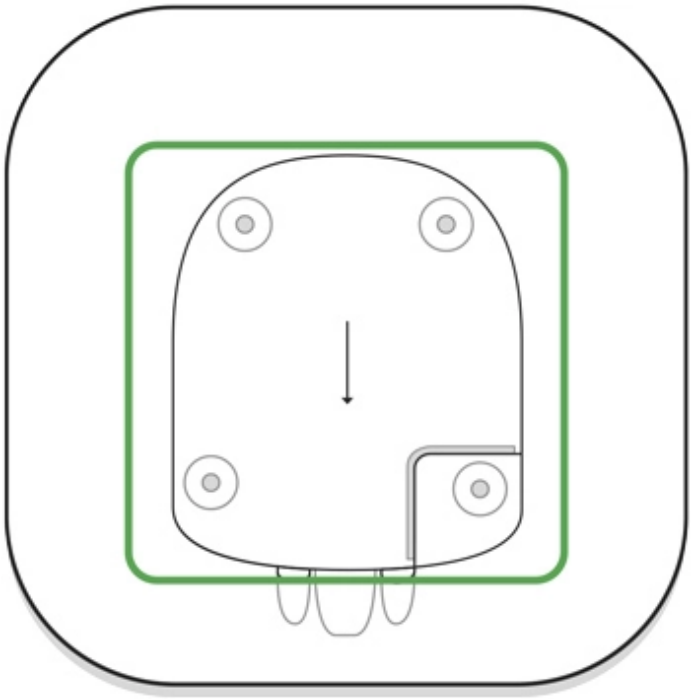
Security requirements

While installing and using the hub, follow the general electrical safety regulations for using electrical appliances, as well as the requirements of regulatory legal acts on electrical safety.

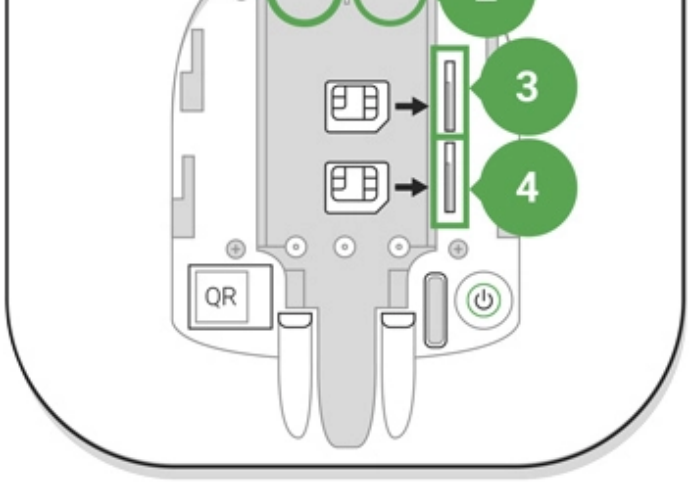
It is strictly prohibited to disassemble the device under voltage! Do not use the device with a damaged power cable.

Connecting to the Network

1. Open the hub lid by shifting it down with force. Be careful and do not damage the tamper protecting the hub from dismantling!



2. Connect the power supply and Ethernet cables to the sockets.



1 — Power Socket
2 — Ethernet socket
3, 4 — Slots for micro-SIM cards connection

3. Press and hold the power button for 2 seconds until the logo lights up. The hub needs approximately 2 minutes to identify the available communication channels. The bright green or white logo color indicates that the hub is connected to Ajax Cloud.

If the Ethernet connection does not occur automatically, disable proxy, filtration by MAC addresses and activate the DHCP in the router settings: the hub will receive an IP address. During the next setup in the web or mobile app, you will be able to set a static IP address.

4. To connect the hub to the GSM network, you need a micro SIM card with a disabled PIN code request (you can disable it using the mobile phone) and a sufficient amount on the account to pay for the GPRS, SMS services and calls. If the hub does not connect to Ajax Cloud via GSM, use Ethernet to set up the network parameters in the app. For the proper setting of the access point, username, and password, please contact the support service of the operator.

using Android, we recommend to follow **push notifications configuration instructions**.

2. Login into your account. Open the **Add Hub** menu and select the way of registering: manually or step-by-step guidance.

3. Type the name of the hub and scan the QR code located under the lid (or enter a registration key manually).

4. Wait until the hub is registered and displayed on the app desktop .

Security system users

After adding the hub to the account, you become the administrator of this device. One hub can have up to 50 users/administrators. The administrator can invite users to the security system and determine their rights.

Changing the hub administrator does not affect the settings of the connected devices.

Ajax security system user rights

Hub statuses

Icons

Icons display some of Hub 2 statuses. You can see them in the Ajax app, in the **Devices** menu .

Icons	Meaning
	2G connected
	SIM card is not installed
	The SIM-card is defective or has a PIN-code on it

	The hub have lost connection with the central monitoring station of the security organization via direct connection

States

States can be found in the **Ajax app**:

1. Go to the **Devices** tab .
2. Select Hub 2 from the list.

Parameter	Meaning
Malfunction	Click (i) to open the list of hub malfunctions. The field appears only if a malfunction is detected
Cellular signal strength	Shows the signal strength of the mobile network for the active SIM card. We recommend installing the hub in places with the signal strength of 2-3 bars. If the signal strength is weak, the hub will not be able to dial-up or send an SMS about an event or alarm
Battery Charge	Battery level of the device. Displayed as a percentage **How battery charge is displayed in Ajax apps**
	Status of the tamper that responds to hub dismantling:

External power	• **Connected** — the hub is connected to external power supply • **Disconnected** — no external power supply
Connection	Connection status between the hub and Ajax Cloud: • **Online** — the hub is connected to Ajax Cloud • **Offline** — the hub is not connected to Ajax Cloud
Cellular data	The hub connection status to the mobile Internet: • **Connected** — the hub is connected to Ajax Cloud via mobile Internet • **Disconnected** — the hub is not connected to Ajax Cloud via mobile Internet If the hub has enough funds on the account or has bonus SMS/calls, it will be able to make calls and send SMS messages even if the **Not connected** status is displayed in this field
Active SIM card	Displays the active SIM card: SIM card 1 or SIM card 2
SIM card 1	The number of the SIM card installed in the first slot. Copy the number by clicking it
SIM card 2	The number of the SIM card installed in the second slot. Copy the number by clicking it
	Internet connection status of the hub via Ethernet:

Average Noise (dBm)	frequencies, and the third — at Wings frequencies. The acceptable value is -80 dBm or lower
Monitoring Station	The status of direct connection of the hub to the central monitoring station of the security organization: • **Connected** — the hub is directly connected to the central monitoring station of the security organization • **Disconnected** — the hub is not directly connected to the central monitoring station of the security organization If this field is displayed, the security company uses a direct connection to receive events and security system alarms **What is a direct connection?**
Hub model	Hub model name
Hardware version	Hardware version. Unable to update
Firmware	Firmware version. Can be updated remotely
ID	ID/serial number. Also located on the device box, on the device circuit board, and on the QR code under the SmartBracket panel

Rooms in the Ajax app

The virtual rooms are used to group the connected devices. The user can create up

The room is created in the app using the **Add Room** menu.

Please assign a name for the room, and optionally, attach (or make) a photo: it helps to find the needed room in the list quickly.

By pressing on the gear button go to the room settings menu. To delete the room, move all the devices to other rooms using the device setup menu. Deleting the room erases all its settings.

Connecting Devices

The hub doesn't support **uartBridge** and **ocBridge Plus** integration modules.

During the first hub registration in the app, you will be prompted to add devices to

3. Click **Add** — the countdown for you to add a device will begin.

4. When the app starts searching and launches countdown, switch on the device: its LED will blink once. For detection and pairing to occur, the device should be located within the coverage area of the wireless network of the hub (at a single protected object).

If the connection fails on the first try, switch off the device for 5 seconds and retry.

How to configure and connect an IP camera to the Ajax security system

Video surveillance

You can connect third-party cameras to the security system: seamless integration with Dahua, Hikvision, and Safire IP cameras and video recorders has been implemented, and you can also connect third-party cameras supporting RTSP protocol. You can connect up to 25 video surveillance devices to the system.

How to add a Dahua camera or video recorder to the hub

How to add a Hikvision/Safire camera or video recorder to the hub

How to add a third-party camera to the hub

Settings

Settings can be changed in the **Ajax app**:

Avatar is a customized title image for Ajax security system. It is displayed in the hub selection menu and helps to identify the required object.

To change or set an avatar, click on the camera icon and set up the desired picture.

Hub name. Is displayed in the SMS and push notification text. The name can contain up to 12 Cyrillic characters or up to 24 Latin characters.

To change it, click on the pencil icon and enter the desired hub name.

Users — user settings for a security system: what rights are granted to users and how the security system notifies them of events and alarms.

To change the user settings, click on  opposite the user name.

How the Ajax security system notifies users of alerts

How to add new users to the hub

- Router — gateway used by the hub
- DNS — DNS of the hub

GSM — enabling/disabling cellular communication, configuring connections, and checking account.

- Cellular Data — disables and enables SIM cards on the hub
- Roaming — if it is activated, the SIM cards installed in the hub can work in roaming
- Ignore network registration error — when this setting is activated, the hub ignores errors when trying to connect via a SIM card. Activate this option if the SIM card cannot connect to the network
- Disable Ping Before Connecting — when this setting is activated, the hub ignores operator communication errors. Activate this option if the SIM card cannot connect to the network
- SIM card 1 — displays the number of the SIM card installed. Click on the field to go to the SIM card settings
- SIM card 2 — displays the number of the SIM card installed. Click on the field to go to the SIM card settings

Mobile data usage

- **Incoming** — the amount of data received by the hub. Displayed in KB or MB.
- **Outgoing** — the amount of data sent by the hub. Displayed in KB or MB.

> Keep in mind that data is counting on the hub and may differ from your operator's statistics.

Reset statistics — resets statistics on incoming and outgoing traffic.

Check balance

- **USSD code** — enter the code that is used to check the balance in this field. For example, *111#. After that, click **Check balance** to send a request. The result will be displayed under the button.

Geofence — configuring reminders for arming/disarming the security system when crossing a specified area. The user location is determined using the smartphone GPS module.

For example, the marketing department employees do not have access to the law office.

How to enable and configure group mode in the Ajax security system

Security Schedule — arming/disarming the security system by the schedule.

How to create and configure a scenario in the Ajax security system

Detection Zone Test — running the detection zone test for the connected detectors. The test determines the sufficient distance for the detectors to register alarms.

What is Detection Zone Test

The time before raising the alarm by the communication loss between hub and device is calculated with the following formula:

*Ping interval * (number of undelivered packets + 1 correction packet).*

The shorter ping interval (in seconds) means faster delivery of the events between the hub and the connected devices; however, a short ping interval reduces the battery life. At the same time, alarms are transmitted immediately regardless of the ping interval.

We do not recommend reducing the default settings of the ping period and interval.

Note that the interval limits the maximum number of connected devices:

Interval	Connection limit
12 s	39 devices
24 s	79 devices
36 s or more	100 devices

Regardless of settings, the hub supports 10 connected sirens maximum!

Learn more about scenarios

LED Brightness

Adjustment of the hub logo LED backlight brightness . Set in the range of 1 to 10. The default value is 10.

Firmware Auto-Update

Configuring automatic OS Malevich firmware updates.

- **If enabled**, the firmware is automatically updated when a new version is available, when the system is not armed, and external power is connected.
- **If disabled**, the system does not update automatically. If a new firmware version is available, the app will offer to update the OS Malevich.

How OS Malevich updates

Hub System Logging

Logs are files containing information about system operation. They can help sort out

How to send an error report

Advanced settings

The list of advanced hub settings depends on the type of application: standard or PRO.

Ajax Security System	Ajax PRO
Server connection Sirens settings Fire detectors settings System integrity check	PD 6662 Setting Wizard Server Connection Sirens settings Fire detectors settings System Integrity Check Alarm Confirmation Restoration After Alarm Arming/Disarming Process Devices Auto Deactivation

PD 6662 Setting Wizard

Opens a step-by-step guide on how to set up your system to comply with the British security standard PD 6662:2017.

Learn more about PD 6662:2017

The time to generate a message regarding the loss of communication between the hub and the Ajax Cloud server is calculated using the following formula:

*(Ping interval * 4) + Time filter*

With the default settings, Ajax Cloud reports the hub loss in 9 minutes:

*(60 s * 4) + 300 s = 9 min*

- **Receive events of server connection loss without alarm**. Ajax apps can notify about the hub-server communication loss in two ways: with a standard push notification signal or with a siren sound (enabled by default). When the option is active, the notification comes with a standard push notification signal.
- **Notify of connection loss over channels**. Ajax security system can notify both the users and the security company about the loss of connection even via one of the connection channels.

In this menu, you can choose the connection loss of which channels will be reported by the system, as well as the delay for sending such notifications:

Siren activation parameters

If the hub or detector lid is open. If enabled, the hub activates the connected **sirens** if the body of the hub, detector, or any other Ajax device is open.

If in-app panic button is pressed. When the function is active, the hub activates the connected sirens if the panic button was pressed in the Ajax app.

You can disable the sirens reaction when pressing the panic button on the SpaceControl key fob in the key fob settings (Devices → SpaceContol → Settings).

Settings of siren after-alarm indication

This setting is only available in **PRO Ajax apps**

during a fire. And you can quickly disable triggered fire detectors using the Ajax app, Button, or KeyPad/KeyPad Plus.

Learn more

System Integrity Check

The **System integrity check** is a parameter that is responsible for checking the status of all security detectors and devices before arming. Checking is disabled by default.

Learn more

Alarm Confirmation

This setting is only available in **PRO Ajax apps**

The function eliminates situations when the user arms the system with detectors that generate false alarms.

Learn more

Arming/Disarming Process

This setting is only available in **PRO Ajax apps**

The menu allows to enable arming in two stages, as well as set Alarm Transmission Delay for security system disarming process.

What is Two-Stage Arming and why is it needed

What is Alarm Transmission Delay and why is it needed

deactivating devices manually here.

Clear notifications history

Clicking the button deletes all notifications in the hub events feed.

Monitoring Station — the settings for direct connection to the security company's central monitoring station. Parameters are set by security company engineers. Keep in mind that events and alarms can be sent to the central monitoring station of the security company even without these settings.

"Monitoring Station" tab: what is it?

- **Protocol** — the choice of the protocol used by the hub to send alarms to the central monitoring station of the security company via a direct connection. Available protocols: Ajax Translator (Contact-ID) and SIA.

station of the security company are selected. Hub 2 can send alarms and events to the central monitoring station via **Ethernet** and **EDGE**. We recommend that you use all communication channels at once — this will increase the transmission reliability and secure against failures on the telecom operators' side.

- **Ethernet** — enables event and alarm transmission via Ethernet.
- **GSM** — enables event and alarm transmission via the mobile Internet.
- **Periodic Test Report** — if enabled, the hub sends test reports with a given period to the CMS (Central Monitoring Station) for additional monitoring of object connection.
- **Monitoring Station Ping Interval** — sets the period for sending test messages: from 1 minute to 24 hours.

Encryption

Installers — PRO users settings (installers and representatives of security companies) of the security system. Determine who has access to your security system, the rights that are granted to PRO users, and how the security system notifies them about the events.

How to add PRO to the hub

Security companies — a list of security companies in your area. The region is determined by the GPS data or the regional settings of your smartphone

Settings Reset

Reset the hub to the factory settings:

1. Switch on the hub if it is turned off.
2. Remove all users and installers from the hub.
3. Hold the power button for 30 s — the Ajax logo on the hub will start blinking red.
4. Remove the hub from your account.

Events and Alarms Notifications

The Ajax security system informs the user about alerts and events using three types of notifications: push notifications, SMS, and phone calls. The alert settings

	with the Ajax Cloud service	
Events	• Switching on/off **WallSwitch**, **Relay**, **Socket**	Push notifications SMS
Arming/Disarming	• Arming/Disarming entire premises or group • Switching on **Night mode**	Push notifications SMS

The hub does not notify users of opening detectors triggering in the Disarmed mode when the Chime feature is enabled and configured. Only the sirens connected to the system notify

for radio communication, and the hub is hidden from direct view.

The device developed only for indoor use.

Make sure that communication between the hub and all connected devices is stable. If the signal strength is low (a single bar), we do not guarantee a stable operation of the security system. Implement all potential measures to improve the quality of the signal! At least, relocate the hub: even 20 cm shifting can significantly enhance the signal reception.

If, after the relocation, signal strength is still low or unstable, use the **ReX radio**

It is strictly prohibited to disassemble the device under voltage! Do not use the device with a damaged power cable.

Do not disassemble or modify the hub or any of its parts: this can affect the normal operation of the device or cause its failure.

Do not place the hub:

- Outside the premises (outdoors).

1. Hub 2
2. Power cable
3. Ethernet cable
4. Installation kit
5. Micro SIM (not included some countries)
6. Quick Start Guide

Technical Specifications

	SIM card only
Energy consumption from the grid	10 W
Tamper proof	Available, tamper
Operating frequency band	868.0 – 868.6 MHz or 868.7 – 869.2 MHz, depending on the sales region
RF output power	8.20 dBm / 6.60 mW (limit 25 mW)
Radio signal modulation	GFSK
Radio signal range	Up to 2,000 m (any obstacles absence) **Learn more**

Warranty

User agreement

Technical support: **support@ajax.systems**