Product Information
A New World

*With 12 million drones expected to be operating by 2020, it’s no surprise the number of drone incidents are growing by the day – intentional and unintentional.*

Recreational and commercial drones generally range in cost between US$30 and US$30,000, are legally available at conventional retailers and online, and can be lawfully flown in most major countries.

Their remote based operation with GPS navigation, compact size, vertical mobility and exceptional agility affords them with a host of positive far-reaching applications from emergency response, surveying, photography, filmography, through to logistics. What was once virtually impossible to scale or otherwise difficult to commercialise due to high costs is now possible.

Almost as easy as they are to acquire, is their ability to directly or indirectly cause damage, death or loss; and with so many new drones entering the skies every day it’s no surprise the volume of drone incidents are continuing to climb.

Privacy & Safety

*Advancing your organisation’s ground-based security capabilities into the skies has now become an essential part of an effective security strategy built for today’s environment and into the future.*

As consumer-grade drones have become extremely popular around the world, they’re presenting both unique and frequent threats to privacy, physical security and public safety in a wide variety of environments, including industrial and critical infrastructure, prisons, government facilities, airports, outdoor events and venues, military, homeland security, border control, real assets and executive protection.

What was once protected by high elevations, guard towers, physical barriers or other ground-based preventative measures has now become exposed and penetrable. As such, drone security should be on top of any organisation’s agenda that has a duty to protect the privacy and safety of those in which it is entrusted to do so.

How safe are your skies?
The DroneShield® Solution

DroneShield® helps your security forces identify unauthorised drones at short & long range using proprietary technology, real-time alerts and digital evidence collection.

Powered by our proprietary acoustic detection technology, an enterprise-grade sensor network and real-time alert system– DroneShield® is the premier solution to passively sense drones that are invisible to radar, evade line of sight or that lack radio-frequency links ensuring your security capabilities are equipped to deal with this new & growing threat.

Listening: DroneShield® sensors recognise unique sound properties of common drone types. They listen to surrounding activity, establishing and taking a sound sample when they sense drone activity nearby.

Analysis: DroneShield® compares the sample to our database of acoustic signatures. If it finds a match, the system issues an alert and records identifying information about the aircraft.

Identification: Our extensive audio signature database makes it possible for DroneShield® to distinguish a drone from everyday sources of noise. This allows us to detect drones with high accuracy, delivering low false-alarm rates.

Alerts: Instant alerts are delivered independently through a variety of methods, including SMS, email, or existing video or incident management systems. DroneShield® easily integrates into your established security system.

Our detection products also include a cloud-based visual interface, giving you live visibility to surrounding acoustic activity making it easy for you to respond swiftly and precisely.

Subscription Model

When you choose DroneShield® you get the convenience of receiving all software & hardware for the lifetime of your installation.

Our subscription based pricing model provides you with immediate and ongoing benefits which include:

- Zero CapEx required with none of the upfront and ongoing hardware costs that are often associated with security systems.
- All software updates to our proprietary audio signature database
- All software updates to the DroneShield® User Interface
- Ongoing access to after sales support from DroneShield®
**FAR REACHING DRONE DETECTION**

**LONG RANGE SENSORS**

**Benefits**

**Far Reaching:** Detect up to 1km  
**Convenient:** Remotely configurable using the DroneShield® User Interface  
**Durable:** Weather resistant  
**Accurate:** Able to distinguish drone activity from common environmental noise sources at superior distances

**Ideal for:**

- Prisons  
- Airports  
- Government Assets  
- Defence and Military  
- Critical Infrastructure  
- Security Interests  
- Law Enforcement  
- Data Centers  
- VIP & Executive Residences  
- Sports and Concert Stadiums  
- Film Productions  
- Special Events

DroneShield® Long Range Sensors ensure your drone surveillance capabilities are maximised with an extended-area drone detection reach of up to a 1km radius. Sensors can be configured remotely using the DroneShield® User Interface.  

*It’s the ideal first-line detection solution, affording your security force with time to react.*

**Contact**

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Specifications

Performance
Rural environment, medium drone: 500-1000m
Suburban environment, small drone: 250-500m
Urban environment, small drone: 100-250m
Warning times are dependent on distance to perimeter

Output Options
IP-based alerts (email, SMS, XML/JSON) indicating zone, drone type, and digital evidence
Mobile (SMS, audible phone call)
Radio frequency audible alerts

Power and Communications
12-48VDC, PoE, or 120v/240vAC power
Wi-Fi, wired Ethernet, GSM/GPRS, dry contact relays, XML/JSON

Environment and Installation
Designed to IP65 of IEC529
Mounts to standard cell tower base station antenna mounts

Maintenance
Routine inspection and regular remote database updates

Warranty
12 months from date of shipment

Dimensions
Parabolic microphone: 66cm diameter x 26cm
Weight: 15kg

Request a quotation today.

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Benefits

**Broad Coverage:** 180 degree range of detection

**Inconspicuous:** Simple downsized design allows for discreet installation

**Designed For Outdoor Accuracy:** Weather resistant and filters common environmental noise

**Convenient:** Remotely configurable using the DroneShield® User Interface

Ideal for:

- Prisons
- Airports
- Government Assets
- Defence and Military
- Critical Infrastructure
- Security Interests

- Law Enforcement
- Data Centers
- VIP & Executive Residences
- Sports and Concert Stadiums
- Film Productions
- Special Events

DroneShield® Omnidirectional Sensors provide 180 degree coverage of local acoustic activity at close range. Small and compact in size makes it the perfect solution for inconspicuous installation. An all-weather design withstands extreme outdoor conditions, allowing it to distinguish common environmental noise sources from drone activity. Sensors can be configured remotely using the DroneShield® User Interface.

**Perfect for suburban and urban environments.**

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OMNIDIRECTIONAL SENSORS

Specifications

Performance
Omnidirectional microphone: suburban environment: up to 200m
Warning times are dependent on distance to perimeter

Output Options
IP-based alerts (email, SMS, XML/JSON) indicating zone, drone type, and digital evidence
Mobile (SMS, audible phone call)
Radio frequency audible alerts

Power and Communications
12–48VDC, PoE, or 120v/240vAC power Wi-Fi, wired Ethernet, GSM/GPRS, dry contact relays, XML/JSON

Environment and Installation
Designed to IP65 of IEC529 and NEMA 1, 2, 4, 4x, 12, and 13 specifications
Mounts to wall or panel with #10 size screws
Electric Magnetic Compatibility: Complies with BS EN50081-1 and EN50082-1

Maintenance
Routine inspection and regular remote database updates

Warranty
12 months from date of shipment

Dimensions
Sensor body: 22cm x 15cm x 6cm
Weight: 3.6kg

Request a quotation today.
Safe countermeasure against a wide range of drone models
Controlled management of drone payload such as explosives
No damage to common drones models or surrounding environment due to:
  vertical controlled landing on the spot, or
  return back to the starting point
  (assisting to track the operator)
Drone remains intact and available for forensic investigation
Immediate cease of the video transmission back to drone operator
Rifle shape with a backpack
Packed in a hard pelican case
One person operation

Disclaimer:
DroneGun has not been authorized as required by the federal communications commission (“FCC”). This device is not, and may not be, offered for sale or lease, or sold or leased, in the United States, other than to the United States government and its agencies, until such authorization is obtained. The use of DroneGun in the United States by other persons or entities, including state or local government agencies, is prohibited by federal law. Laws limiting the availability of DroneGun to certain types of users may apply in other jurisdictions, and any sales will be conducted only in compliance with the applicable laws.

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Specifications

Jammer Specifications
- Voltage: 16.8+/-0.1V
- Runtime: 2hr
- Charging time: 90min
- Max distance: Up to 2km
- Jammer frequencies: 2.38Ghz-2.483Ghz, 5.725Ghz-5.825Ghz
- GPS (optional)
- GLONASS (optional)

Battery Specifications
- Lithium-Ion
- V-Mount Batteries
- 14.8V, 90wh
- 0.9kg

Antenna Specifications
- Mount: Picatinny Rails / MIL-STD 1913 Rails
- Type: directional antenna
- V-Plane: 10 degrees

Environment
- Operating temperature: -10°C to +60°C
- No calibration required, “plug and play”
- No reload time

Warranty
- 12 months from date of shipment

Maintenance
- No specific maintenance required

Dimensions
- Sensor body: 85cm x 18cm x 27cm
- Body Weight: 5.7kg

Request a quotation today.
**Benefits**

**Versatile:** Does not require internet connection (note: optional internet connection may be activated by the user for technical support and periodic drone database updates). Ideal for situations where internet connection is not possible or desired

**Accurate:** Same precise identification of known acoustic signatures as our cloud based products

**Real Time:** Instantly notifies you of drone activity

The DroneShield® On-Site Processor collects audio data from DroneShield® sensors and compares it to known acoustic signatures in our proprietary software database, without requiring an Internet connection. When it finds a match, the Processor issues instant alerts via SMS, email, or alarm systems through JSON, XML, or dry contact relays. Designed for use with both Omnidirectional and Long Range Sensors, this product is able to support up to 20 sensors.

**Perfect for facilities requiring an 'air-gapped' solution.**

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CONTINUOUS, ONLINE MONITORING OF LOCAL DRONE ACTIVITY

Benefits

**Scalable:** Platform is built on a back-end infrastructure that scales to any size

**Immediate:** Reports live, ongoing activity

**Flexible:** Can be used for low-cost, bi-sensor residential protection or enterprise-level installations

**Convenient:** Can be accessed and configured remotely from any web browser, wherever there is Internet connectivity

**Compatible:** Easily integrates into existing security systems

User Interface is included with purchase of any DroneShield® detection system.

The DroneShield® User Interface displays alert information and other critical sound and system data. A visual and audio interface delivers live readings from DroneShield® sensors, providing real-time visibility to surrounding acoustic activity. Remote access to your DroneShield® sensors allows you to check statuses, listen to sensor audio, respond to real-time alerts, and configure your system settings.

**The convenient browser-based monitoring application lets you view and control your DroneShield® detection activity from anywhere.**

DroneShield® User Interface  
DroneShield® SMS Alerts

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DroneShield® can supply a tailored solution for any site requiring protection from aerial drone threats.

Example - Sensor Solution

OMNI SENSOR No. 1
- ANALOG SIGNAL XLR CABLE
- BASESTATION No. 1
- DIGITAL SIGNAL WIFI OR ETHERNET

LONG RANGE SENSOR No. 2
- ANALOG SIGNAL XLR CABLE
- BASESTATION No. 2
- DIGITAL SIGNAL WIFI OR ETHERNET

DRONESHIELD ALERTS

CLIENT NETWORK

DRONESHIELD MONITOR

DRONESHIELD ON-SITE PROCESSOR

DRONESHIELD CLOUD BASED PROCESSOR

UPDATES VIA CLOUD OR AIR-GAPPED

DRONESHIELD AUDIO SIGNATURE LIBRARY

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**Drone Detection**

**How far away can the sensor detect a drone?**
Detection range depends on a number of factors such as the type of drone, background environment, and how the detection thresholds have been set. The DroneShield® low-profile omnidirectional sensors can detect up to 200 meters. DroneShield® Long Range parabolic dish sensors can detect up to 1 km.

**Does the system only work within line of sight?**
No, DroneShield® uses acoustics that work without requiring direct line of sight.

**For urban areas with vehicle & other sounds, will the sensors pick-up a drone?**
Yes, DroneShield® can filter background noises with our sensors. For high noise environments it is recommended to locate the sensors more closely together (100m for Omnidirectional Sensors, for example).

**How does weather effect your system?**
Weather (wind, rain) can impact the performance of DroneShield®, but weather strong enough to significantly impact performance will also be strong enough to prevent most drones from flying.

**What is the advantage of DroneShield® vs other systems?**

**Laser and LIDAR**
- The active defeat capability of laser is very expensive
- Legal issues (generally unlawful to shoot down and take control of the drone in the US and many other countries, even above private property).
- In any event, to defeat, one needs first to detect (hence the need for DroneShield®)
- Limited range, especially in bad weather
- Potential for false alarms and inaccuracies

**Radar**
- Expensive
- Line of sight required
- High false alarm rate renders impractical for small drones
- Does not detect many small drones
- In the US, an active system needs Federal Communication Commission (FCC) approval and must not interfere with other radio frequency systems (e.g. radio)

**Optical and Infrared Cameras**
- Line of sight required
- Potential to be blocked by trees, bushes or buildings
- Potential for false alarms and inaccuracies
- Very short range
- Expensive

**Radio Frequency (RF)**
- Legal issues (unlawful to interfere with drones in the US and number of other countries)
- Typically challenging against certain types of drones (e.g. frequency hoppers, such as LightBridge)
- Ineffective on certain types of drones (e.g. those on autopilot)
- Potential for false alarms and inaccuracies
- Expensive.

**With new drones coming on the market, will your system detect them?**
DroneShield® updates its drone database on a regular basis. While there are a large number of drones in the market, they often have similar acoustic signatures and thus can be detected so long as the “family signature” is in the database.
Can your system detect do-it-yourself (DIY) or custom drones?
Most DIY and custom drones use commercially available components, especially the parts that make the acoustic sounds we search for (motors, propellers, etc). Thus, even though the drone itself is considered custom or DIY, the acoustic emissions will be similar to commercially-available drones and be detectable by the DroneShield® system.

What is the likelihood of false alarms due to commercial planes, birds or other airborne objects?
As DroneShield® uses acoustics (not radar), airborne objects are not usually an issue.

Are there any active emissions from your system, for example IR or optical laser, high intensity thermal or radio frequency?
There are no active emissions at all, the DroneShield® system is completely passive.

How do I receive alerts?
Integrating with existing security systems is the best way to receive alerts; this can be accomplished either through dry contact relays or XML/JSON protocols for IP-based systems. Other alert paths include SMS and email when the DroneShield® system is connected to the internet.

Once detected, how often are alerts sent?
This is a user-configured parameter where alerts are sent periodically as long as the drone is detected.

Drone Neutralisation

Can DroneShield® disable the drone that is approaching?
DroneShield®’s sensors act as an alert system. The user is able to integrate the system with protocols as appropriate to their situation.

What options do I have to stop the approaching drone?
Available countermeasures depend on the end-user’s situation and laws in their jurisdiction. Interfering with a drone in a civilian environment is not currently legal in a number of countries, as they are considered private property. Where legally available, the customer can deploy the DroneShield® DroneGun Tactical Drone Jammer as an effective countermeasure solution.

Installation

I would like to install your system, what are next steps?
Please contact DroneShield® directly so we can attend to any of your questions. Once we understand your initial requirements DroneShield® can develop an estimate based on the location points of the sensors on your site. This may use Google Maps and/or any other maps you provide. The cost of this estimate would depend on the scale and complexity of your site. Following the estimate, the next step is installation of the sensors by a local installation provider of your choosing, who can be supported by the DroneShield® technical team as required.

Are there export/ITAR restrictions with your system?
There are no ITAR restrictions on the DroneShield® acoustic sensor system. No specific export restrictions apply.

What information is required to be able to establish a proposed architecture and price a system?
For an exact quote, we will need property plans and dimensions of buildings, perimeters, and existing infrastructure. Google Maps is generally sufficient for an approximate quote. The installer will need cable installation information such as existing cable runs, location of server room, security room, existing power spots, etc.
FAQ’s

What are your products?
Omnidirectional Sensor pack: omnidirectional microphone, base station (with connectivity to internet through WiFi or an Ethernet cable), and connected power supply.

Long Range Sensor pack: parabolic dish with microphone, base station (with connectivity to internet through WiFi or an Ethernet cable), and connected power supply.

Demonstration kit: two Long Range Sensors and one Omnidirectional Sensor.

Portable kit: Omnidirectional Sensor plus battery and tripod, enclosed in Pelican case.

DroneGun Tactical Drone Jammer: Jammer and backpack enclosed in hard storage case.

On-Site Processor: Stand-alone processor and connected power supply.

What kind of power is required for a sensor?
The requirement entering the base station is 12VDC. We have adapters that can convert wall power (120VAC - 230VAC), and any other DC source (12-48VDC).

How do your sensors connect to the cloud/server?
The base station sends the microphone’s data to the processor; it connects to the processing server using Ethernet (Cat5e or WiFi).

How fast does my internet connection need to be?
Each sensor requires 0.4Mbps upload speed. Future releases target to reduce this requirement.

How close to the base station does the microphone need to be?
The microphone connects to the base station via 22AWG shielded three-conductor cable; the microphone should be installed no further than 300 meters from the base station.

What is the weight of the sensors?
The Omnidirectional Sensor with base station, without mounting hardware, weighs approximately 5lbs (2.27 kg). The long range parabolic dish sensor with base station weighs approximately 35lbs (15 kg).

What is the coverage of the sensors?
Omnidirectional Sensors cover 180 degrees from the front of the sensor, in all directions including altitude. The Long Range Sensor covers a 30 degree cone. The sensors can be placed “back-to-back” to provide a 360 degree coverage (2 Omnidirectional Sensors or 12 Long Range Sensors).

Are there any constraints with regards to installation location? (e.g. nearby RF radiating equipment.)
We seek to install our sensors away from noise-generating equipment such as HVAC, power generators, or other equipment that may emit strong RF signals.

Can the DroneShield®’s technology be integrated with another existing system?
DroneShield® will consider permitting incorporating its technology within a broader security system on a case-by-case basis.
For Further Information

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DroneShield® has approximately 50 distributors in over 30 countries.