Service at Rohde & Schwarz
You're in great hands

► Worldwide
► Local and personalized
► Customized and flexible
► Uncompromising quality
► Long-term dependability

Rohde & Schwarz

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks & cybersecurity. Founded 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

Sustainable product design

► Environmental compatibility and eco-footprint
► Energy efficiency and low emissions
► Longevity and optimized total cost of ownership

Certified Quality Management	Certified Environmental Management
ISO 9001	ISO 14001

Information Security Management System	Certified Quality Management
ISO/IEC 27001	AQAP-2110

Rohde & Schwarz training

www.training.rohde-schwarz.com

Rohde & Schwarz customer support

www.rohde-schwarz.com/support

ROHDE&SCHWARZ

Make ideas real

COUNTERING DRONES

Drone surveillance in the military area

COUNTER UNMANNED AERIAL SYSTEMS (C-UAS)

SECURITY
SCREENING

CELLULAR NETWORK
ANALYSIS

AIR TRAFFIC
CONTROL

CYBERSECURITY

SYSTEM SOLUTION PARTNER

When it comes to integrating tomorrow's technology to respond to today's threats, Rohde & Schwarz is the partner of choice for defense customers.

As a systems integrator and original equipment manufacturer of core components, our independent company delivers trusted, turnkey solutions supported by systems engineering, project implementation and after-sales services.

Creating unparalleled synergies across defense applications, Rohde & Schwarz enables best practice through the availability of reliable and cost-effective technologies to ensure operational success where it is needed most.

**TEST &
MEASUREMENT**

**MOBILE NETWORK
TESTING**

**LIFETIME
SERVICES**

**SPECTRUM
MONITORING**

COUNTERING SMALL UNCREWED AERIAL SYSTEMS (SUAS)

The proliferation of malicious and non-cooperative Countering small Uncrewed Aerial Systems (sUAS) is a threat to defense customers at home and abroad. Whether to permanent facilities at home or temporary and forward-deployed operating bases further afield, defense customers require support from efficient and reliable counter-UAS (C-UAS) solutions.

Rohde & Schwarz is proud to offer our defense customers a next-generation leap in counter-UAS technology with a cost-effective, system-of-systems approach that can autonomously detect, classify and neutralize the most advanced threats.

THE EMERGING THREAT

As recent conflicts have shown, the proliferation of malicious and non-cooperative sUAS around the world poses a significant and rapidly growing risk for defense.

Both conventional and unconventional adversaries routinely employ sUAS to support a wide range of missions such as intelligence gathering and precision strikes against targets on the ground and at sea.

Stationed at home and abroad in some of the world's most remote and austere environments, defense customers must be protected from commercial and military sUAS so they can focus on successfully completing their missions.

A LAYERED APPROACH

Counter-UAS solutions can protect defense customers from commercial and military drones across all environments and scenarios, often as part of a layered and integrated air defense network.

Use cases include force protection for forward and rear operating bases and airfields, harbors and surface vessels at sea, as well as mounted and dismounted ground forces.

Counter-drone solutions for sUAS must provide 360 degree threat detection at extended ranges and be capable of rapid, autonomous threat classification to optimize situation awareness and ensure the most effective deployment of countermeasures when necessary.

Solutions for countering sUAS must also be rapidly deployable, mobile, optimized for size, weight and power, and all this while ensuring ease of use to minimize the cognitive load on operators. These solutions must keep up with current developments in sUAS technology and be able to adapt quickly to future threats.

The Rohde & Schwarz family of ARDRONIS counter-UAS solutions is ideally suited to supporting the full spectrum of defense requirements across multiple domains, including fixed, deployed and mobile systems targeting sUAS.

Fixed site protection

INFORMATION
SUPERIORITY

Semi-fixed/
deployable
protection

Mobile protection

USE CASE 1:
MOBILE

The threat of malicious and non-cooperative drones across the contemporary operating environment is not just restricted to fixed bases and airfields. Defense customers must also protect mobile tactical platforms and critical assets on land and at sea from sUAS threats.

Counter-drone solutions targeting sUAS must be small in form factor but powerful enough to satisfy the strict signal requirements of defense customers, in both permissive and contested operating environments. They must also support on-the-pause and on-the-move operations, even at high speeds.

Such counter-UAS solutions not only provide commanders with increased levels of situation awareness; they also ensure early warning against potential threats, allowing commanders to take the most effective courses of action, such as cueing integrated or external kinetic and non-kinetic effectors to neutralize targets.

Mobile solutions must also be capable of geolocating sUAS pilots to enable highly mobile ground or maritime units to take measures aimed at preventing further attacks.

MOBILE SYSTEM REQUIREMENTS:

▶ Early detection and classification of sUAS (including swarms) and pilots
▶ On-the-pause/on-the-move operation
▶ Reduced size, weight and power
▶ Rapid deployment
▶ Ease of use
▶ Modularity through open interfaces
▶ MIL-STD security and robustness
▶ Multiband coverage and jamming
▶ Cross-cueing of effectors

USE CASE 2: DEPLOYED

Counter-drone solutions for sUAS also support defense customers seeking to protect forward deployed operating bases, tactical operations centers, temporary landing zones and COMINT shelters.

Quick and easy to establish and operate, even in the most remote and austere operating environments, these counter-UAS solutions provide commanders with early warning as well as threat classification and neutralization of sUAS threats.

Solutions provide data flows that can be integrated into the common operating picture to maximize levels of situation awareness, compress decision-making cycles and ensure the most effective courses of action are taken.

Deployed solutions are networked to a variety of kinetic and non-kinetic effectors used to disrupt or destroy threats with maximum standoff to reduce the risk of collateral damage.

DEPLOYED SOLUTION REQUIREMENTS

▶ Early detection and classification of sUAS (including swarms) and pilots
▶ Extended range and 360-degree coverage
▶ 24/7 perimeter security
▶ Automatic alerts
▶ Rapid deployment
▶ Integrated common operating picture
▶ Modularity through open interfaces
▶ MIL-STD security and robustness
▶ Multi-band coverage and jamming
▶ Cross-cueing of effectors

USE CASE 3:
FIXED

Counter-drone solutions for sUAS are particularly well suited to force protection for operating bases and airfields located in sovereign territory of defense customers.

These solutions defend a predefined perimeter to ensure protection against enemy intelligence gathering activities and kinetic strikes. These C-UAS solutions can detect, identify and neutralize both individual targets and swarms, providing early warning and ensuring decision-makers take the most appropriate course of action to safeguard human life and critical assets.

Counter-drone solutions for sUAS also optimize situation awareness across an operating base or airfield with the capability to cue a variety of kinetic and non-kinetic effectors to neutralize threats.

A secondary requirement, for these solutions is also to geolocate the position of sUAS pilots, so measures can be taken to prevent further attacks.

FIXED SYSTEM REQUIREMENTS:

► Early detection of sUAS (including swarms) and pilots
► Large area and simultaneous multiband coverage
► Visualization of the situation picture (location, behavior, threat level, etc.)
► Autonomous or human-in-the-loop operations
► Open architecture
► User access levels
► MIL-STD security, reliability and robustness
► Report/evidence recording
► Integration of suitable countermeasures

ROHDE & SCHWARZ
ARDRONIS FAMILY:

ARDRONIS is a family of counter-UAS solutions specifically designed to support the operational requirements of defense customers.

The Rohde & Schwarz system-of-systems approach provides customers with the ability to detect, identify, locate, track, verify and counter malicious threats in line with their unique requirements.

ARDRONIS DETECT

Providing accurate detection and classification of any type of sUAS, ARDRONIS Detect provides end users with early warning of threats through RF signal recognition. The solution is lightweight and easily deployable, making it an ideal choice fora wide range of use cases in defense.

ARDRONIS LOCATE COMPACT

Suitable for large area detection of malicious and non-cooperative sUAS, ARDRONIS Locate Compact features a single-channel direction finder capable of locating analog and digital video downlinks. ARDRONIS Locate Compact is a rapidly deployable and cost-effective solution for defense customers and particularly well suited to airfield protection. ARDRONIS Locate Compact can be upgraded to detect FHSS and Wi-Fi enabled drones with the addition of ARDRONIS WiFi.

ARDRONIS LOCATE ADVANCED

Defense customers benefit from automatic detection and identification of radio-controlled drones. ARDRONIS Locate Advanced provides early warning and accurate classification of threats with predefined, real-time notifications to selected individuals. The solution, which includes the capability to locate and track FHSS signals, can geolocate cUAS and their ground control stations. ARDRONIS Locate Advanced can be upgraded with the optional ARDRONIS WiFi up-grade to detect and identify Wi-Fi controlled drones.

ARDRONIS EFFECT

ARDRONIS Effect detects commercial drones, automatically classifies signals and determines the direction of the threat. The solution includes ARDRONIS GNSS which disrupts GNSS signals to deny the sUAS its autonomous flight capability.
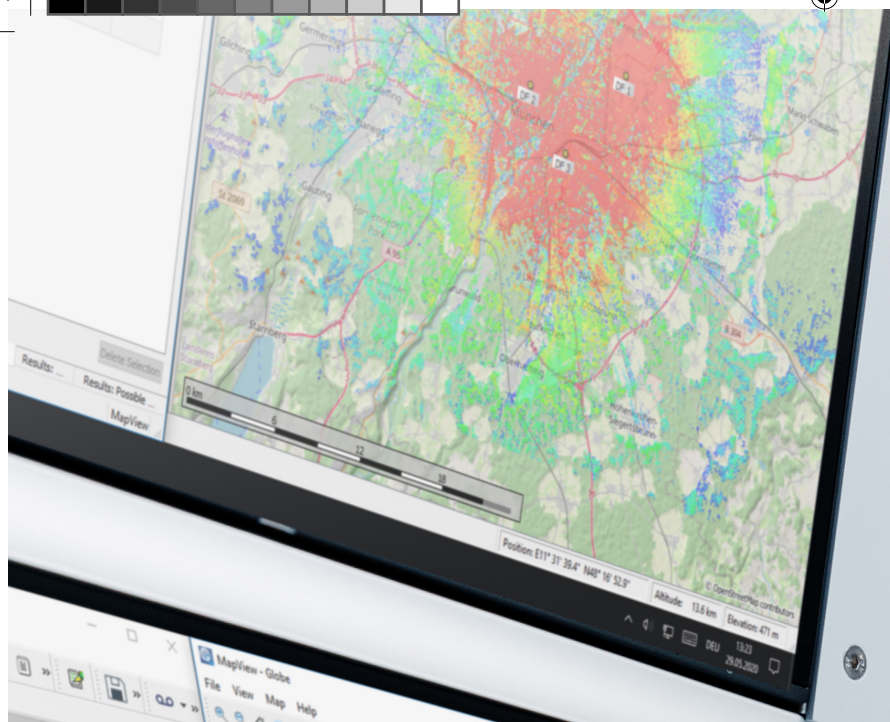
OPTIONAL UPDATE INCLUDES:
ARDRONIS WIFI

Each member of the ARDRONIS family can be upgraded with ARDRONIS-WF to detect and identify Wi-Fi controlled drones.

ARDRONIS PAN-TILT-CONTROL

The full range of ARDRONIS solutions can be upgraded with ARDRONIS Pan-Tilt Control which enables automatic pan-tilt control of directional sensors to verify and counter sUAS threats.

SAPIENT COMPLIANT

ARDRONIS counter-UAS systems are easily integrated into agnostic battle management systems, making the technology suitable for supporting layered air defense networks.

ARDRONIS is already compliant with the UK's SAPIENT (Sensing for Asset Protection with Integrated Electronic Networked Technology) standard which employs machine learning and artificial intelligence to streamline decision making and reduce cognitive load on personnel.

SAPIENT supports the networking of advanced sensors, including counter-UAS solutions, to optimize intelligence gathering and sensor management, reduce demand for bandwidth and encourage greater levels of operational flexibility.

The UK Ministry of Defense (MoD) has already successfully adopted SAPIENT with an Interface Control Document (ICD) freely available to enable the integration of counter-UAS solutions.

The standard is also being adopted by NATO and, in September 2023, ARDRONIS was tested for compliance with SAPIENT at NATO's C-UAS Technical Interoperability Exercise 2023 in the Netherlands.

ARDRONIS solutions were integrated into SAPIENT in coordination with the Royal Air Force's (RAF's) Rapid Innovation Cell which is tasked with testing and evaluation of commercially available counter-UAS solutions.

ROHDE & SCHWARZ:
YOUR TRUSTED PARTNER

Counter-UAS requirements of defense customers for sUAS continue to evolve apace. As a trusted partner, Rohde & Schwarz provides customers with unrivalled support throughout the entire lifecycle of their product line.

As an independent company, we are perfectly positioned to provide the highest levels of in-service support to assist defense customers with integration, maintenance and upgrading counter-UAS solutions.

Our support network extends across the world's time zones, enabling 24-hour support whenever it is required.

SERVICES & TRAINING

Although the ARDRONIS family of counter-UAS solutions are designed for ease of use, Rohde & Schwarz remains committed to supporting the training requirements of defense customers.

The company offers both on-site and off-site training programs that allow customers to understand and problem-solve in their own work environments.

Rohde & Schwarz also supports customer-defined training objectives through specialist and customized training programs that are tailor-made to match specific end user requirements.

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