



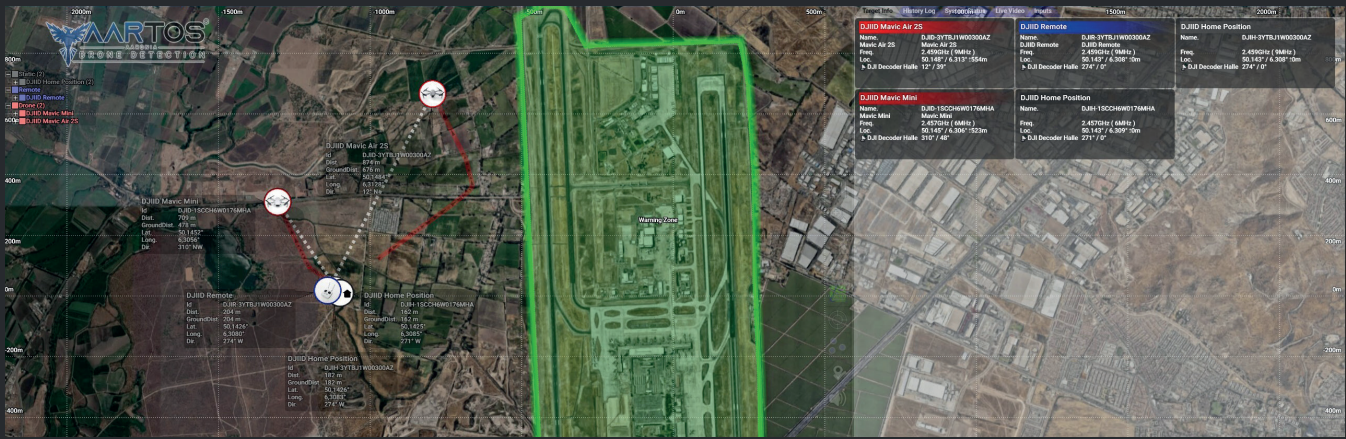
**EXTREME RANGE BROADBAND UAV
DETECTION AND DIRECTION FINDING**



 **DETECT**

 **LOCATE**

 **COUNTER**



DETECT

LOCATE

COUNTER

Detection range up to 40 km (consumer UAV) / 80 km (MIL UAV)

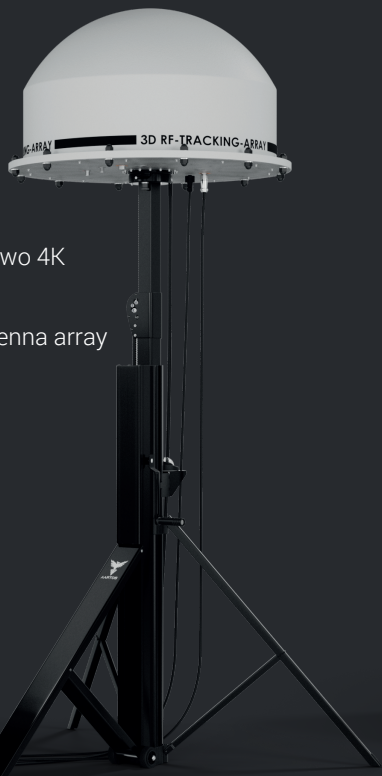
Locates drones, pilots and homepoints up to 8 GHz

Optional jamming systems with up to 10 km jamming range

- ▶ Real-time drone protocol decoding and RF signal detection
- ▶ Real-time RF frequency monitoring and tracking (up to 20 MHz to 8 GHz)
- ▶ Portable and stationary variants
- ▶ Powerful software
- ▶ Made in Germany

- ▶ 16 sector antenna with a high tracking accuracy of 1° to 3°
- ▶ Detects and tracks pre-programmed drones with high accuracy
- ▶ 360° azimuth with full hemispheric reception (elevation)
- ▶ Fully automatic mode possible
- ▶ Optional with radars and cameras

- ▶ Full integration into the AARTOS™ Drone Detection System
- ▶ Seamless frequency range, selectively from 400 MHz to 6 GHz
- ▶ IP65 weather protection, operating temperature -20°C to +60°C
- ▶ Portable or stationary



X9 Portable

- ▶ Command Center with two 4K high contrast monitors
- ▶ IsoLOG® DF 160-UA antenna array

X9 Stationary

- ▶ Rack mounted hardware packed in a sturdy water-resistant case
- ▶ IsoLOG® DF 160-UA antenna array





▶ Ultra-long detection range

The AARTOS™ X9 operates with higher precision compared to the X7 and additionally offers seamless ultra-wideband monitoring with 4+ independent receivers and an optimized amplifier group.

The X9 scans the entire frequency range more than 1000! times per second. With an enormous range of up to 80 km (or more by scaling multiple AARTOS™ X9 systems), the AARTOS™ X9 is perfect for the monitoring of large areas.

The X9 system is combat proven and has been successfully deployed in dozens of different use cases worldwide.

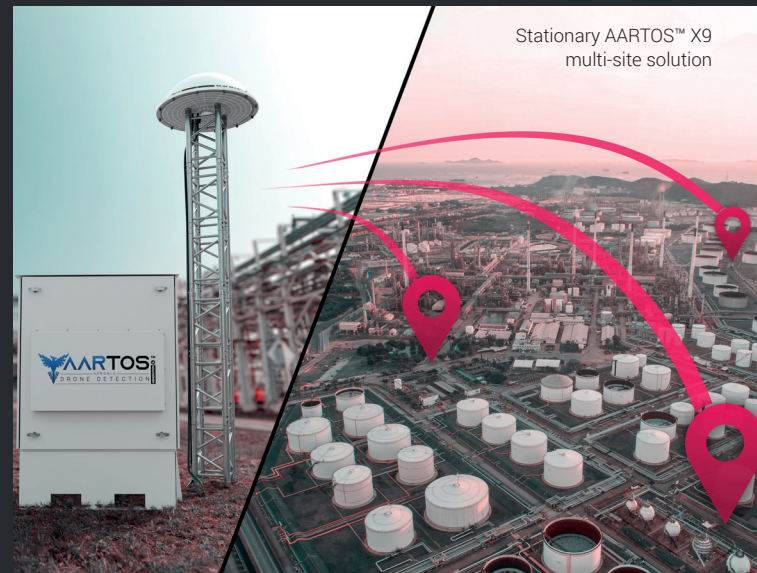
▶ Multi site solution

The multi-site solution consists of several antennas (IsoLOG® DF) and analyzers (19" Outdoor Rack) that feed to a central monitoring PC which manages all systems simultaneously. The unique advantage of our multi-site solution lies in its ability to triangulate signals with very high accuracy.

Due to its ability to combine a high number of receivers, the multi-site solution is best suited for the protection of very large areas such as industrial plants, stadiums and government buildings.

▶ 3D drone position finding

Our patented 3D RF Tracking Antenna IsoLOG® is the first and only DF antenna also offering the elevation and altitude of any RF source using the optional 3D capability of the IsoLOG® antenna. This makes it the perfect choice for tracking flying transmitters e.g. drones or airplanes. In addition the IsoLOG® antenna offers the by far fastest tracking speed on the market of down to 8µs per sector resulting in unique real time monitoring/tracking of all RF transmitters.



Stationary AARTOS™ X9 multi-site solution



Integrated AARTOS™ X9 with full sensor suite





▶ **Safe detection**

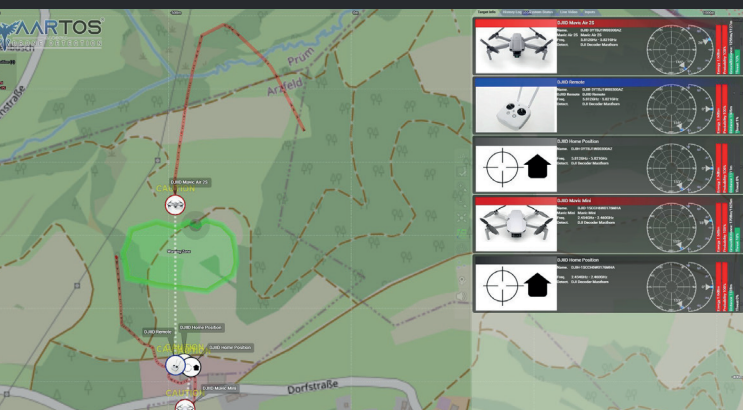
Our system does not mistake UAVs for other flying objects such as birds, balloons or kites. Saving time and resources for real threats.

▶ **Early detection**

The **AARTOS™** Drone Detection System triggers an alarm as soon as a remote control sends its first signal, even before the actual drone is airborne. Allowing countermeasures to be launched at an early stage.

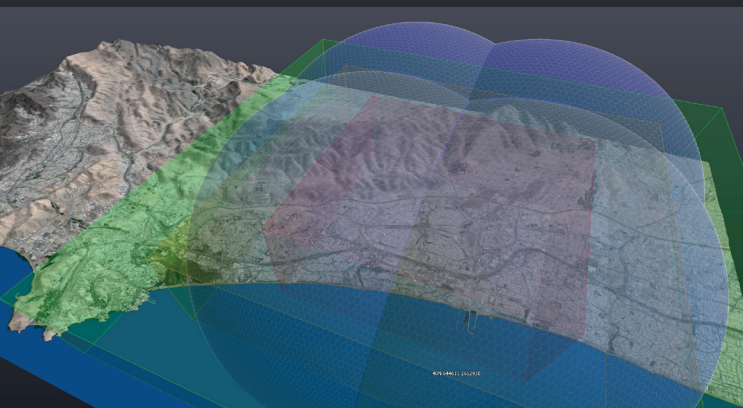
▶ **Tracking the drone operator**

Since the **AARTOS™** detects both the drone (from downlink signals) and its corresponding remote control, the movement of both can be tracked in real-time. If two or more systems are deployed, triangulation can then determine the exact position.



A top-down 2D perspective is the most commonly used visualization technique in drone detection. The program is easy to understand and navigate due to its similarity to common satellite-image-based map solutions.

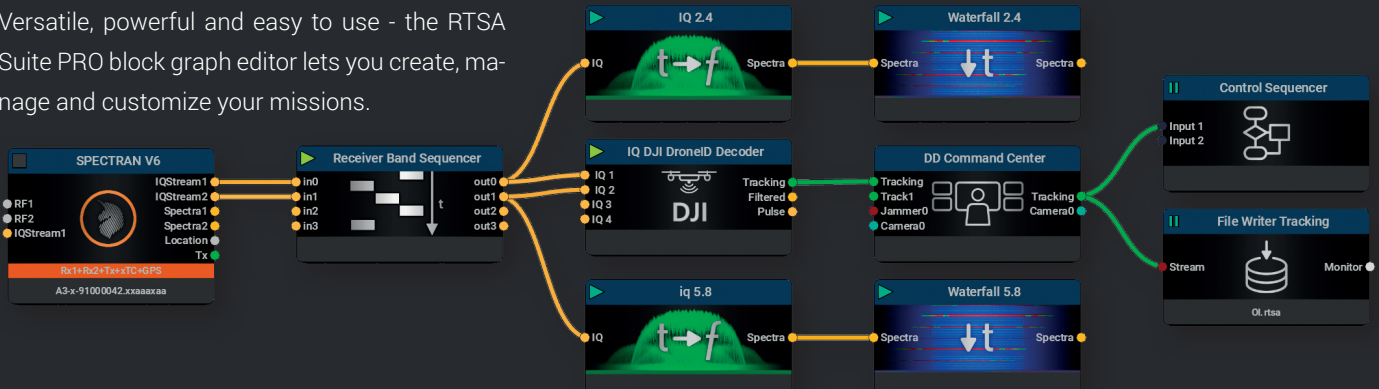
The 3D view expands our capabilities by adding the drone's altitude information (this requires multiple drone detection systems), and making it easier to evaluate distances between different objects on the map.



The topographic mode displays the surrounding terrain's surface, depicting hills, mountains, peaks and valleys.

Combined with our 3D, man-made structures system building system, the topographic view creates the most accurate representation of the surrounding area: **AARTOS™** is also able to integrate 3D models of complex areas (e.g. cities, airports, etc.) into its 3D view, improving usability for end users.

Versatile, powerful and easy to use - the RTSA Suite PRO block graph editor lets you create, manage and customize your missions.





► **Technical Specifications**

The highest-precision drone detection combined with an extremely large detection range. The AARTOS™ X9 consists of a 16 sector IsoLOG® 3D DF antenna array and a spectrum analyzer (Command Center or 19" rack). Perfect for single-system and multi-grid system setups.

► **Spectrum Analyzer Specifications**

The AARTOS™ X9 features up to 6 inbuilt real-time spectrum analyzers with a total instantaneous IQ capture bandwidth of 1.470 MHz and a frequency range of 10 MHz to 6 GHz (optionally 8 GHz). It is capable of scanning 6 GHz in less than 1 millisecond with a sweep speed of up to 6 THz/s.

► **IsoLOG® DF 160-UA Specifications**

The tracking antenna includes a high density, customizable array 16 tracking-antennas. Each IsoLOG® 3D DF ships complete with a robust radome designed for the most hostile conditions and can be customized with RAL colors.

Max. range (standard)	▶ 14 km	Analyzer units	▶ 4 (opt. up to 6)	Frequency range	▶ 400 MHz to 8 GHz
Max. range (long range)	▶ 40 km	Frequency range	▶ 10 MHz to 6 GHz (optionally 8 GHz)	Coverage	▶ 360°
Max. range (MIL-UAV)	▶ 80 km	Real-time bandwidth	▶ Up to 1.470 MHz (with 6 inbuilt analyzers)	Sectors/Antennas	▶ 16/16
Usage	▶ Mobile & stationary	POI	▶ 97 ns (FFT), 10 ns (direct I/Q)	Tracking speed	▶ Up to 8µs (with ultra-fast DF option)
Frequency coverage	▶ 400 MHz to 6 GHz (opt. 20 MHz to 8 GHz)	DANL (internal preamp on)	▶ Typ. -170 dBm/Hz	Tracking accuracy	▶ Typically 1° to 3°
Detection type	▶ Protocol decoding & RF Signal detection	Sweep speed	▶ Up to 6 THz/s	GPS receiver	▶ included
Tracking type	▶ GPS & RF signal triangulation	RF connectors	▶ Up to 6x Rx SMA 1x Rx N	Low-noise pre-amplifiers	▶ included
Antenna sectors	▶ 16	Frequency ref. accuracy	▶ 0,5 ppm	Operating temperature	▶ -30° to +60° C (-22° to 140° F)
Typ. tracking accuracy*	▶ 1° to 3°	Resolution bandwidth	▶ 62 mHz to 57 MHz	Storage temperature	▶ -40° to 70° C (-40° to 158° F)
Multi frequency swarm attack	▶ Yes	Attenuator range	▶ 50 dB / 70 dB (0,5 dB steps)	Dimensions ø x H	▶ ø960 x 544 mm
Scalable	▶ Yes	ADC	▶ Up to 12 x 2GSPS 16 Bit	Weight	▶ approx. 25 kg
Recommended grid distance	▶ 3 km	DAC	▶ Up to 6 x 2GSPS 14-Bit	Certificates	▶ IP65 (waterproof)
Radar and PTZ Camera	▶ Yes				
Automatic jamming option	▶ Yes				

* Reference target at 2,4GHz with line of sight (hovering drone), 1,5km distance (FCC)



► **Fixed Bands Sector Jammer**

FJ SERIES

By extending the **AARTOS™** X7 or X9 to include our “FJ series” stationary jammer with a jamming range of typically 3 km, it creates a system that can reliably and quickly locate and neutralize threats.

With its directional and omnidirectional antennas and a maximum output power of 390W the jammer is capable of countering drones within the most common frequency bands (GPS e.g. upper and lower L-band, 2.4 GHz, 5.2 GHz, 5.8 GHz, etc.).

As with all of our jammers, the interference created is extremely selective, in order to make sure other RF channels are not impaired. In addition, the jammer is directional, and will only jam signals in the direction of the incoming UAV.



► **Programmable Smart Sector Jammer**

SJ SERIES

Our **AARTOS™** “SJ series” programmable jammer delivers a gapless coverage from 400 MHz to 6 GHz with an effective jamming range of 10 km.

With its directional antennas it is able to cover all commercial and military drones up to 6 GHz and can counter them with a freely adjustable output power of 30W per sector (upgradable to 100W).

All **AARTOS™** Jammer solutions can only be sold to entities with proper government approval for the deployment of jammers. For more information, contact us at mail@aaronia.de.

SJ²⁴⁰ **SJ**⁸⁰⁰

Seamless frequency jamming from 400 MHz to 6 GHz with a 360° coverage and the highest range in our lineup.

FJ³⁹⁰

The stationary FJ series cover 360° with a range of up to 3 km and up to 7 frequency bands.

MJ⁴⁰

This handheld UAV jammer is a potent and portable drone jamming system with 2h battery life and customizable frequency bands.

Typ. Range ►	4 km / 10 km	3 km	2 km
Antenna(s) ►	8 directional	4 directional Up to 4 omnidirectional	1 directional
Sectors ►	8	4	1
Bands ►	All bands up to 6 GHz	Up to 7	4
Output Power ►	240W / 800W	390W	40W



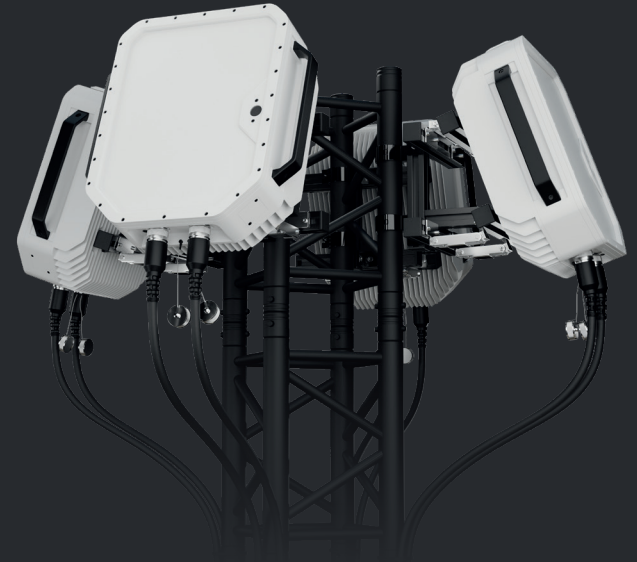
▶ **EO/MWIR PTZ Cameras** **XCAM** SERIES

Among the latest additions is the Visual Detection System, a fully integrated optical and thermal drone detection solution that is perfectly matched to the detection mechanisms of AARTOS™.

This option enables the user to spot detected drones, even from afar, and identify potentially dangerous payloads attached to the drone, such as explosives.

Automated AI tracking will continue even if a drone enters autonomous flying mode while it is being tracked by the Visual Detection System.

- Thermal and optical camera for 24/7 protection
- Sophisticated tracking and analysis AI
- Max. camera resolution of 1920 × 1080 px (full HD)
- Max. thermal module resolution of 1280 x 720 px
- Optical: 13 mm to 261.5 mm focal length
- Thermal: 72 mm to 900 mm focal length
- IP67-certified protection



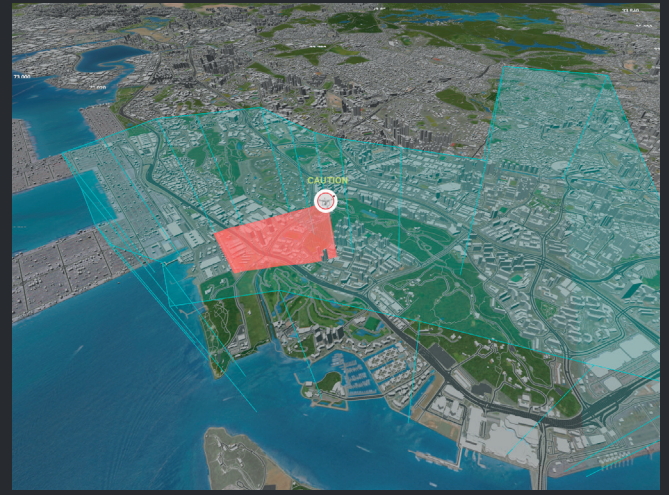
▶ **4D UAV Radar** **RD** SERIES

Using an (optional), sophisticated radar system, AARTOS™ can automatically determine and display the exact position, flight direction, altitude, speed and classification of an inbound drone. The trajectory of the flight can also be tracked in real-time as a 3D model.

The system distinguishes between birds, fixed-wing drones and propeller drones. When a UAV enters the designated no-fly zone, a multi-alarm can be configured.

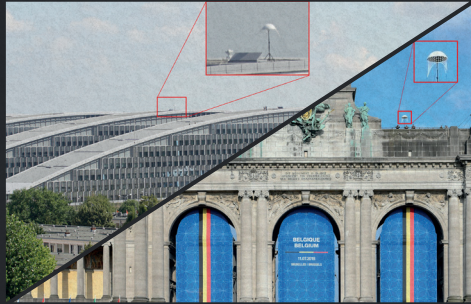
▶ **Complete customization**

The required equipment for AARTOS™ can be configured to match detailed customer requirements. End customers will receive hardware that is tailored to their specific needs, with all components chosen individually. This guarantees optimal drone detection performance in any given terrain or area.





G20 Summit Brazil 2024 & Bali 2022



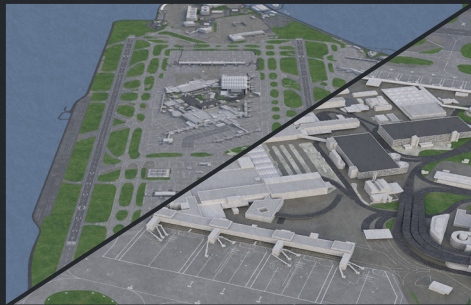
NATO Summit, Brussels



North Korea / USA Summit, Singapore



Airpower 2024, Austria



Heathrow International Airport, UK



Formula 1 GP Red Bull Ring, Austria



AARTOS™
DATASHEETS
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MADE IN GERMANY