



HF/VHF COMBAT NET RADIO

TURMA family is the response to the threat of asymmetrical scenarios where the relevance of tactical communications and services is dramatically increasing. It is a multiband, multirole, multifunction tactical transceiver providing capabilities for different operational roles in the battlefield. Operation over the extended HF/VHF frequency range allows short/medium/long haul communications through LOS, ELOS, BLOS links.

The TURMA family is comprised of three variants for soldier, vehicle and fixed and semi-fixed installation requirements.

- TURMA Manpack (25W HF/SSB - VHF/FM 10W)
- TURMA Vehicular (25W HF/SSB - VHF/FM 10W)
- TURMA Vehicular/Fixed 125W HF/SSB - VHF/FM 50W for vehicular/ fixed installation with external High Power Amplifier and Antenna Tuning Unit.

Security

EPM protection is ensured in terms of both TRANSEC and COMSEC. Security of transmission is obtained by the use of frequency hopping (voice and data), enhanced by a new dedicated waveform. Security of communications is implemented as an internal crypto module.

High efficiency

With the most extended frequency range in the class (1.6 MHz to 59.9750MHz) TURMA allow any range of tactical communications in the HF/VHF band. In addition, the system has highest levels of sensitivity and autonomy.

TURMA FAMILY

Combat Net Radio Services: looking towards NCW

In line with the requirement for full integration of lower-echelon field units into the Command and Control System, TURMA offer a wide range of services, such as:

- Fully integrated CNRI capability without any additional HW
- Capability to communicate with other mobile users as well as with fixed users of the Strategic Network
- Data and voice services for selective calls or broadcasting in both plain and secure mode
- Radio Localization through embedded GPS
 - Position and speed
 - Data quality
 - Unit identifier
 - Time of data transmission
- E-mail on HF
 - Support COTS client
 - Automatic Adaptive Speed
 - Integration with ALE
 - ARQ capability
 - FAX on e-mail.

Never alone: full support and customization

TURMA systems are developed upon a software programmable architecture, in order to meet specific requirement and allow a progressive evolution.

TECHNICAL SPECIFICATION

Frequency Band	1.6MHz to 59.9750MHz
Tuning Step	1Hz (Frequency range 1.6MHz to 29.999999MHz) 25kHz (Frequency range 20MHz to 59.9750MHz FM mode)
Modes of Operation	Simplex/Half Duplex
Preset Radio Channels	100
Preset data profiles	100
Types of Service	Telegraphy (J2B) Morse (J2A) Voice plain/crypto (via internal crypto facilities) in USB/LSB (J3E), AM (A3E) and FM (F3E) FSK up to 300b/s in HF (STANAG-4481) NPSK data up to 3600b/s in HF (STANAG-4285/4529) NQAM data up to 9600b/s in HF (STANAG-4539 HDR/MIL-STD-188-110B Annex C) Data up to 16kb/s in VHF MIL-STD-188-110B (Serial Tone) up to 4800bps Frequency Hopping Voice (LPC10/MELP) and data up to 2400bps Fast Frequency Hopping Voice (CVSD) and data up to 16Kbps

Frequency Stability	+/-1*10 ⁻⁶ /day
Setting Mode of Operation	Through Alphanumeric Display and Keyboard (Frequency, Channel, etc)
Control	Local or Remote Via Internal Line Modem (up to 3km)
Transceiver dimensions (W x D x H)	250mm x 240mm x 80mm (without battery)
Transceiver weight	3.7Kg
Antennas	Whip, Tactical and Transportable Dipole, Short/ Long Wire, GPS

RECEIVER

Sensitivity (S/N=10dB)	-113dBm (SSB), -112dBm (USB, LSB), -100dBm (AM), -105dBm (FM)
Selectivity	300Hz to +3050Hz at 3dB -400Hz to +4550Hz at 60dB
Output audio level (Distortion Less Than 5%)	Headphone: 15mW/600ohm Speaker 150mW/4ohm
IF & image rejection	80dB minimum (in HF band)

TRANSMITTER

RF output power (50 ohm)	TURMA Manpack: 25W average and PEP (SSB), 10W (FM) TURMA Vehicular: 25W average and PEP (SSB), 10W (FM) TURMA Vehicular/Fixed: 125W average and PEP (SSB), 50W (FM)
Intermodulation Products	30db min below the level of each tone
Carrier Suppression	55dB min
Harmonic Attenuation	45db min
Antenna tuning	Automatic
Tuning Time	3 sec max for any frequency, 10ms for stored frequency
Primary power	TURMA Manpack: 24Vdc from Battery TURMA Vehicular: 24Vdc nominal from Vehicular Battery TURMA Vehicular/Fixed: 24Vdc from External Power Supply Unit
Nominal consumption	TURMA Manpack: 72W max USB Voice TURMA Vehicular: 78W max USB Voice TURMA Vehicular/Fixed: 600W max USB Voice
Manpack battery life	12 hrs, based on a 9:1 receive to transmit duty cycle in USB voice mode, using 7.2Ah Nickel Metal Hydride battery

ENVIRONMENTAL

Temperature	-40°C to +55°C (operating) -40°C to +70°C (storage)
EMI	As per MIL-STD-461D
Humidity, rain, corrosion, vibration	As per MIL-STD-810F