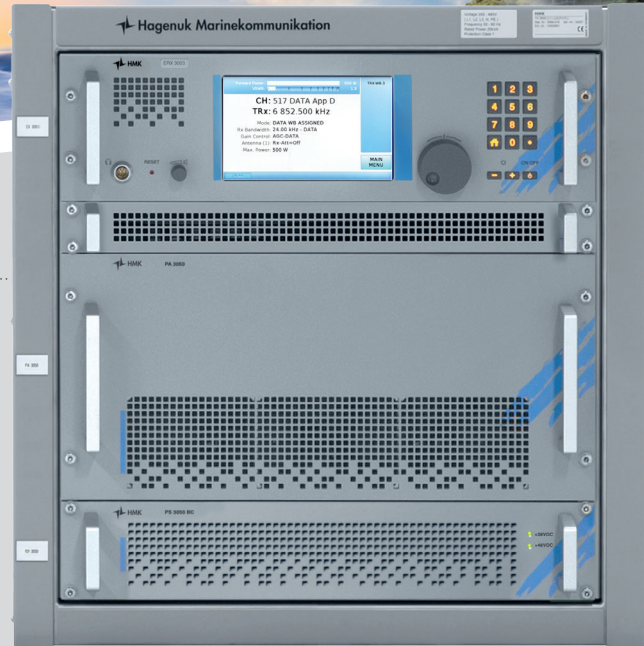


TRX 3050 M

500 W HF Transceiver



TRX 3050 M standard version in 19" rack providing rack space for optional enhancements.

TRX 3050 M 500 W HF Transceiver

The TRX 3050 M is a software-based HF transceiver rated at 500 W PEP/average output power for tactical and strategic HF communication, providing 24 kHz wideband capability.

Form factor and technical design of this basic configuration allows easy replacement of existing Series 3000 TRX 3050, also in integrated systems.

KEY FEATURES

Wide range	Full HF range, TX starting with 1.5 MHz, RX path also covering VLF Band	Modular system approach	This TRX 3050 M forms the basic unit for highly scalable modular HF system designs, a wide range of optional pre-integrated accessories are available supporting maritime needs
High speed @HF	Optimized 24 kHz system design allows data transfer, comparable to satellite communication	Fully software defined	Radio and accessories allow flexible adaptation to customer requirements
Heavy duty design	Capable for 24/7 transmission	Frequency hopping	Designed for integration with external hopping controller to satisfy any customer requirements, e.g. acc. to NATO or any proprietary standard, like MAHRS or others
Rugged design	Especially designed for harsh naval environments on vessels and submarines, providing enhanced co-site performance		
Enhanced integratability	Flexible interfaces, supporting seamless integration onboard		
Full interoperability	Supporting wide range of STANAG and MIL-STD waveforms and modes		



Hagenuk Marinekommunikation

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TECHNICAL DATA

Frequency range	1.5 MHz – 30 MHz transmit, 10 kHz – 30 MHz receive
Frequency resolution	1 Hz
Frequency tuning	Via local keyboard or remote control
RF output power	500 W \pm 1 dB, PEP/average at 50 Ω
Reducing of output power in steps of	-3 dB, -6 dB, -10 dB, -20 dB
Adjustment of maximum power	In 0.1dB steps down to -9.9 dB
Channel memory	1000
Frequency stability	$< 1 \times 10^{-8}$
Frequency changing time	≤ 10 ms
Modes of operation	
Standard	AM (A3E), SSB (J3E USB/LSB), Data USB/LSB/ISB, ISB (B8E), CW (A1A, A2A, H2A), FSK (F1B), AME (R3E, H3E, H3W), FM (F3E)

INTERNAL OPTIONS AND SCALABILITY

Data communication	In conjunction with external MDM3010 E, the radio supports basically narrowband legacy waveforms up to 19,200 bps and can easily be scaled to wideband waveforms via software up to comply MIL-STD-188-110C, appendix D (up to 24kHz).
2 Channel ISB	Acc. to MIL-STD-188-110C, appendix F
HF wideband capability, up to 24 kHz bandwidth	Acc. to STANAG 4203 Ed. 3 (prepared for Ed. 4); in conjunction with MDM 3010 E providing full support of MIL-STD-188-141D Appendix A (ALE 2G) Appendix C (ALE 3G); incl. STANAG 4538 Appendix G (ALE 4G (WALE), up to 24 kHz) The ALE features are scalable by software in MDM 3010 E modem controller.
L11	Full radio support of Link 11, acc. to MIL-STD-188-203-1A, STANAG 5511 ¹⁾
L22	Full radio support of Link 22, acc. to STANAG 5522 ¹⁾
MSK(5030)	Full radio support of Multiple Shift Keying, acc. to STANAG 5030 ²⁾
FH	Full radio support of ECCM acc. to MAHRS or other proprietary frequency hopping ³⁾
LK	Full radio support of Link Y, proprietary Link-standards for non-NATO customers ⁴⁾

¹⁾ with external DTS / SPC, ²⁾ with external MSK demodulator, MSK 3003 E (pls refer to separate HMK brochure), ³⁾ with external FH controller, integration service may become necessary for new hopping controllers ⁴⁾ requires Link controller equipment from dedicated OEMs, other proprietary LINK systems can be integrated upon request, ⁵⁾ requires separate FillGun service Tool

Interfaces

I/O Audio	600 Ω balanced, 0 dBm adjustable
Remote control	Serial data RS232, 422, 485 LAN 10/100/1000 BASE-T Ethernet

Input for external frequency standard 10 MHz, 0 dBm \pm 10 dB, 50 Ω

Frontpanel socket	Microphone PTT (0V = transmit) Interface for software updates/upgrades in field ⁵⁾
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Comprehensive built-in test (BITE)

Suppression of unwanted sideband > 60 dB/PEP

Carrier suppression	J3E, ISB, Link 11: > 60 dB/PEP H3E, H3W: 4.5 dB to 6 dB / PEP R3E: 18 dB \pm 2 dB / PEP
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Suppression of intermodulation products 3. order > 36 dB / PEP (two-tone signal with power amp.)

Harmonics suppression > 60 dB / PEP

Noise suppression (inband) 80 dBc / Hz

Noise suppression $\Delta f = >100$ Hz: >75 dBc / Hz
 $\Delta f = >100$ kHz: >145 dBc / Hz

Power supply

PS 3050 BC	115 VAC / 60 Hz / 1 phase (acc. to STANAG 1008 Ed. 9 and MIL-STD-1399 section 300A) 230 VAC / 50 Hz / 1 phase (acc. to EN 60038)
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PS 3050 DCB (add-on-option) Nom. 24 VDC, floating, automatic switch-over, for enhanced availability (requires integration also with platform battery buffered DC supply) PS 3050 DCB adds additional height (2U) and is not placable within standard rack

GENERAL DATA

Environmental specifications

Temperature

Operation -15 °C to +55 °C, acc. to MIL-STD-810H, method 502.7 procedure II, method 501.7 procedure II

Non-operation / storage -30 °C to +70 °C, acc. to MIL-STD-810H, method 502.7 procedure I, method 501.7 procedure I

Humidity

Damp heat 40 °C, 95 % RH (non condensing), acc. to MIL-STD-810H, method 507.6 procedure II – aggravated cycle

Shock

Functional shock 30 g / 20 ms; half sine, 3 shocks per main axis (pos./neg.), acc. to MIL-STD-810H, method 516.8 procedure I – functional shock

Vibration

General vibration Acc. to MIL-STD-810H, method 514.8 procedure I – general vibration a ii (category 21 – watercraft – marine vehicles, Fig. 514.8D-11)

Environmental vibration Acc. to MIL-STD-810H, method 528.1 type I – environmental vibration (sections 5.1.2.4.2 exploratory vibration test, 5.1.2.4.3 variable frequency test, 5.1.2.4.6 endurance test)

Pressure

Low pressure (altitude) At 4.572 m (15.000 ft), acc. to MIL-STD-810H, method 500.6, procedure I (storage / air transport)

EMC

Acc. to MIL-STD-461 F, procedure CE101, CE 102, CS 101, CS 114, CS 115, CS 116, RE 101, RE 102, RS 101, RS 103
Acc. to DIN EN 60945:2003-07, chapters 9.2, 9.3 and 10.3 to 10.9

Dimensions (incl. rack)

Height 581 mm (11 U, w/o shockmounts)

Depth 673 mm (incl. handles)

Width 586 mm (19")

Weight Approx. 110 kg

Packaging dimensions (incl. rack in wooden box)

Height Approx. 760 mm

Depth Approx. 790 mm

Width Approx. 690 mm

Weight Approx. 157 kg

EXTERNAL OPTIONS AND ACCESSORIES

MDM 3010 E External HF data modem, ALE and frequency hopping controller (for further details, please refer to separate brochure)

ARQ 3010 E External IP network Over-The-Air (OTA) controller, e.g. to comply STANAG 5066 (for further details, please refer to separate brochure)

MSK 3003 E External MSK controller (for further details, please refer to separate brochure)

AK 3003 FillGun service tool for installation, SW maintenance and field updates/ upgrades

Handset HMK Mat.-No. 3028.386

Headset HMK Mat.-No. 3026.917

ATU 3050 A Automatic antenna tuner unit (ATU), with silent tuning capability, 500 W, for vessel applications (please refer to separate brochure)

NLA 3050 HMK Mat.-No.: 3076.859, ATU with silent tuning capability, for up to 500W, complete set incl. NVIS Loop antenna, for vessels (please refer to separate brochure)

ATU 3050 C ATU for installation in submarine hoistable mast (please contact HMK Sales to get support for your project)

ATU 3050 E ATU for installation in submarine hoistable mast (please contact HMK Sales to get support for your project)

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EXTERNAL OPTIONS AND ACCESSORIES

The following Series 3003 M equipment and accessories can be used in conjunction with the TRX 3050 M basic unit:



MDM 3010 E, software defined HF and UHF WB Modem & ALE controller



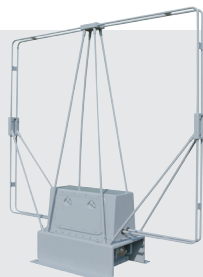
ARQ 3010 E, HF / UHF OTA network controller



MSK 3003 E, fully software defined MSK demodulator



ATU 3050 A, antenna tuning unit for whip antennas on vessels



NVIS Loop antenna system incl. optimised ATU, for vessels



ATU 3050 C, special ATU design, optimised for submarine use



ATU 3050 E, special ATU design, optimised for submarine use



Handset, Headset

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**TRX
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