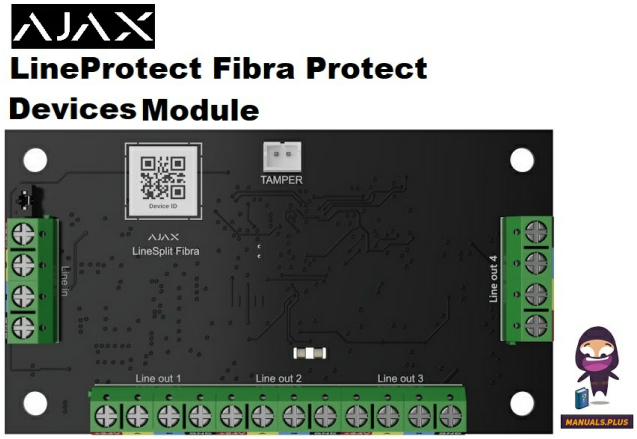

AJAX LineProtect Fibra Protect Devices Module User Manual

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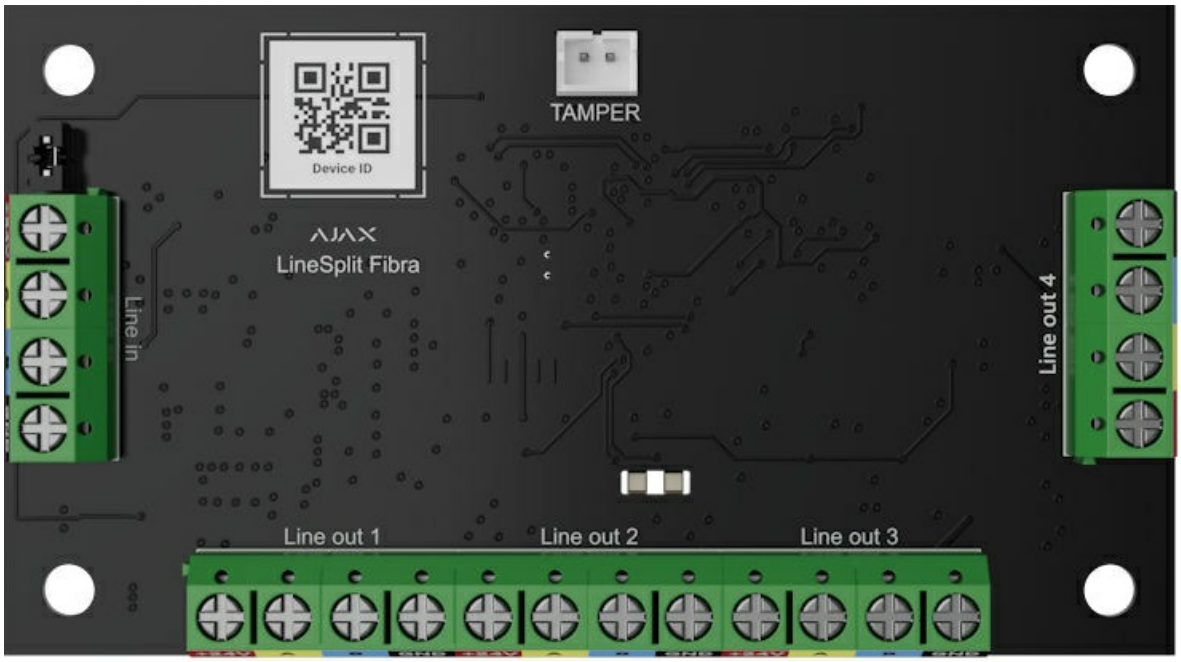
AJAX LineProtect Fibra Protect Devices Module



Specifications

- Designed to protect devices on the Fibra line
- Compatible with Hub Hybrid (2G) and Hub Hybrid (4G)
- Works in an Ajax system
- Exchanges data with the hub using the secure Fibra wired communication protocol
- Part of the Fibra product line of wired devices

Product Usage Instructions

Functional Elements:

1. QR code with the device ID for pairing with Ajax system
2. Terminating resistor jumper for line configuration
3. LineProtect input terminals
4. LED indicators for status monitoring
5. Connector for tamper board attachment (sold separately)
6. Output terminals for connecting wired devices

Operating Principle:

- LineProtect safeguards devices on the Fibra line in an Ajax system by protecting them from various threats.
- To install, connect one input and one output Fibra line to LineProtect. Use LineSplit Fibra to divide the line.
- Avoid installing LineProtect in a Ring topology.

Fibra Data Transfer Protocol:

- The module uses Fibra technology for fast and reliable two-way communication between the hub and connected devices.

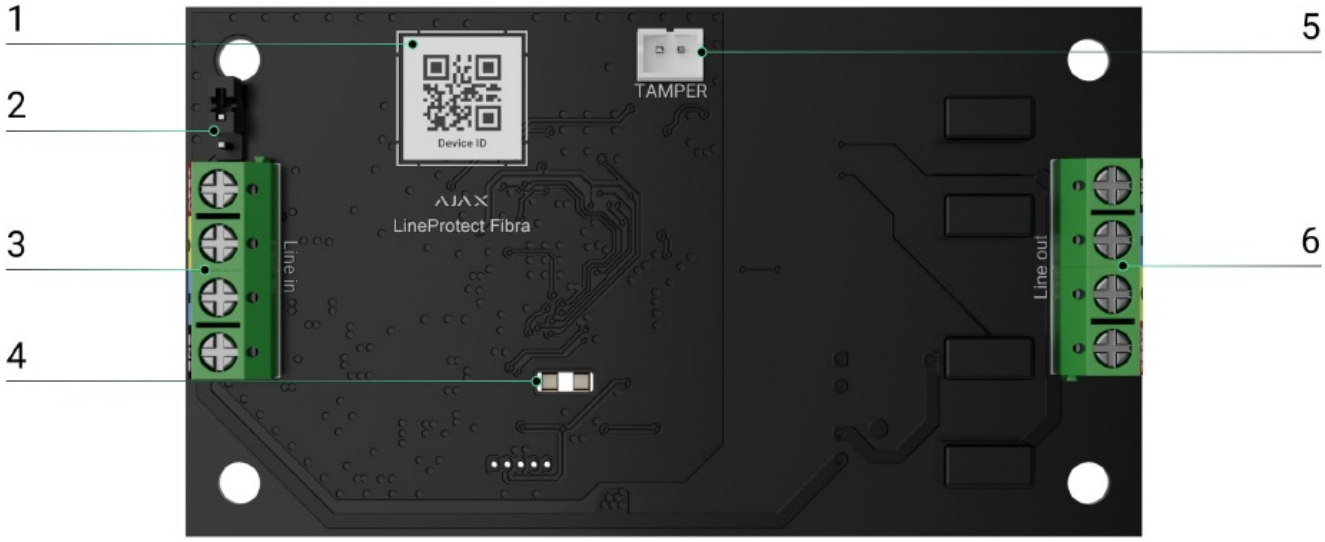
Sending Events to Monitoring Station:

- LineProtect can transmit various events including tamper alarms, voltage status, communication loss, and device activation/deactivation.

LineProtect Fibra is a module designed to protect devices on the Fibra line from short circuit and sabotage: 110/230 V~ voltage supply to the line, hit with thestun gun. The module works in an Ajax system and exchanges data with the hub using thesecure Fibra wired communication protocol.

- LineProtect is a part of the Fibra product line of wired devices. Only accreditedAjax Systems partners can buy, install, and administer Fibra products.

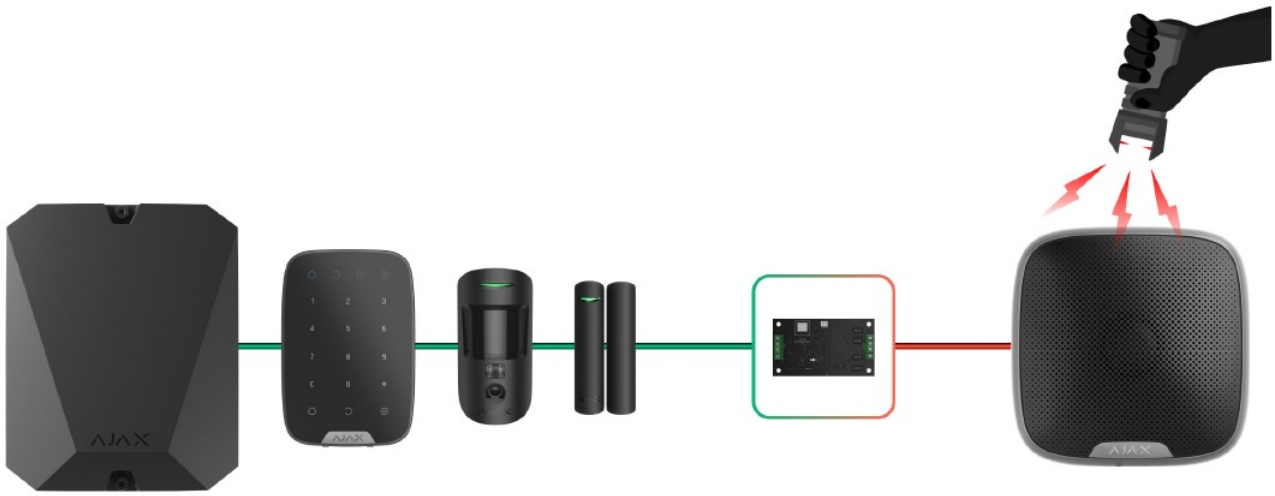
Functional elements



1. QR code with the device ID. It is used to pair this device with an Ajax system.
2. Terminating resistor jumper. It is installed on two contacts if LineProtect isthe last device on the Fibra line. Otherwise, the jumper is either installed onone contact or not installed.
3. LineProtect input terminals.
4. LED indicators.
5. Connector to fasten the to the module. The tamper board is inCase that is sold separately.V tamper board6.
6. Output terminals for connecting wired devices.

Operating principle

- LineProtect is a module designed to protect devices connected to the input lineon the Fibra line in an Ajax system. It connects to any point of the Fibra line.
- The module protects devices installed on the Fibra line between LineProtect andthe hub, as well as the hub itself. LineProtect does not protect devices betweenthe module and the end of the line.

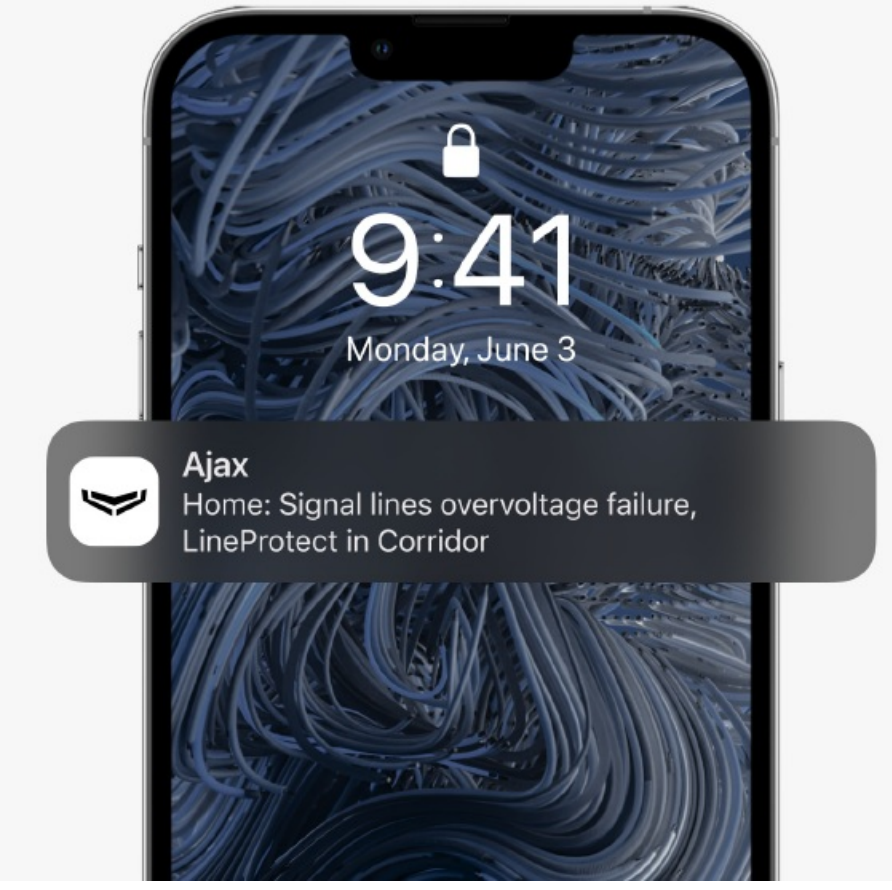


- You need to connect one input and one output Fibra line to LineProtect. It is used to divide the line. Do not install LineProtect on the Fibra line created in a Ring topology.
- Do not connect LineProtect modules one after another. You can connect one LineProtectto one Fibra line

The module protects the hub and Fibra devices from the following threats

- 110/230 V~ voltage supply.
- Short circuit on the line.
- Hit with the stun gun.
- Overvoltage on the Fibra signal lines

LineProtect distinguishes the intervention type, and the system sends thecorresponding notifi cation to the Ajax apps.



Fuses are triggered if an abnormal voltage is supplied on the Fibra line. In thiscase, LineProtect can fail, so it

needs to be replaced. The users and the securitycompany will receive the corresponding notifi cation.

Fibra data transfer protocol

- The module uses Fibra technology to transmit alarms and events. It is a wireddata transfer protocol for fast and reliable two-way communication between thehub and connected devices

Sending events to the monitoring station

- The Ajax system transmits alarms to the **PRO DESKTOP** monitoring app, as well as to the central monitoring station (CMS) using SurGard (Contact ID), SIA (DC-09), ADEMCO 685, and **OTHER PROTOCXOL**

LineProtect can transmit the following events

1. Tamper alarm and turning off the alarm.
2. Low supply voltage and voltage return to normal values.
3. Loss and restoration of communication between LineProtect and the hub.
4. Permanent deactivation and activation of the device.
5. One-time deactivation and activation of the device.6.
6. Short circuit on the Fibra line and power supply restoration.
7. Overvoltage on the Fibra signal lines and voltage return to normal values. 8.
8. Faulty fuse.

When an alarm is received, the CMS operator knows exactly what has happened and where to send the rapid response team. The Ajax devices are addressable, meaning that the PRO Desktop app and CMS receive events, device type, assigned name, and location (room, group). The list of transmitted parameters may differ depending on the CMS type and the selected communication protocol

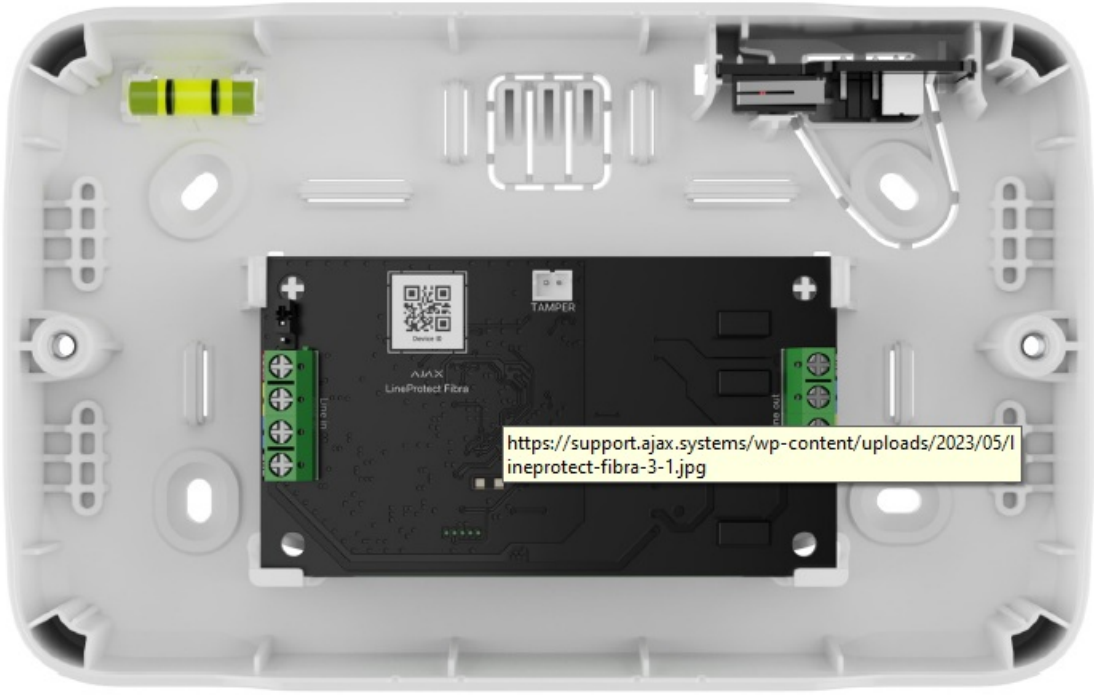
You can find the device ID, loop (zone) number, and line number in the device.

Selecting the installation site

- LineProtect is installed in front of potentially vulnerable devices. An intruder can directly electrocute a street siren or a keypad in a public space
- The module protects devices installed between LineProtect and the hub, as well as thehub itself. However, the module does not protect devices that have been directlysubjected to high voltage.
- When choosing a spot to install LineProtect, consider the parameters that affect the operation of the device:
- Fibra signal strength.
- The length of the cable for connecting LineProtect.
- The length of the cable for connecting wired devices to LineProtect.

Follow these recommendations when designing the Ajax system project for an object. Only professionals should design and install security systems. The list of authorized Ajax partners is **available here**

Installing into Case



- We recommend installing LineProtect into Case. The casing is sold separatelyand available in multiple versions. Installing a single module, several modules, orseveral other devices into Case is possible.
- Case has mounts for the modules, wire channels, and a tamper that connects tothe board of LineProtect.

[Learn more about Case]

LineProtect cannot be installed

- Outdoors. It can damage the module.
- Inside premises where temperature and humidity values do not correspond to the **operating parameters**, It can damage the module. operating parameter

Fibra signal strength

- Fibra signal strength is the ratio of undelivered or corrupted data packages to those expected over a specific time. The icon in the Devices tab in Ajaxapps indicates the signal strength:
- Three bars indicate excellent signal strength.
- Two bars indicate good signal strength.
- One barlow signal strength; stable operation is not guaranteed.
- Crossed out icon, no signal; stable operation is not guaranteed.

[What is Fibra Signal Strength Test]

Lines Power Test

- The test simulates the maximum energy consumption of devices connected tothe hub. If the system passes the test successfully, all its devices have enough power in any situation.
- During the test, LineProtect calibrates its output to the appropriate voltage. After calibration, the device

becomes more sensitive to detecting sabotage, including short circuits. If you change the system configuration, you need to repeat the lines power test to recalibrate the device according to the new network characteristics.
- After the test, the app displays a notification with the status of each line
- Test passed.
- Test passed with malfunctions.
- The test failed.

What is Lines Power Test

Designing the system project

- It is crucial to design the system project to install and configure the devices correctly. The project must consider the number and types of devices atthe object, their exact location and installation height, the length of wired Fibralines, the cable type, and other parameters. Read
  to learn tips for designing the Fibra system project.
- LineProtect can be connected at any point of the Fibra line. The output line ofthe device can have a length of up to 2,000 meters when connected using the U/UTP cat.5 twisted pair cable. Different types of devices can be connected tothe output Fibra line. For example, you can use opening detectors, motion detectors, sirens, and keypads. The number of wired devices in the system is limited by the output current of the hub and its specifications. You can connect up to 100 devices to Hub Hybrid.

To provide additional power to the line, install **linesupply fibra**

Ajax systems support Beamand Ring topologies. However, do not install LineProtect onthe Fibra line created in a Ring topology

Cable length and type

Recommended cable types:

- U/UTP cat.5, 4 × 2 × 0.51, copper conductor.
- Signal cable 4 × 0.22, copper conductor.

Verification using a calculator

- To ensure that the project is designed correctly and the system will work in practice, we have developed a **Fibra power supply calculator.**It helps to check the communication quality and cable length for wired Fibra devices when designing the system project.

Preparing for installation

Cable arrangement

- When preparing to lay cables, check the electrical and fire safety regulations inyour region. Strictly follow these standards and regulations. Tips for cablearrangement are available in **THE ARTICLE**

Cable routing

- We recommend you carefully read the section before installation. Do not deviate from the system project. Violating the BasicLineProtect installation rules and the recommendations of this manual may lead to incorrect operation and loss of connection with the device. Tips for cable routing are available in **the articles**

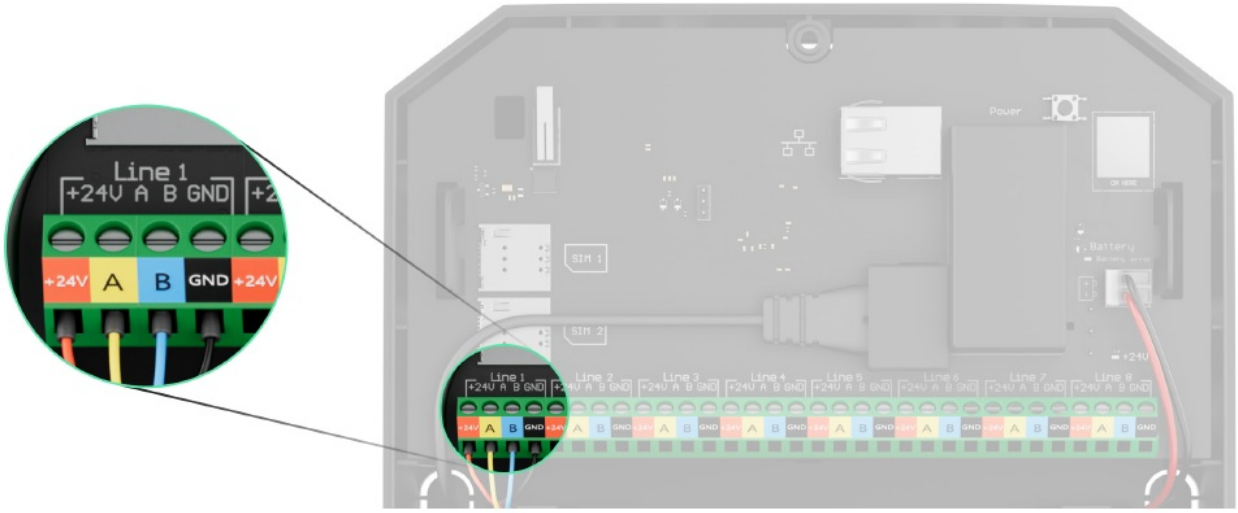
Preparing cables for connection

- Remove the insulating layer and strip the cable with a special insulation stripper. The ends of the wires inserted into the device terminals must be tinned or crimped with a sleeve. It ensures a reliable connection and protects the conductor from oxidation. Tips for preparing the cables are available in **the article**

Installation and connection

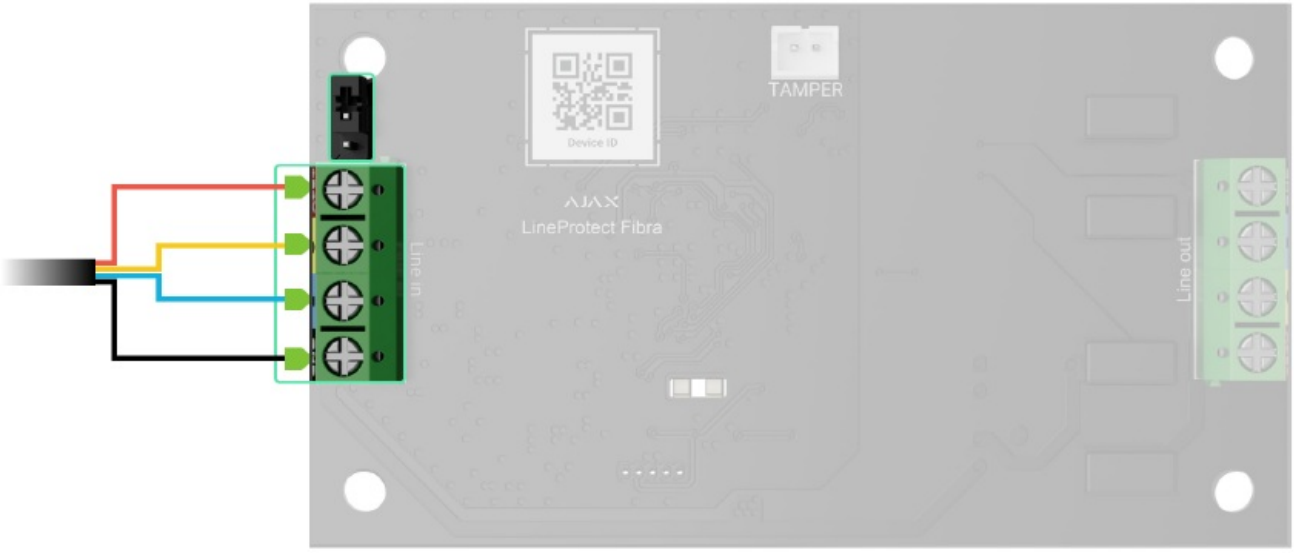
Connecting LineProtect Fibra to the hub

1. Prepare cable holes in advance by carefully breaking out the perforated parts of the Case.
2. Secure Case with the bundled screws using at least two fi xing points. FixCase at a point with a perforated area so its tamper responds to disassembly attempts.
3. Turn off the power of lines in the **Ajax pro app**
    1. Hub → Settings → Lines → Lines Power Supply
4. Route the cable to connect LineProtect to the hub casing. Connect the wiresto the required hub line.



- +24V
- 24 V power terminal. A, B
- signal terminals. GND
- ground.

5. Connect the wires to the LineProtect input terminals according to thediagram below. Follow the polarity and connection order of the wires.Securely fasten the cable to the terminals.



6. If LineProtect is the last one on the line , install a terminating resistor jumperon the two contacts. Otherwise, the terminating resistor jumper shouldremain installed on one contact or not be installed.
7. If LineProtect is not the last one on the line , connect the device's wires tothe LineProtect output terminals according to the diagram below. Follow the polarity and connection order of the wires. Securely fasten the cable to the terminals.

8. Secure the module in Case using holes in the board. Secure the cable withties.
9. Connect the Case tamper to the appropriate module connector.
10. Place the lid on the casing and fasten it with the bundled screws.
11. Turn on the power supply of lines in the **ajax pro app**
    - Hub → Settings → Lines → Lines Power Supply
12. Add LineProtect to the hub.
13. Run the functionality testing.

Adding to the system

- LineProtect Fibra is compatible only with **hub hybrid (2G)** and **hub hybrid 4G**. only ed partners can add and configure Fibra devices in in **Ajax pro app**.

Before adding a device

1. Install an **Ajax pro app**

2. Log in to a **pro account** or create a new one
3. Select a space or create a new one.
    - **What is space**
    - **How to create space**
    - The space functionality is available for apps of such versions or 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.
4. Add at least one virtual room.
5. Add a **compatible hub** to the space. Ensure the hub is switched on and has internet access via Ethernet, Wi-Fi, and/or mobile network.
6. Ensure the space is disarmed, and the hub is not starting an update bychecking statuses in the Ajax app.

How to add LineProtect Fibra

- Two ways to add devices are available in the Ajax PRO app: automatically and manually.
- Automatically Manually

To add a device automatically:

1. Open the **Ajax PRO app.** Select the hub to which you want to add LineProtectFibra
2. Go to the Devices tab and click Add Device.
3. Select Add All Fibra Devices. The hub will scan the Fibra lines. Afterscanning, all devices connected to the hub that still need to be added to the system will be shown.
4. Select the device from the list. After pressing, the LED indicator will flash to identify this device.
5. Set the device name and specify the room and security group if **group mode** is enabled. Press Save.

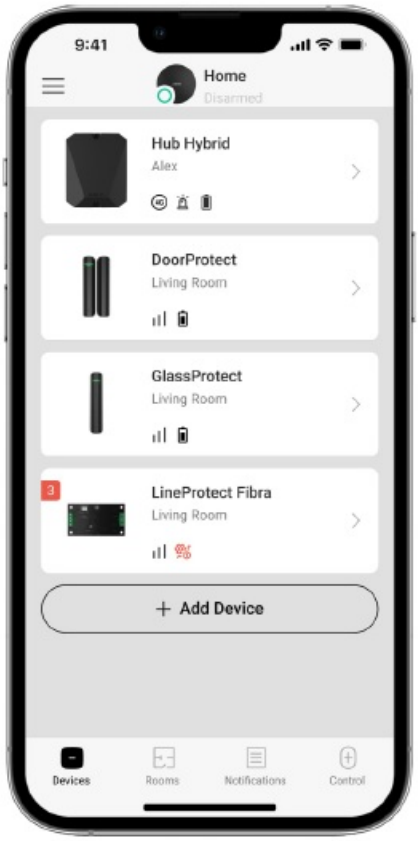
If the connection fails, check the wired connection's correctness and try again. Ifthe maximum number of devices (100 for Hub Hybrid) has already been addedto the hub, you will receive an error notifi cation while adding. LineProtect only works with one hub. The module stops exchanging data withthe previous hub when pairing with a new one. When LineProtect is added to anew hub, it remains in the list of devices on the previous hub. You can remove itmanually.

Functionality testing

Available for LineProtect:

- **Fibra Signal Strength Test** – to determine the strength and stability of the signal at the device installation site.
- **Lines Power Test** – to determine if there is enough power for all devices connected to the hub and calibrate the protection threshold.

Icons



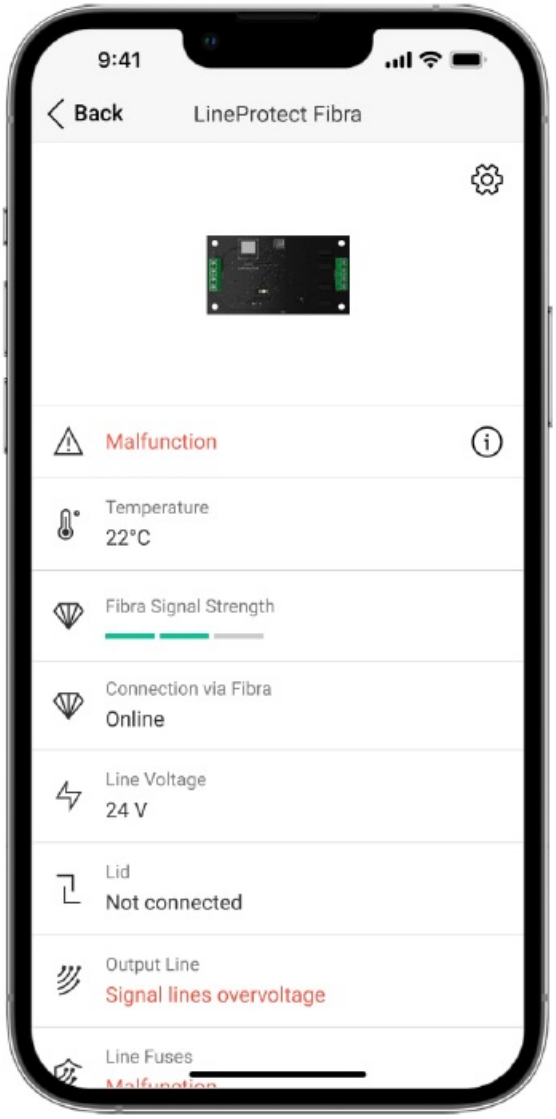
The icons show some statuses of the device. You can check them in the Ajaxapps:

1. Select a hub in the Ajax app.
2. Go to the Devices tab.
3. Find LineProtect in the list

Icon	Meaning
	Fibra Signal Strength — displays the signal strength between the hub and the module. Recommended values: 2–3 bars. Learn more
	LineProtect is permanently deactivated.

	Learn more
	In LineProtect, events of tamper triggering are permanently disabled. **Learn more**
	LineProtect is deactivated for one arming cycle.
	In LineProtect, events of tamper triggering are disabled for one arming cycle.
	The device was not transferred to the new hub. **Learn more**

States



The states display information about the device and its operating parameters.You can check the LineProtect states in the Ajax apps:

1. Select a hub in the Ajax app.
2. Go to the Devices tab.
3. Select LineProtect from the list of devices

Parameter	**Meaning**
Temperature	Module temperature. The acceptable error between the value in the app an d the temperature at the installation site: 2 °C. The value is updated as soon as the module detects a temperature change of at least 1 °C. You can create a scenario by temperature to control a utomation devices. **Learn more**
Fibra Signal Strength	Signal strength between the hub and LineProtect Fibr a. Recommended values: 2–3 bars. Fibra is a protocol for transmitting events and alarms. **Learn more**
Connection via Fibra	The status of connection between the hub and the mo dule: **Online** — The module is connected to the hub. **Offline** — The module has lost connection with the hub. Check the module connection to the hub.
Line Voltage	The voltage value on the Fibra line to which the modul e is connected.

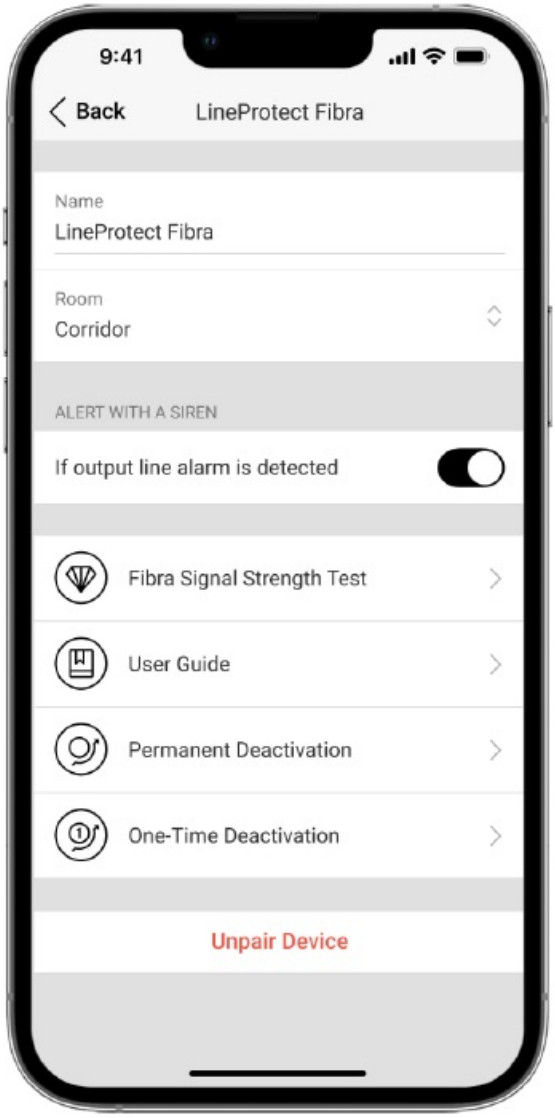
Lid	The tamper status responds to the detachment of the device from the surface or violation of the device's cas ing integrity: **Not connected** — the tamper is not connected to Lin eProtect. **Closed** — The module is installed into Case; the tam per is connected. The casing is in a

	normal state. **Front lid open** — the integrity of the casing is violated . Check the casing state. **Detached from surface** — the module is removed fro m the mount in the casing. Check the mounting. **Learn more**
Output Lines	Shows the output line status: **OK** — devices on the output line operate in normal m ode and transmit all events. **Shorted out** — the short circuit on the output line was detected. **Signal lines overvoltage** — the high voltage on the s ignal lines was detected. Check the polarity and connection order of the wires.

Line Fuses	The status is shown after line fuses triggering: **Malfunction** — due to the sabotage on the line, device fuses are faulty. The module and devices connected to the output line do not operate. LineProtect needs to be replaced.
Permanent Deactivation	Shows the status of the device permanent deactivation function: **No** — the device operates in normal mode and transmits all events. **Entirely** — the device does not notify about alarms or malfunctions, and cannot execute scenarios and system commands. **Lid Only** — notifications on the tamper triggering are disabled. **Learn more**

One-Time Deactivation	Shows the status of the device deactivation for one arming cycle function: **No** — the device operates in normal mode and transmits all events. **Entirely** — the device does not notify about alarms or malfunctions, and cannot execute scenarios and system commands for one arming cycle. **Lid Only** — notifications on the tamper triggering are disabled for one arming cycle.
Firmware	LineProtect firmware version.
Device ID	LineProtect ID/Serial Number. Also available on the device board and its packaging.
Device No.	LineProtect loop (zone) number.
Line No.	The Fibra line number of the hub to which LineProtect is connected.

Settings



To change module settings in an Ajax app

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

Settings	Meaning
Name	Name of the module. Displayed in the list of hub devices, text of SMS and notifications in the events feed. To change the name of the module, click on the text field. The name can contain up to 12 Cyrillic characters or up to 24 Latin characters.
Room	Selection of the LineProtect virtual room. The room name is displayed in SMS and notifications in the events feed.
Alert with a siren if output line alarm is detected	When the toggle is enabled, the **siren** activates when the output line alarm is detected.
Fibra Signal Strength Test	Puts the module into the Fibra Signal Strength Test mode. The test allows you to check the signal strength between the hub and LineProtect via the wired Fibra data transfer protocol to select the optimal installation site. **Learn more**
User Guide	Opens LineProtect User Manual in an Ajax app.
Permanent Deactivation	Allows the user to disable the device without removing it from the system. Three options are available:

	No — the device operates in normal mode and transmits all events. **Entirely** — the device does not notify about alarms or malfunctions, and cannot execute scenarios and system commands. **Lid Only** — notifications on the tamper triggering are disabled. Learn more
One-Time Deactivation	Allows the user to disable the device for one arming cycle without removing it from the system. Three options are available: **No** — the device operates in normal mode and transmits all events. **Entirely** — the device does not notify about alarms or malfunctions, and cannot execute scenarios and system commands for one arming cycle. **Lid Only** — notifications on the tamper triggering are disabled for one arming cycle.
Unpair Device	Unpairs LineProtect from the hub and deletes its settings.

Indication

Event	Indication	Note
Adding a module	**When added automatically,** the green LED flashes quickly when LineProtect is selected from the list. When you click **Add device**, the green LED flashes once. **When added manually,** the green LED flashes once.	

Removing the module	The green LED flashes six times.	
Tamper triggering	The green LED flashes once.	
Lines Power Test	The green and red LEDs are glowing continuously during the test.	
Low voltage on the output li ne	The green LED lights up smoothly and goes out smoothly.	Voltage of 7 V or less is consi dered low.
Short circuit on the line	The red LED flashes 4 times per second for 12 s econds.	After 12 seconds, LineProtect attempts to restore power to t he output lines. If the fault has not been cleared, the module r epeats turning off. The actions are repeated until the correct s tate of the line is restored.
Overvoltage on the line	The red LED flashes 4 times per second for 12 s econds.	After 12 seconds, LineProtect attempts to restore power to t he output lines. If the fault has not been cleared, the module r epeats turning off. The actions are repeated until the correct s tate of the line is restored.
Faulty fuses	The red LED flashes 4 times per second for 12 s econds.	After 12 seconds, LineProtect attempts to restore power to t he output lines. If the fault has not been cleared, the module r epeats turning off. The actions are repeated until the correct s tate of the line is restored.

Maintenance

- The device does not require maintenance

Technical specifications

- All technical specifications
- Compliance with standards

Warranty

- Warranty for Limited Liability Company “Ajax Systems Manufacturing” productsare valid for 2 years after purchase. A faulty fuse is not a warranty case.

Please contact Ajax Technical Support first if the device does not function correctly. In most cases, technical issues can be resolved remotely.

- Warranty obligations
- User Agreement

Contact Technical Support

- E-MAIL
- Telegram
- mailto:support@ajax.systems

FAQ

Q: Can LineProtect be connected in a Ring topology?

A: No, LineProtect should not be installed on the Fibra line created in a Ring topology.

Q: What events can LineProtect transmit to the monitoring station?

A: LineProtect can transmit tamper alarms, voltage status changes, communication loss, and device activation/deactivation events.

Documents / Resources

	AJAX LineProtect Fibra Protect Devices Module [pdf] User Manual LineProtect Fibra Protect Devices Module, LineProtect Fibra, Protect Devices Module, Devices Module, Module

References

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- Signal range extenders in the security system | Ajax Systems
- Alarm sirens for Ajax security systems
- uartBridge — Module for Ajax devices integration with third-party wireless alarms systems
- Warranty - Ajax Systems
- Where to buy — Ajax Systems
- How to enable and configure group mode in the Ajax system | Ajax Systems Support
- How to transfer settings and devices from one hub to another | Ajax Systems Support
- How to create the Ajax PRO account? | Ajax Systems Support
- What is a tamper | Ajax Systems Support
- What is Fibra Signal Strength Test | Ajax Systems Support
- How to create Space | Ajax Systems Support
- How to deactivate a device without removing it from the system | Ajax Systems Support
- Which CMSs can Ajax hubs be connected to | Ajax Systems Support
- How to create and configure a scenario in the Ajax system | Ajax Systems Support
- Tips for installing and configuring Fibra wired devices | Ajax Systems Support
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