

Life-saving reliability

Secure communications solutions
for land-based operations


ROHDE & SCHWARZ



Nowadays threats are constantly changing the tasks that armed forces are required to accomplish. In particular, peace-building and peace-keeping missions at hotspots all over the globe are posing new challenges for today's ground forces and their commanders. Reliable communications equipment plays a fundamental role in helping these missions succeed.



Command and control is communications

Effective command and control require reliable, secure communications structures, from the upper levels all the way down to the soldier. The information superiority this creates is vital to the troops' ability to operate effectively and survive in the field. The reliability, flexibility and future-readiness of their communications systems can be the dividing line between success and failure for ground forces. Today, more than ever, this means systems must provide data-capable waveforms.

Radio data transmission must be robust, jam-resistant and tap-proof. Interoperability, too, is becoming increasingly important, as it enables the rapid and efficient exchange of information on intra, joint, combined or interagency operations. The units must be able to communicate, regardless of the platform they are using or the command and control structures that are in place. Systems and equipment must also be designed and built to provide a reliable future-ready solution.

A world-leading supplier of communications equipment for more than 75 years now, Rohde&Schwarz offers products and solutions that meet the military's stringent requirements regarding reliability, flexibility and operational longevity. These include:

- Mobile radiocommunications solutions
- Secure information transmission
- Test and measurement equipment for radiocommunications

With this unique mix of key competencies, Rohde&Schwarz can offer customers comprehensive compatible and reliable solutions, solutions that are deployed by military units and government agencies all over the world. By working closely with the armed services, procurement agencies, public safety organizations, systems integrators as well as national and international security agencies, and by playing an active part in standardization bodies, Rohde&Schwarz creates coordinated system solutions that are tailored to meet customers' high expectations. Customers and partners put their trust in the exceptional performance and quality of Rohde&Schwarz solutions, designed, engineered and manufactured in-house.



R&S®M3SR

The R&S®M3SR radio is an outstanding and proven performer in stationary, shipborne and airborne applications. The HF model supports frequency hopping, link establishment and data transmission according to HF house, and IP over HF. The VHF/UHF model, equipped with a 70 MHz interface, can incorporate additional modems to provide wideband capabilities. These features have made the R&S®M3SR a popular solution around the world.

R&S®M3TR

The R&S®M3TR is a successful tactical radio used in ground vehicles, ships and dismounted operations. Offering an exceptionally wide frequency range and a variety of waveforms, the radio is equipped with a standard IP interface, supports high data rates and includes an embedded encryption solution. With these capabilities, the R&S®M3TR is exceptionally well-suited for brigade-and-below applications.

R&S®M3AR

The field-proven R&S®M3AR is the right solution when military aircraft need to interconnect reliably and efficiently with ground troops' communications networks. Designed specifically for airborne platforms, the R&S®M3AR is successfully deployed by the armies, navies and air forces of numerous countries around the world.

R&S®MMC3000/ Elcrodatt 4-2/ embedded security solutions

Encryption devices shall be approved for the highest national and NATO security classifications, suitable for use with radio equipment operating on military frequency bands.






R&S®MMC3000/ ED4-2 has multirole capabilities and is therefore deployed in all mobile applications in ground, airborne and sea vehicles. The Rohde&Schwarz portfolio includes the following solutions:

- R&S®MMC3000, developed specially for non-NATO countries
- ELCRODAT 4-2, developed specially for NATO countries
- Embedded and adaptable crypto solution for the R&S®M3TR
- Embedded crypto solution for the R&S®M3AR

Test and measurement equipment

To maximize the availability of secure communications solutions and, by extension, the operational readiness of the armed forces that rely on them, systems integrators and users need innovative test and measurement solutions designed to support equipment commissioning and maintenance. Rohde&Schwarz offers an extensive portfolio of market-leading RF and communications test and measurement equipment to meet this need.

Reliable, flexible and future-ready communications

	Stationary	Semi-mobile
 Joint forces headquarters	 	
 Corps		
 Brigade		
 Battalion		
 Platoon		
 Squad		



Established supplier of software defined radios

In response to customers' needs and requirements, Rohde&Schwarz was quick to embrace software defined radio (SDR) technology, a move that led to the development of the R&S®M3xR product family. Today, Rohde&Schwarz SDR products – from stationary to highly mobile – are deployed in all areas of operation, from division level through to the individual soldier. The R&S®M3SR, R&S®M3TR and R&S®M3AR radios in the SDR product family can interoperate on a number of different waveforms.

The right communications equipment for any situation

Rohde&Schwarz provides secure mobile voice and data communications for every command and control level and branch of the forces.

- ▀ In the stationary segment, Rohde&Schwarz has HF solutions for strategic and tactical communications that can also serve as a cost-effective and independent fallback option – e.g. for SatCom. HF/VHF/UHF solutions are used to communicate with deployable units
- ▀ Rohde&Schwarz equips vehicular command and control stations with stationary, manpack and handheld solutions for communications with mobile and highly mobile units, primarily over VHF and UHF links
- ▀ Rohde&Schwarz combines military and civil technologies to optimize interoperability and costs
- ▀ Rohde&Schwarz offers comprehensive external and embedded security solutions
- ▀ Test and measurement systems from Rohde&Schwarz help ensure that communications solutions achieve a high level of availability throughout their entire lifecycle

	Mobile	Highly mobile
	<p>R&S®M3TR HF/VHF/UHF manpack</p> <p>Embedded crypto solution</p>  <p>R&S®MR 3000P VHF handheld</p> <p>Embedded crypto solution</p> 	<p>R&S®M3AR VHF/UHF airborne</p> <p>R&S®MMC3000/ ELCRODAT 4-2/ embedded crypto solution</p> 

Key capabilities for ground forces

1. Data capability

In today's missions, armed forces need continuous access to the latest level-specific operational pictures if they are to respond swiftly to situational changes and accomplish their mission successfully.

Rohde&Schwarz offers a set of important data applications for brigade-and-below use, packaged in the R&S®Postman III application suite.

R&S®Postman III enables efficient data transmission over radio networks, thus significantly contributing toward the success of civil and military missions. In addition to naval and coast guard scenarios, such missions will be carried out in disaster situations and as part of border control or rescue operations. In the event of a failure of wired communications media, such as used by embassies and consulates, R&S®Postman III can replace existing infrastructures by providing shortwave radiocommunications.

R&S®Postman III offers IP based applications and can therefore use standard IP infrastructures such as LAN/WAN or SatCom. R&S®Postman III has been optimized for communications over HF and VHF/UHF radio networks with low and variable data rates. The system supports the use of modern IP enabled radios as well as radios with a serial data interface. R&S®Postman III supports multiline operation.

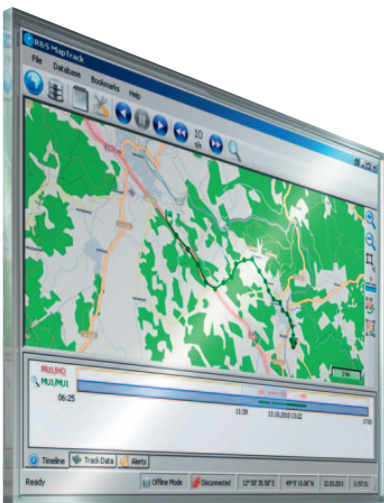
In radiocommunications, this means that information can be exchanged simultaneously with multiple participants over the same or different radio networks. R&S®Postman III automatically selects a line suitable for communicating with the remote participant.

E-mail and chat capabilities and the display of position data are some of the key applications that are made available through the intuitive user interface. Based on the data gained from the combined use of these applications, R&S®Postman III can generate and display a force's situation picture. This is a crucial prerequisite for enabling coordinated action in both civil and military operations.

Key facts

- IP based data transmission for narrowband radio channels
- Multiline capability for simultaneous communications with multiple radio network participants
- Generation of common situation picture based on position data from all radio network participants

The R&S®Postman III application suite supports R&S®M3TR HF/VHF/UHF radios and R&S®M3SR Series4100 stationary radios in radio network infrastructures.



2. Interoperability

Ready to meet tomorrow's interoperability requirements

Rohde&Schwarz is a leading global provider of interoperable radiocommunications solutions for

- Joint operations
- Combined operations
- Interagency communications

In the type designation of the R&S®M3xR family, M3 stands for multiple capabilities, as the example of the R&S®M3TR shows:

- 1. Multiband:** The R&S®M3TR is multiband-capable, covering the HF, tactical VHF, ATC VHF, maritime VHF and UHF aeronautical frequency bands between 1.5 MHz and 512 MHz.
- 2. Multimode:** The R&S®M3TR enables users to choose from multiple waveforms, including HF house waveforms, HAVE QUICK I/II, R&S®SECOM and R&S®SECOS. It can also be software-upgraded to adapt to changing requirements.
- 3. Multirole:** The R&S®M3TR can be used as a manpack or installed in ground vehicles and ships. Irrespective of its role, it incorporates easily into tactical networks via standard IP interfaces.

The software defined design of the R&S®M3xR radios protects existing investments, guards against obsolescence, ensures operational longevity and delivers logistical benefits and significant cost savings over the entire product lifecycle. The R&S®M3TR already supports more than ten waveforms.

Evolution of data capability, interoperability and security in tactical radios.

	Conventional solutions	R&S®M3TR
Data rate	≤ 16 kbit/s	≤ 72 kbit/s
Interoperability	1 waveform	HF house waveforms (ALE 2G, ALE 3G, STANAG 4285, STANAG 4529, STANAG 4538, STANAG 4539, STANAG 4415) R&S®SECOS R&S®SECOM HAVE QUICK I/II
Security	plain frequency, partially COMSEC	COMSEC, TRANSEC Secure voice/data

3. Networking

Military commanders are tasked with doing whatever it takes to effectively accomplish missions while ensuring the safety of their troops. To achieve this aim, access to the right information at the right place and time and the ability to leverage that information into sustained information superiority is a crucial factor.

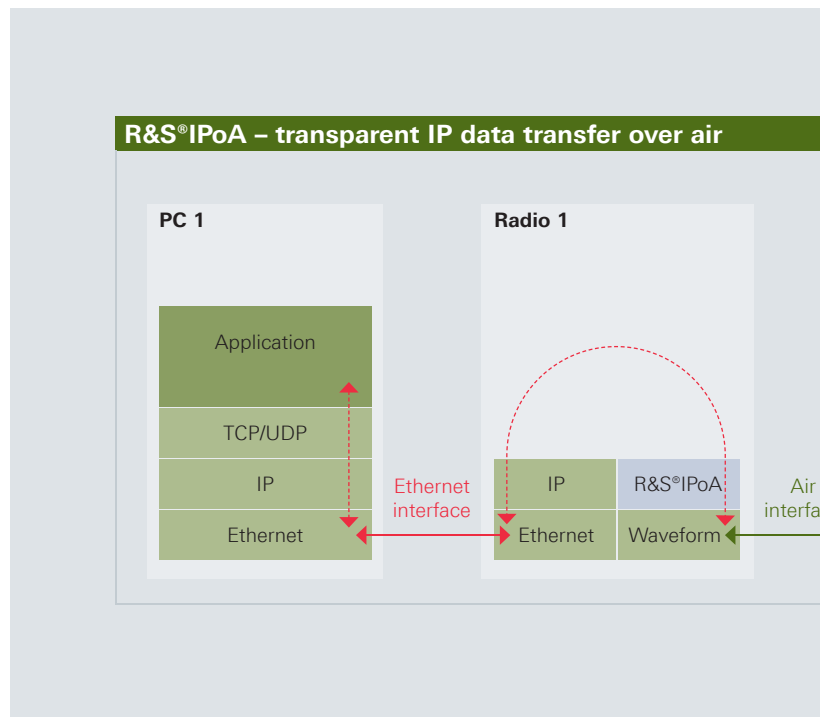
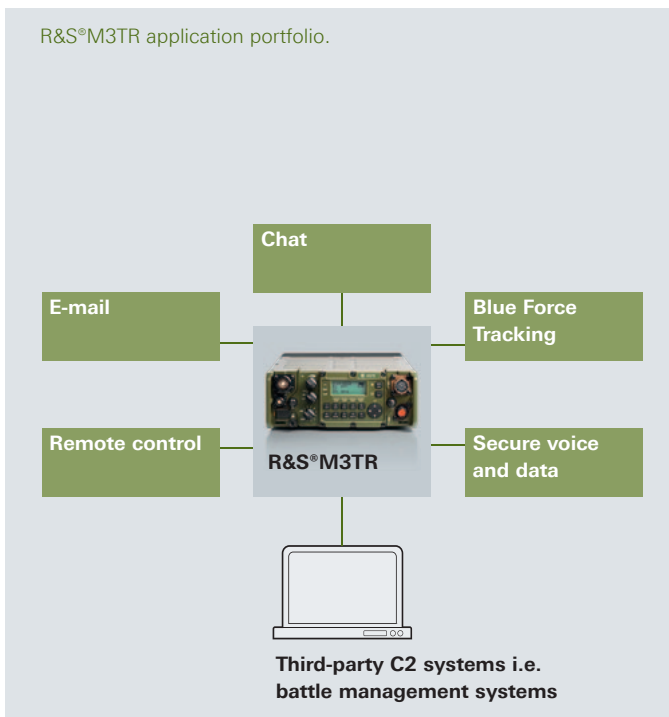
For many years now, Rohde&Schwarz has been committed to equipping ground forces with mobile IP-based data capability providing the following:

- A standard IP interface
 - Simple integration into established and future command and control systems
 - Extension of fixed-infrastructure capabilities over the air for mobile users
- Applications such as e-mail, chat and Blue Force Tracking

This offers Rohde&Schwarz customers easy entry into the tactical Internet, as well as long-term future-readiness.

IP over air (R&S®IPoA)

With its built-in IPoA capabilities, the R&S®M3TR can easily connect to and integrate into existing LANs over a standard RJ-45 Ethernet or RS-232-C port, allowing IP-based applications to be routed seamlessly between LANs over tactical radio links. Prioritizing voice over data traffic permits ad hoc messages to be transferred instantly. Data transmission resumes automatically once the messages have been sent. This capability enables highly mobile ground forces to share their operational data with command and control information systems at other levels of command and control and contribute to the common relevant operational picture (CROP).



R&S®RNMS3000 radio network management system

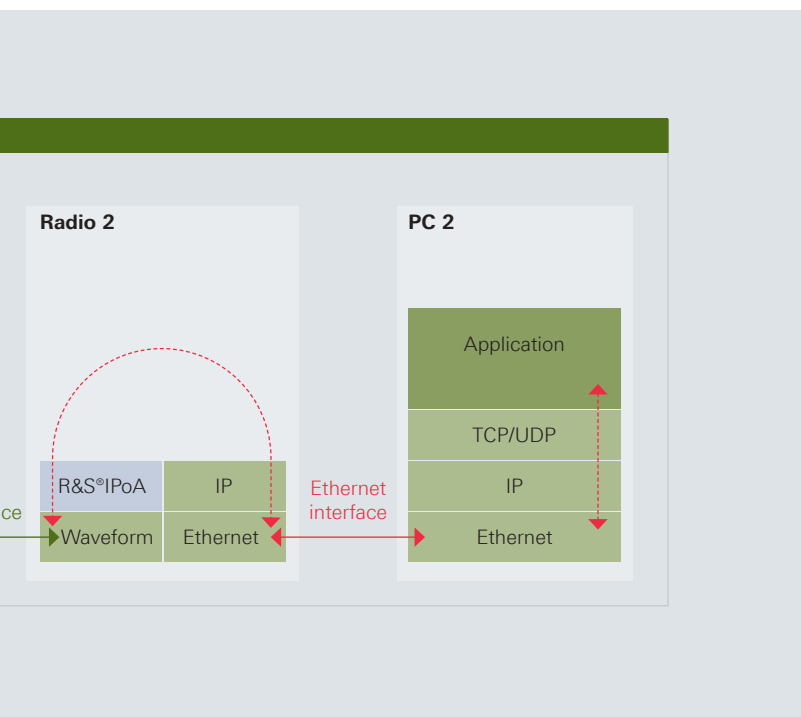
The capabilities and the quality of networked command and control processes play a central role today in the armed forces' ability to operate effectively. When it comes to setting up a reliable, robust, networked radiocommunications system, time-efficient planning and configuration are key.

The R&S®RNMS3000 is a modular management system designed to enable user-friendly, cross-band configuration of R&S®M3xR-based networks. The system is the result of close collaboration with users and many years of experience. When preparing missions, this single tool enables the following:

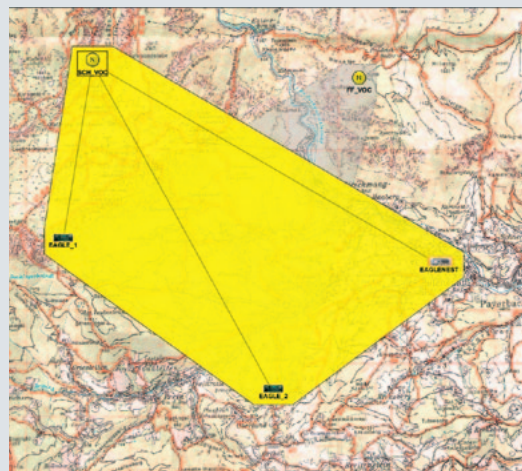
- Configuration of logical radio networks
- Secure generation and distribution of encryption keys
- Frequency allocation

This eliminates the need for radio operators to be involved in the management process.

The R&S®RNMS3000 supports organizations with central as well as decentralized network management.



A graphical radio network plan.



4. Security

Highly secure encryption of military voice and data communications

Rohde&Schwarz supplies approved, field-proven, highly secure radiocommunications systems. The ED4-2 is a highly secure device, ruggedized to military standards, that replaces several earlier types of encryption devices and includes compatibility modes for the internationally most common and important equipment.

Approved for the highest level of classified information, Cosmic Top Secret, by Germany's Federal Office for Information Security (BSI) and by the Military Committee Communications Security and Evaluation Agency (SECAN), more than 2500 ED 4-2 have been purchased by the German Armed Forces as their common encryption device for mobile communications and have been rolled out in multiple vehicles. The highly secure device is not only deployed by the German Armed Forces. More than half of all NATO members currently use the ED 4-2 on a variety of national and international platforms, including German UH Tiger and NH90 helicopters, the K130 corvette, F124 and F125 frigates and the U 212 submarine. In the future, the ED 4-2 will also be used to encrypt HF communications for NATO forces in Europe's A400M military transport aircraft.

The R&S®M3TR enables encryption in FF channels as well as in frequency hopping modes R&S®SECOS and R&S®SECOM. SVD (secure voice/data) can be used stand-alone on FF channels or together with ALE 3G. MELPe vocoders are used to digitize the analog voice signals. In ALE 3G mode, SVD encryption can be applied to both voice and xDL data communications. Therefore the R&S®M3TR provides the security, reliability and flexibility that soldiers need to accomplish their mission effectively.

Added protection through ease of use

Soldiers on missions have to be completely familiar with their equipment so that they can operate it correctly, even when under stress and in difficult weather conditions.

The R&S®M3TR's innovative preset concept that is based on the R&S®RNMS3000 management system allows network parameters for multiple radio nets to be planned and prepared in full, prior to operations. The parameters are loaded into the radios using fill devices or cables and are instantly available to operators without the need for any additional configuration. This means that operators can switch between radio nets in active missions, quickly and easily, and without the need for specialist knowledge. With its configuration preset concept and intuitive human-machine interface (HMI), the R&S®M3TR eases the burden on soldiers in the field enormously.

Experience gathered by product users in the field benefits the development of new models. The operating concept of the R&S®M3TR ensures reliable operation and ease of use, even in critical situations.



Preset rotary switch

5. Safeguarding system availability

To ensure that communications equipment is functioning optimally for a planned mission, it first has to be calibrated and subjected to a number of tests. Regularly maintaining radio equipment ensures that it will continue to operate reliably for many years. As a manufacturer both of highly secure radio systems and an extensive portfolio of test and measurement equipment for radiocommunications, Rohde&Schwarz has the range of expertise needed to meet all test requirements, from conventional analog communications equipment to the very latest digital SDR systems. Rohde&Schwarz is also a leading supplier of test and measurement equipment for modulation modes such as OFDM and for MIMO multi-antenna technology, both of which are part of today's radiocommunications standards.

For any type of military system, immunity to outside electromagnetic interference and the ability to suppress their own potentially compromising emissions are fundamental requirements. Rohde&Schwarz specializes in market-leading test and measurement systems for evaluating these properties and measuring electromagnetic compatibility. The portfolio ranges from compact test instruments with a comprehensive range of add-ons and accessories to turnkey system solutions.

Rohde&Schwarz measuring instruments also feature numerous additional capabilities specifically designed for military applications. In many models, the mass memory for setup and test data is easy to remove. In addition, special programs are available that enable memory contents to be deleted irretrievably. Most instruments can also emulate legacy command sets to simplify the replacement of older equipment and to provide easy enhancement and upgradeability in the long term.

The extensive test and measurement portfolio of Rohde&Schwarz includes the following:

- Signal generators and analyzers to generate and analyze modulated and unmodulated signals. These instruments cover everything from CW to analog and pulse modulation, and from simple digital modulation such as BPSK and QPSK to highly complex OFDM modulation modes. Wide modulation (up to 528 MHz) and demodulation bandwidths (up to 120 MHz) allow reliable tests even on wideband multicarrier systems
- Flexible fading solutions for signal generators to allow the testing of military communications equipment under real-world conditions, such as moving transmitters and receivers or multipath signal propagation

Mobile field test equipment:

- Broad range of portable spectrum and network analyzers
- Precise, easy-to-use power meters that can connect directly to a laptop via USB
- Portable radio test set for testing analog FM radios



Europe's largest EMC test lab, operated by the German Armed Forces, is equipped with test and measurement equipment from Rohde&Schwarz.

Portfolio for land-based operations

Secure radiocommunications



R&S®M3SR Series4100

The R&S®M3SR Series 4100 radios are HF software defined radios (SDR) for stationary, navy and army applications.

- ▮ Frequency range 1.5 MHz to 30 MHz
- ▮ 150W, 500W and 1000W power classes
- ▮ HF house waveforms implemented in software
- ▮ Frequency hopping capability
- ▮ Embedded crypto solution
- ▮ Interfaces for NATO and non-NATO encryption devices
- ▮ IP data transmission
- ▮ Data rates up to 19.2 kbit/s
- ▮ High MTBF



R&S®M3SR Series4400

R&S®M3SR Series4400 radios are VHF/UHF software defined radios (SDR) for military air traffic control, air defense and navy applications.

- ▮ Frequency range 100 MHz to 512 MHz
- ▮ 30W AM/ 100W FM power class
- ▮ Frequency hopping capability
- ▮ External crypto solutions like R&S®MMC3000 or ED4-2
- ▮ Interfaces for NATO and non-NATO encryption devices
- ▮ SNMPv3 remote control protocols
- ▮ Data rates up to 1.9 Mbit/s (with external modem)
- ▮ High MTBF



R&S®Postman III

R&S®Postman III offers IP based applications and has been optimized for communications over HF and VHF/UHF radio networks with low and variable data rates.

- ▮ Use of IP-capable radios and radios with a serial data interface
- ▮ Multiline capability
- ▮ Consolidated position data display for all radio network entities
- ▮ Blue Force Tracking
- ▮ E-mail
- ▮ Voice mail
- ▮ Fax
- ▮ Chat
- ▮ File transfer



R&S®RNMS 3000

The R&S®RNMS3000 is a radio network management system for Rohde&Schwarz radios. It includes functions for managing keys, frequencies and networks and enables remote configuration of radios via network.

- ▮ Central network management
- ▮ Decentralized network management
- ▮ Supports all R&S®M3xR families through an integrated user interface
- ▮ NATO-G-A-G waveforms
- ▮ HF house waveforms
- ▮ Rohde & Schwarz (R&S®SECOM, R&S®SECOS) waveforms



**R&S®M3TR
MR300xU/H**

R&S®MR300xU/H radios are HF/VHF/UHF software defined radios (SDR) designed to support all types of tactical communications.

- ▮ Frequency range 1.5 MHz to 512 MHz
- ▮ 10 W, 50 W, 150 W and 500 W power classes
- ▮ HF house waveforms implemented in software
- ▮ Frequency hopping capability
- ▮ Embedded and adaptable crypto solution
- ▮ Interfaces for NATO and non-NATO encryption devices
- ▮ IP data transmission
- ▮ GPS reporting, message service
- ▮ Data rates up to 72 kbit/s
- ▮ High MTBF



**R&S®M3TR
MR3000 P**

R&S®MR3000 P radios are ideal handhelds for use in R&S®M3TR radio networks.

- ▮ Frequency range 25 MHz to 146 MHz
- ▮ 5 W power class
- ▮ Frequency hopping capability
- ▮ Embedded crypto solution
- ▮ GPS reporting/SMS
- ▮ Data rates up to 7.1 kbit/s
- ▮ High MTBF

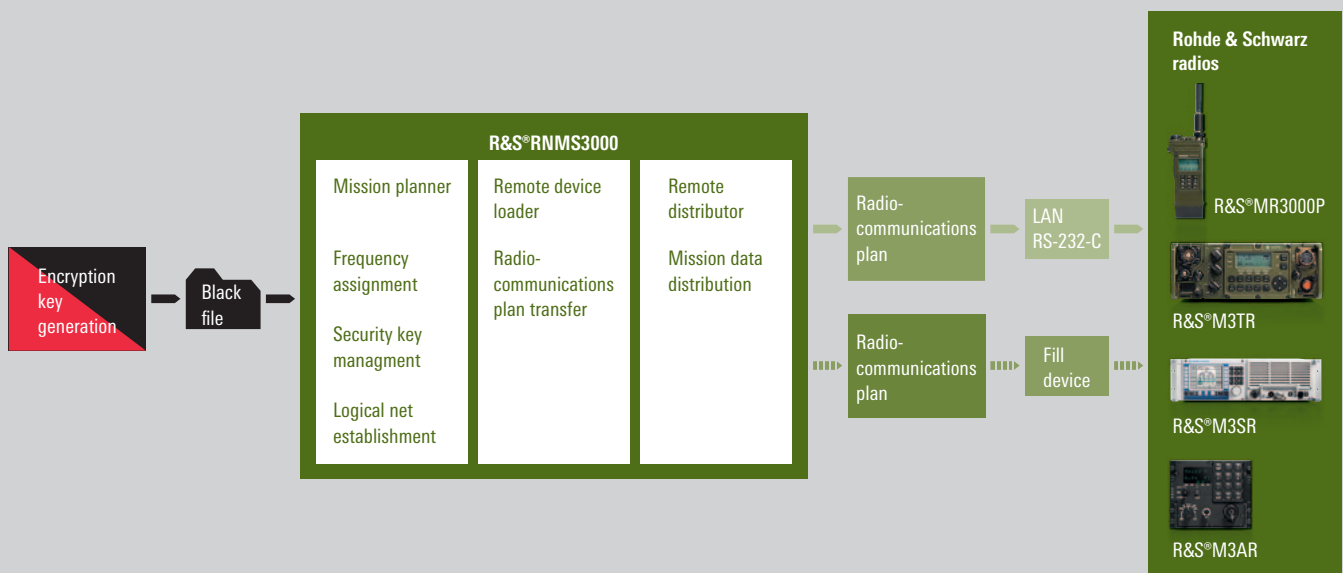


**R&S®M3AR
MR6000 A/L/R**

R&S®MR6000 A/L/R radios are a well-established generation of VHF/ UHF SDRs for all types of airborne platforms. They are also used for tactical army communications and ATC voice and data radio.

- ▮ Frequency range 30 MHz to 400 MHz
- ▮ 10 W AM / 15 W FM and 20 W AM / 30 W FM power classes
- ▮ Frequency hopping capability
- ▮ Embedded NATO and non-NATO encryption solution
- ▮ Interfaces for NATO and non-NATO encryption devices
- ▮ Compact dimensions, low weight
- ▮ Data rates up to 16 kbit/s
- ▮ High MTBF

Process sequence





ELCRODAT 4-2

Multimode, multirole high-security voice and data encryption device for mobile platforms.

- ▮ Deployed by the German Armed Forces as common mobile encryption device
- ▮ Approved for security classifications up to cosmic top secret/top secret
- ▮ Ruggedized to MIL standard
- ▮ Interoperable with R&S®M3xR and numerous other radios
- ▮ Interoperable with established national and international voice and data encryption devices
- ▮ Data rates up to 64 kbit/s
- ▮ R&S®MMC3000 for non-NATO countries



ELCRODAT 5-4

Voice and data encryption device for use in analog and digital networks.

- ▮ Deployed by the German Armed Forces as a device for commanders
- ▮ Interoperable with existing encryption devices (ELCROVOX 1-4D, STU-IIB, ELCRODAT 6-1)
- ▮ Crypto keys can be loaded manually or provided automatically via a key distribution center
- ▮ Approved for security classifications up to cosmic top secret (pending)/top secret
- ▮ SatCom-compatible
- ▮ Data rates up to 128 kbit/s
- ▮ Upgradeable for use in IP networks



R&S®SITLine ETH50

Ethernet encryptor up to 100 Mbit/s

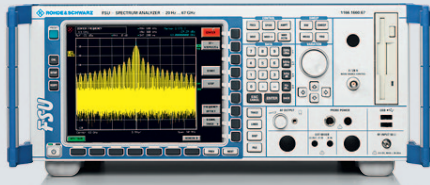
- ▮ BSI-approved, application-independent
- ▮ Cascading with high-security devices
- ▮ Fanless operation from -20 °C to +70 °C
- ▮ MTBF > 300 000 hours for wired, radio relay and satellite links



R&S®FT5066 - trusted filter

Firewall functionality for radio control information

- ▮ Physical and logical separation of red and black data
- ▮ Redundant and independent control functions
- ▮ Adaptable to standard modem and radio equipment
- ▮ Audio-visual status indicators
- ▮ Logging function



R&S®FSW signal and spectrum analyzer

Its excellent RF performance and wide analysis bandwidths make the R&S®FSW especially suited for A&D applications.

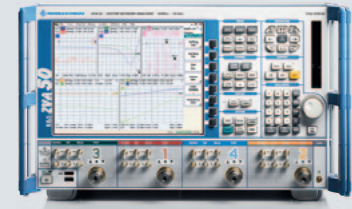
- ▮ Up to 160 MHz analysis bandwidth
- ▮ Outstanding dynamic range
- ▮ Unmatched phase noise
- ▮ High-resolution 31 cm (12.1 inch) touchscreen
- ▮ Emulation of legacy command sets
- ▮ Removable solid state disk for use in security areas
- ▮ Universal vector signal analysis
- ▮ OFDM signal analysis and pulse measurement functions



R&S®SMA 100A analog signal generator

The signal generator offers excellent signal quality, high output power and analog modulation capabilities, plus a high-performance pulse modulator.

- ▮ Fast frequency and level setting
- ▮ Very low SSB phase noise
- ▮ Generation of highly accurate VOR/ILS test signals
- ▮ Emulation of legacy command sets for easy replacement of older equipment
- ▮ Removable mass memory for use in security areas
- ▮ Simple, high-precision power measurement with R&S®NRP power sensors



R&S®ZVA network analyzer

This high-end network analyzer sets new standards for measurements on amplifiers, frequency-converting devices under test (DUTs) and antennas.

- ▮ Frequency range up to 50 GHz, expandable to 325 GHz with frequency converters
- ▮ Pulsed measurements, including measurements of pulse profiles with wide bandwidth and high time resolution
- ▮ Measurements on frequency-converting DUTs
- ▮ Coherent sources with adjustable phase offset
- ▮ Emulation of legacy command sets for easy replacement of older equipment
- ▮ Removable mass memory



R&S®CTH portable radio test set

The R&S®CTH allows dependable testing of analog FM radio systems even under challenging environmental conditions.

- ▮ Frequency and power measurements
- ▮ Transmitter and receiver measurements
- ▮ Measurement of antenna matching
- ▮ High measurement accuracy
- ▮ Easy operation
- ▮ Handy and ergonomic
- ▮ Distance-to-fault measurement
- ▮ Display optimized for outdoor use
- ▮ Rugged and all-weatherproof
- ▮ Convenient transit case



R&S®NRP-ZXX power sensors

With their high measurement accuracy and rapid measurement speed, the power sensors of the R&S®NRP-Zxx family are ideal for all applications.

- ▮ Fast, precise and USB-capable
- ▮ Universal power sensors: ideal combination of accuracy, measurement speed and extremely wide dynamic range
- ▮ Wideband power sensors: high video bandwidth and automatic pulse analysis
- ▮ Thermal power sensors: outstanding linearity and maximum accuracy
- ▮ Frequency range from DC to 110 GHz
- ▮ Dynamic range up to 90 dB

Tried-and-tested in the field

In international missions and many countries, the equipment of the armed forces must be robust enough to withstand harsh operating conditions such as extreme heat, dust and vibrations. The R&S®M3TR is tough and reliable enough to handle the job.

Ground forces in more than 20 countries rely on Rohde&Schwarz radio equipment in the field.



ISAF Afghanistan

Complete radiocommunications solution for various radio paths in a mobile command and control vehicle.



UNFIL Lebanon

Proven reliability: Radiocommunications equipment in vehicular installation exposed to tough environmental conditions during everyday operations. The results were outstanding.



EUFOR Democratic Republic of Congo

Overall, the R&S®M3TR multiband radios were successful in this equatorial mission owing to their rugged design, outstanding flexibility, and excellent reliability



Rohde & Schwarz – leading radio solutions for army helicopters

R&S®M3AR radios from Rohde & Schwarz have proven their worth, time and again, as an interoperable radiocommunications solution in helicopter platforms. Available with embedded and external encryption, the radios support both NATO and national algorithms.

Selected reference helicopter platforms:

- _____
- A109
- _____
- Fennec
- _____
- Super Puma
- _____
- UH Tiger
- _____
- Mi-17/Mi-8
- _____
- NH90
- _____
- W-3A Sokol
- _____
- Super Lynx



Radio with external crypto solution



Radio with embedded crypto solution



Foto: Bundeswehr/Rott

Tomorrow's mobile communications capabilities for ground forces

Rohde&Schwarz is working intensively on the next generation of radios. The company is currently collaborating closely with the German Armed Forces on the development of their future joint radio system known as SVFuA. This system will be the basis for the future software defined radio generations of the German Armed Forces.

SVFuA and other development initiatives will help ensure that forthcoming radio families and solutions from Rohde&Schwarz will continue to satisfy the changing communications needs and expectations of military commanders.

Rohde&Schwarz is also involved in numerous international standardization bodies and initiatives:

European studies and working groups

- WINTSEC (basis for an SDR architecture from a civil and military perspective)
- EULER (demonstrator-based extension of WINTSEC)
- EDA Defence R&T Joint Investment Programme on Force Protection, Call 2, WOLF – Wireless Robust Link for Urban Force Operation

NATO studies and working groups

- LOS COMMS Capability Team
- BLOS COMMS Capability Experts Group
- SDR User Group
- IICWG Secure Communications Interoperability Protocol (SCIP) Working Group

Wireless Innovation Forum (WInnF)

- Vice-Chair of the WInnF
- Member of the Board of Directors
- Member of the Steering Group of the SCA Coordination Committee

Further national and international telecommunications standardization bodies

- European Telecommunications Standards Institute (ETSI), a European standardization body for information and communications technology
- International Telecommunication Union (ITU), the United Nations body responsible for coordinating international telecommunications
- Institute of Electrical and Electronics Engineers (IEEE), a worldwide organization for advancing and standardizing electronics and information technology
- Security Techniques Subcommittee of the International Organization for Standardization and International Electrotechnical Commission's Joint Technical Committee 1 on Information Technology (ISO/IEC JTC 1/SC 27)



Service, logistics and support

For military and civil radio users, the operational readiness and availability of their radiocommunications systems are of central importance. Rohde&Schwarz has a global service, logistics and support network with offices in more than 70 countries to provide local, on-site customer care.

Rohde&Schwarz offers customers flexible, individually tailored service packages spanning a product's entire lifecycle and operating life to ensure maximum system availability at minimum cost. Services include:

- ▮ Definition and optimization of maintenance strategies aligned to customer-specific requirements
- ▮ Spare parts service including inventory quantity proposal and optimization of inventory locations
- ▮ Detailed system and equipment documentation
- ▮ Spare parts data and catalogs
- ▮ User and maintenance training, including computer-based training (CBT) programs
- ▮ On-site repair, calibration and customer support services
- ▮ Test equipment for customers who carry out first-line service
- ▮ Configuration and obsolescence management

Rohde&Schwarz has considerable experience in these areas of logistics and can adapt its services flexibly in line with customer requirements to deliver the kind of optimized support needed to safeguard maximum system availability at minimum cost.

Minimizing product lifecycle costs

Featuring multiband, multimode and multirole capabilities, the R&S®M3xR radios can be used flexibly in a variety of frequency bands, with different waveforms, and in versatile applications. Instead of having several types of radios to accomplish a number of different tasks, users can rely on one radio that is capable of covering a full range of needs. This greatly simplifies logistics. In addition, identically structured HMI and CBT applications significantly reduce the training effort for personnel.

The Rohde & Schwarz advantage:

- ▮ High-reliability, high-availability radiocommunications solutions that support the operational effectiveness and security of the armed forces
- ▮ Long-term trusted partnerships
- ▮ Transparent, low lifecycle costs and logistics costs

Global sales and service locations www.sales.rohde-schwarz.com

Sales level

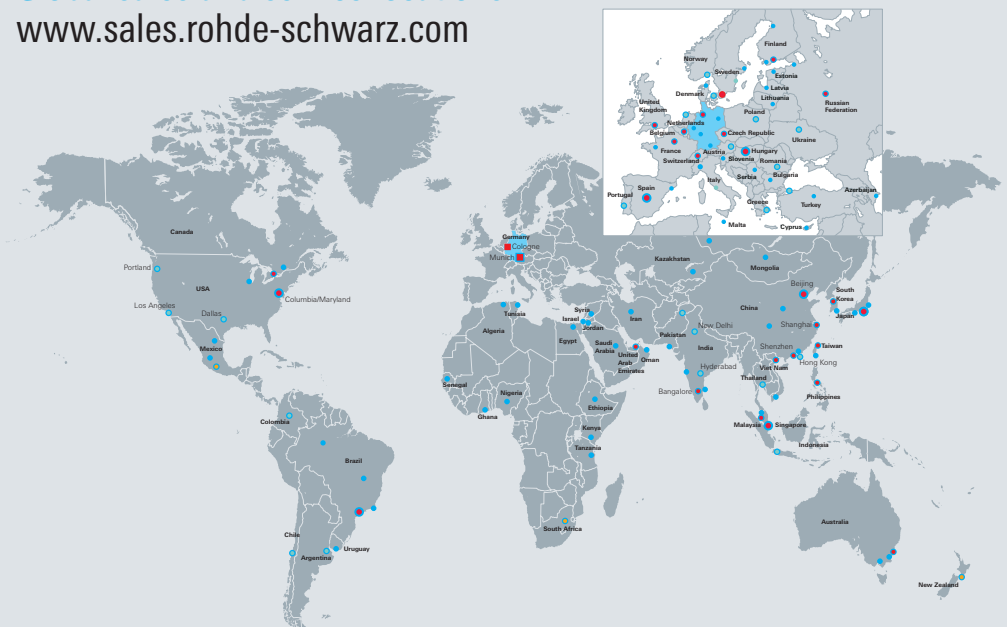
- Sales locations

Service level

- Backup service
- Area support center

Local service center

- Calibration and maintenance with standardized automatic calibration systems available
- Calibration and maintenance
- Maintenance



Customer Support

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