



**HF/VHF
TACTICAL COMBAT NET RADIO
CNR 2000**



A Finmeccanica Company



HF/VHF TACTICAL COMBAT NET RADIO

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DESCRIPTION

The CNR-2000 Family is a new line of Marconi Selenia Communications HF/VHF (1.6 MHz to 60 MHz) multiband, multirole, multifunction tactical radio communication transceivers embedding within a single package the capabilities for different operational roles in the battlefield.

Operation over the extended 1.6 MHz to 60 MHz frequency range allows short/medium/long haul communications over LOS (Line Of Sight), ELOS (Extended Line Of Sight) and BLOS (Beyond Line Of Sight) links with HF and VHF tactical radios.

The open system, software programmable architecture of the CNR-2000 family allows the expansion/customisation of capabilities to meet specific requirements and a progressive evolution towards future configurations of the 21st Century tactical radio, in line with the requirement for full integration of lower-echelon field units into the Command and Control System.

The CNR-2000 equipment have embedded facilities for operation as elements within radio networks and as radio communication components interfacing with wired communication systems, providing:

- Situational awareness using GPS positioning data
- CNRA (Combat Net Radio Access) services, such as addressed call facilities between CNR-2000 users and connection to external tactical and infrastructure networks.

EPM protection can be provided by a TRANSEC/COMSEC proprietary scheme implemented as an EPM internal SW module.

STANAG-4444 will be implemented as a future enhancement of the HF EPM capability.

The CNR-2000 Family includes the following equipment:

- SRT-178/M 25W HF/SSB - VHF/FM 10W for manpack use
- SRT-178/VM 25W HF/SSB - VHF/FM 10W for vehicular installations
- SRT-278/VM 125W HF/SSB -

VHF/FM 50 W for fixed/semifixed installations with external High Power Amplifier and Antenna Tuning Unit

The primary role of the SRT-178/M is to operate as a Combat Net Radio in voice/data wireless networks in the Forward Area, providing connection between group members at different levels.

These capabilities mean unconstrained mobility, operational flexibility and quick deployment in the tactical battlefield.

The SRT- 178/VM and SRT-278/VM are primarily intended for deployment in vehicular, sheltered or fixed Command Posts.

All the above three configurations, are built around a common Receiver/Exciter Unit which is associated with:

- a built in RF Power Amplifier suitable for rated RF power level
- a built in Automatic Antenna Tuning Unit capable of matching a wide selection of tactical whip and wire antennas and mounting



25W manpack HF transceiver CNR2000

hardware specific to the type of installation.

The vehicular transceiver is designed for operation from the vehicle's battery while the SRT-

178/M is provided with a rechargeable battery pack contained in a battery case secured to the Transceiver package (there is a choice of different battery types).

The user friendly Man Machine interface allows the selection of the operational modes by unskilled personnel on the field.

MAIN FEATURES

Networking features

- Extended frequency band for short, medium and longrange communications
- Backward interoperability with legacy equipment and waveforms used in military and civilian applications
- Exchange of information with correspondents at same and higher hierarchical level
- Packet rerouting to improve net connectivity
- Gateway function to extend communications outside the net
- Embedded TRANSEC/COMSEC facilities for proprietary EPM protection, implementation of STANAG-4444 as growth capability
- Embedded GPS providing positioning data (Situational Awareness) and accurate time on TRANSEC/COMSEC operation
- Embedded multiwaveform modem for data rates up to 9.6kb/s
- Embedded ALE (Automatic Link Establishment) function as per

MIL-STD-188-141A

- Third generation ALE in accordance with STANAG 4538 (fast link set up) as growth capability
- HF-HF and VHF-HF rebroadcast capabilities
- Embedded Combat Net Radio Access (CNRA) to Area System
- Selective call
- Stand-by mode retaining all configuration data
- Data Link Protocol STANAG 5066 with HF Email service (SW suite WINDOWS OS based).

Technology

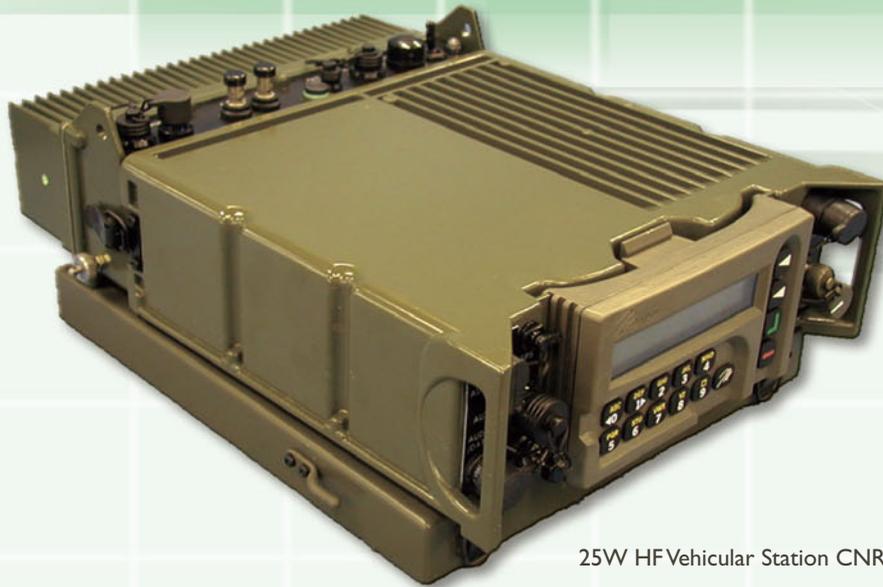
- SW Digital Radio Architecture based on a real time operating system and on extensive use of digital DSP (Digital Signal Processing)
- RF Front-End using SMD components

Functional features

- Easy features upgrading by SW download

- Preplanned Product Improvement
- Software programming/reprogramming interface
- CVSD voice coding
- LPC-10 voice coding
- MELP voice coding as growth capability
- Simplex transmit and receive SSB operation over the HF band, FM over the VHF band
- Incorporated continuous and interruptive BITE facilities for isolation and front panel indication of a faulty module
- User friendly operator interface
- Automatic antenna tuning with memory storage of tuned configurations
- Preset channel operation with 100 prestored channels configurable
- Preset modem configuration with 100 prestored modem profiles
- Local and remote control facilities

125W HF Vehicular Station CNR2000



25W HF Vehicular Station CNR2000



125W HF Vehicular Antenna Tuning Unit



125W HF RF Vehicular Power Amplifier

TECHNICAL SPECIFICATIONS

| | |
|--|---|
| Frequency Band | 1.6 - 60 MHz |
| Tuning Step | 1 Hz (Frequency range 1.6-30 MHz) 25 kHz (Frequency range 20-60 MHz 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 and MIL-STD- 188-110A) - NQAM data up to 9600b/s in HF (STANAG-4539) - Data up to 16kb/s in VHF |
| Frequency Stability | +/-1*10-6 /day |
| Setting Mode of Operation (Frequency, Channel, etc) | Through Alphanumeric Display and Keyboard |
| Control | Local or Remote Via Internal Line Modem (up to 3km) |
| Transceiver dimensions | 250mm(W) x 240mm(D) x 80mm(H) without battery |
| Transceiver weight | 3.7 Kg |
| Antennas | Whip, Tactical and Transportable Dipole, Short/Long Wire, GPS |
| Receiver | |
| Sensitivity (S/N=10dB) | -110 dBm (USB, LSB), -97 dBm (AM) -100 dBm (FM) |
| Selectivity | 300Hz to +3050Hz at 3dB -400Hz to +4550Hz at 60dB |
| Output audio level (Distortion Less Than 5%) | Headphone: 15mW/600 ohm Speaker 150 mW 4 ohm |
| IF & image rejection | 80dB minimum (in HF band) |
| Transmitter | |
| RF output power (on 50 ohm) | - SRT-178/M : 25W average and PEP (SSB), 10 W (FM) - SRT-178/V : 25W average and PEP (SSB), 10W (FM) - SRT-278/V: 125W average and PEP (SSB), 50W (FM) |
| Intermodulation Products | 30db min below the level of each tone |
| Carrier Suppression | 50dB min |
| Harmonic Attenuation | 45db min |
| Antenna tuning | Automatic |
| Tuning Time | 3 sec max for any frequency, 10 ms for stored frequency |
| Primary power | - SRT-178/M manpack: 24 Vdc from Battery - SRT-178/V Vehicular: 24 Vdc nominal from Vehicular Battery - SRT-278/V Vehicular: 24 Vdc nominal from Vehicular Battery |
| Nominal consumption | - SRT-178/M : 72W max USB Voice - SRT-178/VM: 78W maxUSB Voice - SRT-278/VM: 600 W max USB Voice |
| Manpack battery life | 10 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 |



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Marconi Selenia Communications S.p.A.

Viale dell'Industria, 4 - 00040 Pomezia RM
Tel. +39 06 910911 - Fax +39 06 9109339
e-mail: marketing@marconiselenia.com

Via A. Negrone 1/A - 16153 Cornigliano GE
Tel. +39 010 60021 - Fax +39 0106501897

Marconi Selenia Communications Ltd

Marconi House, New Street, Chelmsford, CM 1 1 PL - UK
Tel. +44 1245 353221 - Fax +44 1245 287125

Marconi Selenia Communications GmbH

Gartenstrasse, 106 - 71522 Backnang - Germany
Postfach (P.O.Box) 1980 - 71509 Backnang
Tel. +49 (0) 719113-0 - Fax +49 (0) 719113-3821

Marconi Selenia Communications Romania Srl

8, Dr. Louis Pasteur - 76206 Bucharest - Romania
Tel. +40 (0) 1 4109530 - Fax +40 (0) 1 4109550

Marconi Selenia Kominikasyon A.s.

Konya Yolu Km. 25 - 06830 Golbasi (Ankara) - Turkey
Tel. +90 (0) 312 4845181 - Fax +90 (0) 312 4844332

Marconi Selenia Communications Do Brasil

Brasilia (BR) - SHIS Q126 Conj 5 Casa 4 Bairro:
Lago sul Brasilia DF CEP 71670-050 Brasil
Tel. +55 (0) 61 3673530 - Fax +55 (0) 61 3674412