Advanced HF/VHF Tactical Radio R&S MR3000H

The R&S MR3000H belongs to a new family of high-performance digital radios covering the HF and VHF/FM band in a single unit. Thanks to different high-speed data modes and protocols as well as different antijam modes for HF and VHF/FM, it perfectly integrates into tactical communication networks.

The radio is software-configurable and reprogrammable including pre planned product improvement (P³I).

All members of the R&S M3TR family are based on one mechanical platform, with a common logistic concept and one man machine interface (MMI).

Features

- Multiband capability (1.5 MHz to 512 MHz with external devices)
- Multiwaveform capability
- High data rate up to 64 kbit/s for data and video
- Software-configurable and upgradeable (P³I)
- Selective links in one net
- Low volume/weight
- Power saving mode
- Integrated GPS and position report
- Removable front panel for flexible use and integration
- User-friendly MMI

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General specifications

Frequency range	TX: 1.5 MHz to 108 MHz RX: (100 kHz), 1.5 MHz to 512 MHz
Channel spacing	
HF	1 Hz
VHF/FM	5 kHz, 6.25 kHz, 8.33 kHz, 12.5 kHz, 25 kHz
Frequency stability	standard: ±0.5 ppm
Presets	100 (10 available on rotary switch)
Modulation	J3E (USB, LSB), A3E (AM), F1B/F1D (FSK), A1A (CW), F3E (FM)
Operating modes	SSB/FM/AM, frequency hopping (VHF/FM), frequency hopping (HF), clear voice/data transmission (FF mode), secure voice/data transmission (FH mode, DFF mode), test (BITE), remote control, GPS mode (time, position), erase
Antenna tuning	
HF	built-in, automatic, silent tuning
Test (IBIT)	module level; manually initiated BIT continuous monitoring

HF transmitter specifications

RF output power	0.5 W, 1 W, 2 W, 5 W, 10 W, 20 W PEP, FM average, AM PEP
Power reduction protection	high VSWR, high temperature
Carrier suppression	>50 dB below PEP (J3E)
Sideband suppression	>50 dB below PEP
Intermodulation products	>34 dB below PEP
Harmonic suppression	HF: >40 dB, VHF >50 dB

HF receiver specifications

Sensitivity (1.5 MHz to 30 MHz)	SSB: –115 dBm (0.3 µV) for 10 dB (S+N)/N (2.4 kHz bandwidth)
Squelch	syllabic squelch, 150 Hz tone squelch, signal squelch, RSSI (relative signal strength indication)

VHF/FM transmitter specifications

RF power output	1 W, 2W, 5 W, 10 W, FM average, AM PEP
Power reduction protection	high VSWR, high temperature
Harmonics	–50 dBc
Spurious emission	–70 dBc

VHF/FM receiver specifications

Sensitivity (30 MHz to 512 MHz)	FM: –115 dBm, 10 dB SINAD

Power supply

Input voltage	14 V to 33 V DC 19 V to 30 V fully specified

Fast data modes (optional)

HF modes (FF)	STANAG 4285 waveform up to 3600 bit/s VHF mode (FF)R&S proprietary waveform up to 72 kbit/s

Automatic link establishment (optional for HF)

Specifications	MIL-STD-188-141B, App. A

Voice processor (R&S SECOM only)

Vocoder	
bitrate	HF: 1200 bit/s VHF: 4800 bit/s

EPM (optional)

Frequency hopping modes	
HF	R&S SECOM-H
VHF/FM	R&S SECOM-V
Encryption	R&S SECOM embedded voice/data encryption

Environmental conditions

Temperature range (MIL-STD-810E methods 501.3 and 502.3)	
Operational	-40°C to +70°C
Fully specified	-25°C to +55°C
Storage	-40°C to +85°C
Temperature shock	to MIL-STD-810E method 503.3
Shock	to MIL-STD-810E method 516.4
Vibration	to MIL-STD-810E method 514.4
Waterproofness	1 m immersion during 2 hours, to MIL-STD-810E method 512.3
Sand and dust	to MIL-STD-810E method 510.3
Solar radiation	to MIL-STD-810E method 505.3
Icing and freezing rain	to MIL-STD-810E method 521.1
Salt fog	to MIL-STD810E method 509 .3
Low pressure (altitude)	to MIL-STD810E method 500.3, proc. I+II 5000 m above sea level at <+35°C
Humidity	to MIL-STD810E method 507.3 (cycle5), 33°C/63°C, 75% RH, 15 days
Fungus	to MIL-STD810E method 508.4
EMI	to MIL-STD-461, CE 102, CE106, CS101, CS103 to 105, CS 114, RE102, RS103, RS105
Bench handling	to MIL-STD810E method 516.4, proc.VI

Dimensions (W x H x D)	199 mm x 74 mm x 309 mm (with battery pack)
Weight	<5.9 kg (with battery pack Li-Ion)

Accessories (optional)

Handset, headset, battery charger, loudspeaker with external 3 W audio amplifier

External control units, data terminals

Data terminal (DT) for field use, fill gun, message handling PC software, mission planning PC software, remote control terminal, remote control software (installed on a PC) for remote control of the radio

Antennas

HF whip antenna 2.4 m, VHF whip antenna 1.5 m, short rod antenna VHF, long wire antenna, dipole antenna for VHF and HF range, other antennas on request

External amplifiers

50 W VHF power amplifier, 50 W VHF/UHF power amplifier, 150 W HF power amplifier

External antenna tuning units

Vehicular antenna tuning unit HF 150 W

Docking stations

Docking station for one or two radios, one or two 50 W VHF power amplifiers and a switchbox (DDS)[1] or auxbox (SDS)[2]

Batteries	Li-Ion (rechargeable) or $LiSO_2$ (primary)
Autonomy/capacity at +25°C	(FF-operation, duty cycle TX/RX/Stdby = 1:1:8, 50 Ω termination)
Li-Ion	VHF (5 W, FM): 20 h, HF (10 W, SSB): 15 h
$LiSO_2$	VHF (5 W, FM): 25 h, HF (10 W, SSB): 17 h

[1] Double docking station.
[2] Single docking station.

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