TRX 3015

150 W HF Transceiver

TRX 3015
with optional 19" rack

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FEATURES

Output power	150 W PEP and average
Software defined	Easy upgrade of waveforms
Operation	Combined transmit/receive antenna or separate transmit and receive antennas
Frequency hopping	ECCM capability acc. to STANAG 4444
GMDSS	With optional DSC watch receiver / controller
Built-in test	Comprehensive built-in test
Optional HF messaging suite for	■ E-mail acc. to STANAG 5066 ■ X400 e-mail acc. to STANAG 4406 Annex E ■ Military Messaging ACP 127 ■ MIL-Chat XMPP ■ Offline encryption

GENERAL

The TRX 3015 is a software defined transceiver rated at 150 W output power for communication in the short wave (HF) frequency band, particularly suitable for:

- ■ Operation on board of all kinds of naval ships
- ■ Military and civilian land based installations
- ■ Mobile stations, e.g. vehicle cabins for special applications
- ■ Stations for border control, police and other security organisations
- ■ Embassy nets
- ■ Stations for international organisations

Hagenuk Marinekommunikation
A company of the ATLAS ELEKTRONIK Group

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The equipment is designed for voice and data transmission and reception.
The TRX 3015 is composed of the exciter/receiver unit ERX 3000 and the integrated 150 W main power amplifier.

TECHNICAL DATA

Frequency range	1.5 MHz – 30 MHz transmit, 10 kHz – 30 MHz receive
Frequency resolution	1 Hz
Frequency tuning	Via keyboard and/or single knob flywheel
RF output power	150 W ± 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 0.1 dB steps down to -9.9 dB
Channel memory	1000
Frequency stability	$< 1 \times 10^{-8}$ per day, options on request
Frequency changing time	≤ 10ms
Modes of operation	
Standard	AM (A3E), SSB (J3E USB/LSB), Data USB/LSB/ISB, ISB (B9W), CW (A1A), FSK (F1 B), AME (R3E, H3E, H3W)
Optional	Link 11 with external L11 modem, acc. to MIL-STD-188-203-1A Frequency hopping: (with optional FH controller), acc. to STANAG 4444 L22 with external L22 equipment acc. to STANAG 5522
Input for external frequency standard	10 MHz, 0 dBm ± 10dB, 50 Ω, BNC connector Optionally 1 MHz, 5 MHz and 10 MHz, 0 dBm +10 dB / -4 dB , 50 Ω
Control interface	RS 232, RS 422, RS 485 and RS 422 Bus 1200, 2400, 4800, 9600, 19200, 38400 Baud

Passband tuning	± 50 % of selected bandwidth in 10 Hz steps
BFO	± 5 kHz in 10 Hz steps
Sensitivity	Without HF-preselection (10 dB, SINAD with CCITT-Filter) A3E at m=0.5, B=6 kHz 40 kHz – 200 kHz < 2 μV 0.2 MHz – 30 MHz < 1.5 μV A1A at B=300 Hz 10 kHz – 40 kHz typ. 0.5 μV 0.04 MHz – 30 MHz < 0.2 μV J3E at B=0.3 kHz – 2.7 kHz 10 kHz – 40 kHz typ. 1.5 μV 0.04 MHz – 30 MHz < 0.5 μV
Scan functions	Scan by channel, frequency sweep
IF-bandwidths	0.1, 0.15, 0.3, 0.6, 1.5, 2.4, 2.7, 3.2, 3.4, 6.0, 7.0 kHz, others on request
AGC	Selectable 25, 200, 500, 1000 ms. Output is maintained within 3 dB for a change in input of 134 dB for input levels between 0.4 μV$_{EMF}$ and 2 V$_{EMF}$
Intercept point	(3rd order) > 30 dBm (1 MHz – 30 MHz)
Suppression of unwanted sideband	> 60 dB/PEP
Carrier suppression	J3E, ISB, Link 11: > 50 dB/PEP H3E, H3W: 4.5 dB to 6 dB / PEP R3E: 18 dB ± 2 dB / PEP
Suppression of intermodulation products 3. order:	> 36 dB / PEP (two-tone signal with power amp.)
Harmonics suppression	> 60 dB / PEP

Detached front panel DFP 3000 (option)

Internal 40 dB pre/interselector PSI 3000 (option)

A broad range of built-in and external options are available to enhance its capabilities which includes adaptive high speed modems for data communication, automatic link establishment, antenna tuning, GMDSS operation, etc. The external power supplies PS 3015 is available as an add-on 19" unit, both units may be housed in a common cabinet optionally.

Noise suppression (inband)	80 dBc / Hz
Noise suppression	Δf = >50 kHz: >138 dBc / Hz without interselector Δf = >500 kHz: >145 dBc / Hz without interselector
Power supply input	
ERX 3000 , PA 3015	28 VDC
PS 3015 AC (external), mains input	100 VAC –265 VAC or 200 VDC – 300 VDC, 47 Hz – 400 Hz
Optional input	21 VDC – 32 VDC, floating
Power consumption	Approx. 750 VA, automatic switch-over in case of mains interruption
Operating temperature	-15 °C to +55 °C
Humidity	max. 95 % up to 40 °C
Shock	acc. to BV 0430, sheet 16 (without shockmounts), 30 g / 11 ms resp. 15 g / 20 ms all directions
Vibration	acc. to BV 0440, diagram 1 and 6 (-10 dB)
EMI/EMC	acc. to VG 95373/IEC 945 and MIL-STD-461 C/462

Dimensions	TRX 3015	PS 3015
Height	133 mm (3 U)	88 mm (2 U)
Depth	max. 490 mm (without handles)	max. 430 mm
Width	483 mm (19" unit)	

Weight (approx., without options)	TRX 3015 PS 3015 / AC	PS 3015	
	11.5 kg	9 kg	6 kg

PSI 3000	HF pre- / interselector, 1.5 MHz - 30 MHz band pass filter, selectivity: min. 40 dB at 10 % frequency deviation, autom. tuning within < 10 ms, < 1.5 MHz low pass filter
ALE 3000	2G ALE controller
MDM 3003	High speed modem with 2G and / or 3G ALE, up to 19.2 kbps
STR 3000	Link 11 / 22 side tone receiver
IB 3000	Interface board, BCD frequency output (TTL-level 100 Hz steps), NMEA interface for GMDSS functions
FS 3000 M	1 MHz freq. reference output interface for VLF-MSK demodulator MSK 1001 M
FS 3000	1.5 MHz and 10 MHz reference input interface with 1 MHz ref. output for VLF MSK demodulator MSK 1001 M

Antenna coupler ATU 3015 (option)
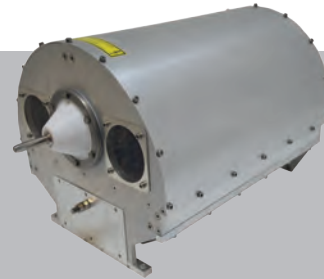

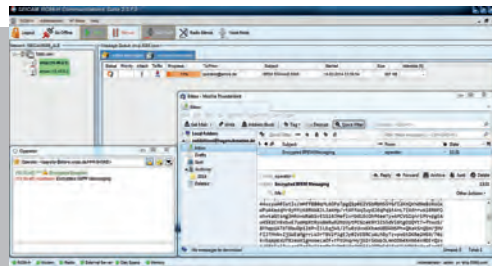High speed antenna coupler ATU 3050 A (option)

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ATU 3015	Automatic antenna tuner unit (ATU) with silent tuning capability, 150 W
ATU 3050 A	ATU with silent tuning capability, 500 W
ATU 3050 C	ATU with silent tuning capability, 500 W
DSC 3002	GMDSS watch receiver / controller
DFP 3000	Detached front panel
RS 1010	Rubidium frequency standard for up to 6 transceivers
SEICAM 5066	MS Windows based messaging suite for e-mail STANAG 5066, X400 e-mail STANAG 4406 Annex E, MIL-Chat XMPP, ACP 127
RCS 3000	Windows remote control software
19" rack	With internal cabling
Headset	Dynamic headset with PTT switch

The title page shows TRX 3015 with optional 19" rack.

High speed antenna coupler ATU 3050 C for submarines (option)

STANAG 5066 communication suite (screenshot)

Built-in modem MDM 3003 (option)