

A white drone with red accents is flying in the sky above a city skyline at dusk. The drone is positioned in the upper left quadrant of the frame. The city buildings are visible in the lower half of the image, creating a sense of height and urban environment. The overall lighting is dim, suggesting twilight or early evening.

ctrl+sky

drone detection and neutralization system

Changes in the world

Over the last few years, the media has regularly reported violations of privacy, criminal activity and other public threats. Drones can spy, steal confidential information and compromise our privacy.

Response to growing market needs

Demand for non-military counter-drone systems is driven by:



the sudden growth of the unregulated drone market is causing more frequent threats related to hostile / unwanted use of drones



an increase in the number of potentially harmful incidents and accidents involving drones, especially in public spaces



increased interest and recorded cases of drones being used by criminal groups and terrorists



growing awareness of governments and federal institutions of potential threats from drones used by hostile actors



ctrl+sky

Ctrl+Sky is a unique multi-sensor counter-drone system that is able to detect, track and neutralize intrusive unmanned aerial systems. It is exceptionally effective because it is based on patented APS technologies and multi-sensor approach: from the software to the hardware.

why ctrl+sky

Ctrl+Sky has many competitive advantages which makes it the most advanced product on the market. From the complete multi-sensor configuration of the system, the price-performance ratio, to the patented, unique sensors. Combining scientific approach with practical application and focusing on maximizing efficiency make Ctrl+Sky a global market leader in its category.

The world's only drone detection system using:

- Modular and fully reconfigurable radar sensor
- MIMO radar technologies for improved detection accuracy
- Radar tracking based on MHT (multi hypothesis tracking) algorithms
- Acoustic sensor to determine the direction of incoming drones

CTRL+SKY STATIONARY

FEATURES

- Multi-sensor drone detection, identification and neutralization system
- Integrated radar, acoustic, RF and vision sensors, as well as jammers
- Modular and scalable design to protect effectively installations/areas of any size
- Robust design to withstand any weather conditions with flexible mounting options
- Both stationary and portable versions, as well as vehicle mounted



CTRL+SKY MOBILE

FEATURES

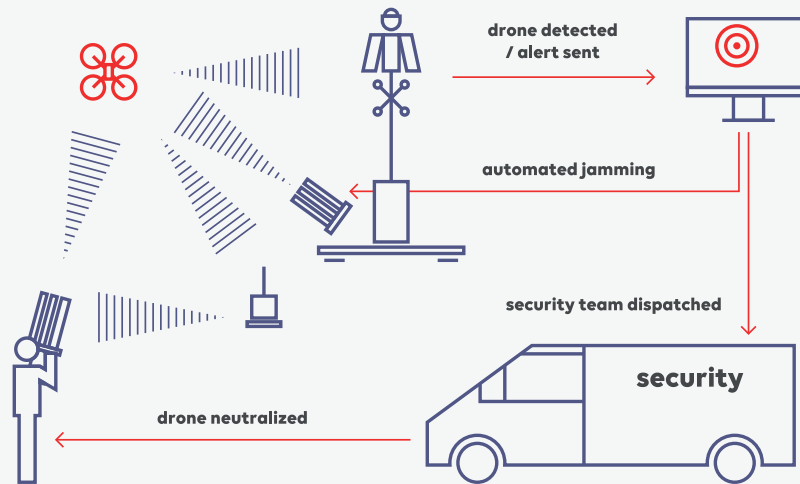
- Portable, multi-sensor drone detection, identification and neutralization system
- Integrated radar, acoustic, RF and vision sensors, as well as jammers
- Power supply from the battery or generator allows for 24 hours non-stop operation
- Mounting all the sensors on tripods provides mobility and allows quick installation of the system in the areas of interest

Unmatched system performance thanks to multi-sensor approach:

- Operation in all weather conditions, both day and night
- The best price / quality ratio in the market
- Possibility of purchasing or leasing the system
- Detection of autonomous drones
- Detect drones with RF communication disabled
- Precise positioning of drones, distances and directions

How it works

Thanks to the multi-sensor approach, Ctrl+Sky enables efficient detection, identification and neutralization of drones, day and night, in all weather conditions. Ctrl+Sky offers a scalable multi-sensors approach to ensure a complete “dome” of protection from unwanted drone invasion.



The combination of proprietary radar, acoustic, vision and RF sensors allows Ctrl+Sky to minimize false alarms and detects even small drones at distances up to 2000 meters.



Video cameras register recordings of detected drones, so it is possible to present hard evidence of an intruder in a protected area.



The FMCW radar sensor operates in the X band and uses MIMO technology to locate drones. Ctrl+Sky uses the most advanced radar tracker based on MHT algorithm. The system can distinguish drones from other flying objects, such as birds.



RF Sensor detects radio-link between a drone and remote control-station by identifying radio frequency (RF) signatures of Wi-Fi signals. The RF sensor detects a targeted radio signal, identifies it and with CTRL+SKY System software allows neutralization of unwanted UAV. By using multiple RF Sensors the drone operator could also be localized.



Acoustic sensor is based on 8-element microphone array that uses digital beam forming technique in the acoustic domain to accurately localize sound sources in 3D space. Advanced, machine learning based classification algorithms discriminate between drones and other objects.

Ctrl+Sky Jammer is an optional element of the System. Jammer is used to neutralize drones by overpowering drone's receivers. Its use is restricted to a group of customers with appropriate permissions.

Software

A dedicated, web-based application has been developed as an intuitive and user-friendly interface that allows to provide authorized access for a defined user group from a PC, laptop or a tablet. It has the following features:

- monitoring a defined airspace
- definition of protected area
- easy deployment of many sensors
- integration of radar, acoustic, vision and RF sensors
- visualizing the scene on user maps or Google maps
- direction, height and speed are indicated
- tracking many targets
- archiving incidents data
- SMS, email and system alerts
- easy interfacing to common security systems

Solutions





It is estimated at the moment that the group of potential customers for anti-drone systems sits at about 300 000 and this number is growing dynamically from year to year. Ctrl+Sky guarantees practically 100 percent efficiency in detecting intrusive drones and authorized entities allow them to be completely neutralized.

The potential use of such a system is very broad

- | | |
|------------------|-------------------------|
| Private Property | Public Events |
| Government | Stadiums |
| Airports | Critical Infrastructure |
| Prisons | U-space Monitoring |

Functionality

| Functionality | RF sensor only | Acoustic sensor only | crri+sky (multi-sensor) |
|--|----------------|----------------------|-------------------------|
| All-weather operation | ✓ | | ✓ |
| Detects drones with no RF signature | | ✓ | ✓ |
| Non-line of sight detection | ✓ | ✓ | ✓ |
| Value for money | | | ✓ |
| Reliable operation in urban environments | | | ✓ |
| Enhanced performance due to multi-sensor data fusion | | | ✓ |
| Coverage of wide threat set | | | ✓ |

| Sensor Type | Benefits | Limitations |
|---|---|--|
|  <p>Radar sensor</p> | <ul style="list-style-type: none"> → Detects ANY commercial or hobbyist drone → All-weather operation → Provides exact drone position → Extremely low false alarm rates → Flexible detection ranges (few meters to few km) → Affordable | <ul style="list-style-type: none"> → Requires line-of-sights (does not see thru) |
|  <p>Acoustic sensor</p> | <ul style="list-style-type: none"> → Does not require line-of-sight for acoustic signal → Low cost → Provides drone bearing → Drone vs non-drone signal classification | <ul style="list-style-type: none"> → Extreme weather might have impact → Short-range (<200m) |
|  <p>RF sensor</p> | <ul style="list-style-type: none"> → Low-cost → Freely available → Early-warning sensor (RF signal presence detection) | <ul style="list-style-type: none"> → Requires RF signal presence → Difficult to use in URBAN scenarios |
|  <p>Vision cameras</p> | <ul style="list-style-type: none"> → Easily available → Low cost → Visual confirmation sensor | <ul style="list-style-type: none"> → Weather sensitive (problems with clouds, sun, etc) → Short-range |

Advanced Protection Systems is a technology company that has developed and commercialized a unique system for identifying and neutralizing drones: Ctrl+Sky. The system is based entirely on the original patented solutions developed by the APS team, a group of outstanding scientists and engineers.

Advanced Protection Systems with Ctrl+Sky, according to the Markets and Markets report, is one of the key players in the global drone detection and identification market.

Prizes and awards

Between 2015-2017, Advanced Protection System has received many awards and been recognized in the field of innovation and safety.



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