CombiProtect Jeweller

Wireless IR motion detector with an additional K-band microwave sensor.

Single device. Dual protection

We have combined the functions of our two detectors and created a universal security solution for different types of objects —- CombiProtect Jeweller. The device features software algorithms to prevent false alarms and has two primary functions — motion detection and glass break detection. Both sensors can be remotely configured in the app, as well as the required sensitivity level. It is also possible to test the device via the app. The intuitive interface and hassle-free installation create a satisfying PRO and end-user experience

Key features

<table>
<tr><td>Up to 12 m

motion detection distance</td><td>Up to 5 years

of operation with pre-installed enhanced batteries</td><td>Pet immunity

3 sensitivity levels
for motion and glass break sensors</td><td>180° glass break detection angle</td></tr>
<tr><td>Up to 9 m

glass break detection distance</td><td>Up to 1,700 m

communication range with an Ajax hub or range extender[1]</td><td>Software algorithm
to prevent false alarms

SmartDetect</td><td>DualTone

Digital algorithm for glass break verification</td></tr>
<tr><td>Remote control and configuration</td><td>Jeweller radio communication

Power adjustment
Frequency hopping
Encryption
TDMA
Two-way communication</td><td>Vertical motion detection angle</td><td>Horizontal motion detection angle</td></tr>
<tr><td>Temperature compensation

for effective detection in heat and cold

Two colours

of matte enclosure</td><td>Hassle-free installation

QR code
↓
SmartBracket
↓
App</td><td>Compliance

Grade 2 (EN 50131)
PD 6662:2017
INCERT
SSF</td><td>Push notifications

Critical
Office: Glass break detected, CombiProtect Jeweller in Hall.
Critical
Office: Motion detected, CombiProtect Jeweller in Hall.</td></tr>
</table>

Superior, **Fibra**, and **Baseline** product lines are mutually compatible. This opens up numerous possibilities for building systems of any configuration.

Wherever there is a risk of intrusion

Office	Store	Warehouse	Museum	School	Medical center	Car service

Discover future-proof hardware

- Fresnel lens
- PIR sensor
- Electret microphone
- Jeweller antenna
- Tamper
- Pre-installed battery
- SmartBracket mounting panel

No intruder goes unnoticed

PIR sensor

All Ajax motion detectors use PIR sensors by **Excelitas Technologies** — a field-leading American manufacturer specializing in designing and producing optronic components since 1931. Ajax Systems constantly proves the sensor's superior quality at the production stage: **we test 100% of manufactured devices**. Wrapped into Ajax technologies, it brings the utmost accuracy of intrusion detection.

Special lens

The pattern of the Fresnel lens sections is designed to differentiate between the IR diagrams of a human, animal, and thermal noise. Large lens sections capture radiation at an adult's head and torso level. Smaller sections make the diagram more detailed. The lens provides the detector with accurate information about the thermal object in the detection zone and the nature of its movement.

SmartDetect

Thermal interferences filter

We processed thousands of thermal patterns caused by humans, animals, and the environment to develop the SmartDetect software algorithm. In armed mode, the detector constantly analyses the thermal diagram from the PIR sensor, including the IR radiation intensity, thermal spot size, movement speed, time spent in the detection zone, and other parameters. The algorithm identifies false alarm markers instantly and with high accuracy. As a result, the detector accurately responds to human motion without false alarms.

Thermal spot size		**Movement speed**		**IR radiation intensity**	
False alarm	Real alarm	False alarm	Real alarm	False alarm	Real alarm

Temperature compensation

Temperature compensation is a software mechanism that keeps the thermal diagram contrast even if the ambient temperature is close to the temperature of the human body. With each ambient temperature measurement, the detector corrects the PIR sensor data according to the coefficient table stored in its memory. The detector is effective over the entire operating temperature range.

Sensitivity level

The detector can adapt to the conditions of a particular facility, considering possible thermal interference or pets. The sensitivity setting changes the set of markers by which false alarms are filtered. Low sensitivity makes the detector less likely to respond to an active pet. A high sensitivity will raise the alarm in case of any motion in the detection zone.

Professional installation

With the correct installation at the height of 2.4 m and lens direction perpendicular to an alleged intrusion path, the detector provides an accurate thermal diagram and pet immunity. It instantly responds to a real threat, minimizing false alarms caused by pets weighing up to 20 kg and below 50 cm in height.

Enhanced glass break detection

CombiProtect Jeweller uses a sensitive electret microphone and the DualTone digital algorithm to detect the sound of glass breaking. To register a glass break and report an alarm, the device must detect a dull (low-frequency) sound of an impact and a ringing (high-frequency) sound of glass breaking in 1.5 seconds. This two-stage glass break detection algorithm decreases the risk of false alarms. Three sensitivity levels can be configured in the Ajax app, making the detector suitable for any object.

CombiProtect Jeweller doesn't respond to the breaking of glass covered with shockproof, sunscreen, decorative, or any other film. T such glass breaking, we recommend using DoorProtect Plus Fibra, DoorProtect S Plus Jeweller, or DoorProtect G3 Fibra detectors w and tilt sensors.

Wire-free flexibility and reliable performance

Baseline devices operate without any wires, offering maximum flexibility during installation. The pre-installed CR123A battery from proven manufacturers ensures a hassle-free setup, requiring no additional steps to start operating the devices. In addition to real-time testing during battery production, Ajax Systems inspects every unit to ensure the accuracy of the battery characteristics. The battery is easily replaceable, allowing one to swap them out after approximately five years of autonomous operation. The battery status is always accessible via the Ajax app. Users and security companies receive low battery level warnings months in advance, allowing for timely replacement without rushing.

- Real-time testing during battery production
- Up to 5 years of autonomous operation
- Low battery level notification in advance

Jeweller

Unique wireless technology

An Ajax system uses two-way secure radio communication based on the Jeweller proprietary protocol. It provides block cipher encryption and device authentication at each communication session with the hub to prevent sabotage, spoofing, or data theft. Ajax wireless technology has up to 1,700 m (5,500 ft) of radio communication range in an open space. This distance is on average longer than competing solutions. Automatic power adjustment ensures energy efficiency by avoiding the constant use of maximum power in system devices' radio transmitters. Also, Jeweller technology is more stable due to using less noisy radio frequencies. Ajax hubs use frequency hopping to protect against radio interference and signal interception. The system automatically changes frequency within a band and notifies the security company and users about the jamming.

Jeweller uses polling to display the real-time device status and transmits alarms, events, and all measured readings into the Ajax apps. Features encryption and authentication to prevent spoofing.

- Up to 5,500 ft (1,700 m) of radio communication with a hub or a range extender[1]
- Encrypted two-way radio communication
- Notifications about jamming and connection loss

Scaled and comprehensive

ReX 2 Jeweller boosts the radio communication range of all Ajax devices via Jeweller. It guarantees stable communication even through steel and concrete via Ethernet using the wire as the additional communication channel. Up to 5 range extenders can operate within one Ajax system to expand the network twice as big, covering areas like underground parking, basement, or metal hangar.

- Up to 5 range extenders within one system
- Ethernet as an alternative communication channel

- Big estate and large facilities
- Business center with underground parking
- Warehouse or industrial complex
- Sectional metal hangar

System supervision

All Ajax devices perform automatic self-diagnosis and report their states to the hub. Essential parameters, including tamper, communication, power supply, and sensor statuses, are continuously monitored. The Ajax Cloud server controls communication between the hub and Ajax apps, ensuring instant notifications for ARCs, security companies, and users. In case of any malfunction or communication failure, an engineer is informed immediately to provide necessary services.

- Automatic device self-diagnosis with status report
- Regular polling to display the current devices' state on apps
- Instant maintenance notifications

Sabotage resistance

Tamper alarm The enclosure has two tamper buttons on the left and right sides, allowing you to mount the detector on either side. Once the device is detached from the mounting panel, the security company and the user will be notified.	**Data encryption** All data the system stores and transmits are protected by block encryption with a dynamic key. This encryption not only makes it extremely difficult for intruders to reprogram the device but also provides robust protection against data replacement and theft.	**Data-rich notifications** The Ajax system instantly delivers informative notifications about alarms and events. Security companies and users receive precise details about the incident, including the triggered device, along with the time and location.
Device authentication against spoofing During each communication session, the hub authenticates the device by checking its unique parameters. If any parameter fails the check, the hub ignores device commands.	**Regular polling** The device regularly exchanges data with the hub. The system controls each device's state and reports any malfunction or communication loss.	**Communication loss detection** At minimal polling interval settings (3 data packages every 12 seconds), it takes only 36 seconds to detect communication loss and notify the security company and users about the incident.

Effortless installation and setup

CombiProtect Jeweller is ready to operate straight out of the box. Using the SmartBracket panel, an installer can effortlessly mount the device on the wall, eliminating the need to disassemble the enclosure. Ajax apps help quickly make the device a part of the ecosystem: simply pair the device with the hub by scanning the QR code. It can always be reconfigured remotely without the need for on-site visits.

Connection	Installation	Setup	Monitoring
Pairing with the hub via QR code	SmartBracket mounting panel and two tampers ensure sideways installation with no need to disassemble the enclosure	Configuring and testing in mobile and desktop apps	**PRO Desktop** app for n Windows

[1] In an open space.