

MotionProtect Plus Jeweller

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

Precise motion detection in a complex environment

MotionProtect Plus Jeweller is a wireless IR motion detector featuring a dual detection technology comprising PIR and microwave sensors. The microwave sensor is activated solely to confirm the detection triggered by the PIR motion sensor, ensuring precise detection even in areas with significant thermal interference, like those with active air conditioners or fireplaces. With a sleek design, detectors are seamlessly integrated into any space. Installation is simplified with wireless capabilities and the SmartBracket mounting panel, while remote configuration eliminates the need for on-site visits to resolve minor requests.

Up to 12 m motion detection distance	Horizontal viewing angle 88.5°	SmartDetect software algorithm that prevents false alarms	Informative push notifications Critical Warehouse: Motion detected, MotionProtect in Storage area Office: Lid is closed, MotionProtect in Hall
Pet immunity	Vertical viewing angle	Up to 5 years of operation with pre-installed battery	Temperature compensation for effective detection in heat and cold
Up to 1,700 m communication range with an Ajax hub or range extender ¹	Jeweller radio communication Power adjustment Frequency hopping Encryption TDMA Two-way communication	2 colors of glossy enclosure	Compliance
			EN 50131 (Grade 2)
			PD 6662:2017
			UL® Listed
Tamper alarm	Hassle-free installation QR code ↓ SmartBracket ↓ App	Remote control and configuration	Dual detection technology microwave sensor verifies alarms detected by the PIR sensor

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	Educational institution	Store	Restaurant	Museum	Private residence or apartment
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Discover future-proof hardware

- Fresnel lens

- Pre-installed battery
- PIR sensor
- K-band microwave sensor
- Tamper
- Jeweller antennas
- SmartBracket mounting panel

No intruder goes unnoticed

PIR sensor

All Ajax motion detectors use PIR sensors by **Excelitas Technologies** – a field-leading American manufacturer which specializes 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, the sensors bring the utmost accuracy of intrusion detection.

K-band microwave sensor

The K-band microwave sensor scans a room to minimize false alarms triggered by thermal interferences. Operating in conjunction with the PIR sensor, it uses microwave technology only for PIR sensor alarm verification. Unlike traditional X-band sensors, the K-band sensor offers enhanced precision and superior energy efficiency. This results in minimal impact on battery life and significantly fewer false alarms. Additionally, the sensor is entirely safe, posing no harm to human health.

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 analyzes 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 movement 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 keeping 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 movement 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 animals weighing up to 20 kg and below 50 cm in height.

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

The Ajax system uses secure two-way radio communication based on the **Jeweller** proprietary protocol. It supports block encryption and device authentication on every session with the hub to prevent sabotage, spoofing, and data theft.

The Ajax wireless technology has a radio communication range of up to 1,700 m in an open space, which is, on average, longer than that of competing solutions. Automatic power adjustment ensures energy efficiency by avoiding constant use of maximum power in system devices' radio transmitters. Also, the 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 jamming.

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

- Up to 1,700 m of radio communication with a hub or range extender¹
- 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 a state report
- Regular polling to display the current device state on apps
- Instant maintenance notifications

Sabotage resistance

<p>Tamper alarm</p> <p>The enclosure is hardwired with a tamper button, which notifies the security company and users once the detector is dismantled from the mounting panel.</p>	<p>Data encryption</p> <p>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.</p>	<p>Data-rich notifications</p> <p>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.</p>
<p>Device authentication against spoofing</p> <p>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.</p>	<p>Regular polling</p> <p>The device regularly exchanges data with the hub. The system controls each device state and reports any malfunction or communication loss.</p>	<p>Communication loss detection</p> <p>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.</p>

Effortless installation and setup

MotionProtect Plus Jeweller is ready to operate straight out of the box. Using the SmartBracket mounting panel, an installer can effortlessly mount the device on the wall, eliminating the need to disassemble the enclosure. Ajax apps facilitate quick integration into 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 ensures installation with no need to disassemble the enclosure	Configuring and testing in mobile and desktop apps	PRO Desktop app for macOS and Windows

¹ In an open space.