

GRETACODER[®] 104

Voice Scrambler

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Secure Voice System for Radio Communication

The GRETACODER 104 has been specifically designed to provide a sophisticated means for secure radio communication. Radio communication in general and high frequency (HF) radio communication in particular pose a number of unique problems such as fading, poor signal-to-noise ratios, etc. The ease of interception by any number of the hundreds of thousands of receivers in operation around the world demands a suitable voice security system. Of course, operation with the GRETACODER 104 is also possible over telephone channels.



Security

The GRETACODER 104 uses digital signal processing, very long cipher programs and microprocessor control to provide the highest level of tactical security. Keys are introduced with convenient front panel controls. Nine keys can be stored and subsequently selected. Stored keys are not recallable and remain in an electronic memory for several years without external power. The first digit of the selected key determines the security mode: two dimensional coding or time division only.

User Friendly Operation

Voice control facilitates crypto conversations in "quasi duplex" on duplex channels – similar to intercontinental telephone communications via satellite but with the possibility of reverse signalling and "break-in". A simplex (push-to-talk) mode is available for simplex channels.

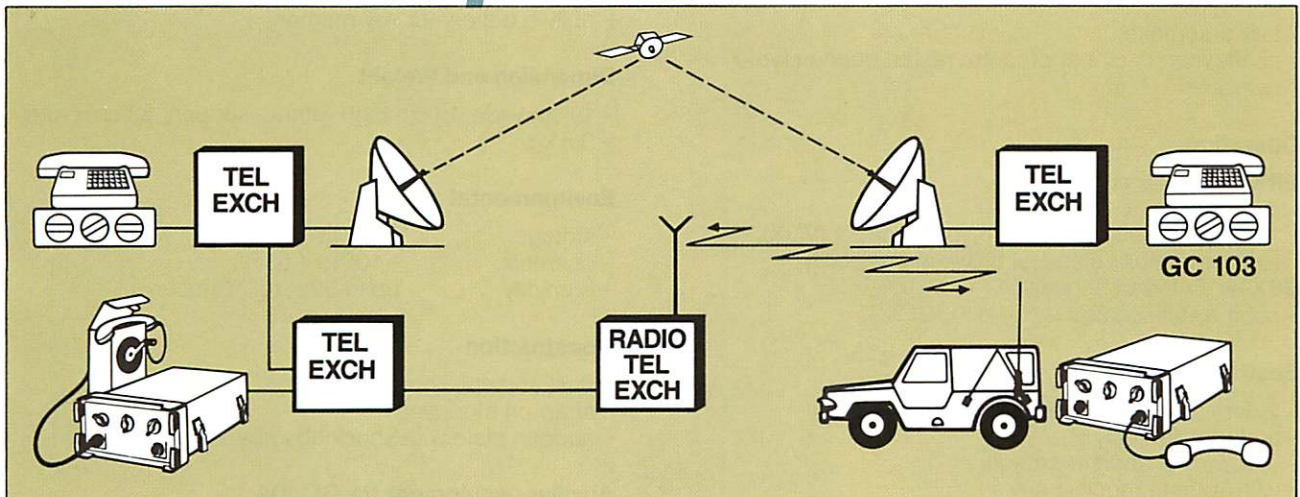
Changeover from clear to crypto or vice versa is fully automatic and remote controlled by either station. The automatic gain control compensates for variations in loudness on different channels.



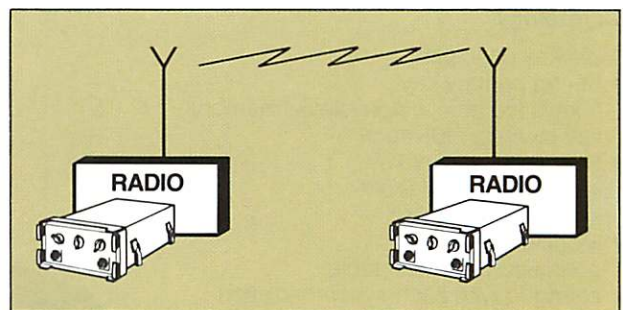
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Reliability

The GRETAGCODER 104 includes BITE (built-in-test-equipment) to check the principal circuits without the need of external test equipment.



DPX Operation with Duplex Radios



SPX Operation with Half Duplex or Simplex Radios

The Company

GRETAG has specialized in the development, manufacture, and sale of encryption systems for more than 40 years. Continuing innovation and experience have formed the basis for a complete line of the highest security encryption systems for military and civil applications.

Specifications

Technique

- digital speech processing at 64 Kbit/sec by CVSD delta modulators
- microprocessor master control
- 8 fragment time and frequency division algorithm
- fast nonlinear pseudorandom cipher program generator
- supervisor for suppression of nonsuitable segment combinations
- total delay in crypto: 480 ms (short fragment) or 960 ms (standard fragment)

Clear/Crypto changeover

- automatic, initiated by either station
- remote control possibility

Synchronization

- fully automatic
- no resynch or cipher program restart during crypto operation

Operation

DPX for duplex channels:

- duplex in clear
- "quasi duplex" in crypto with voice control (VOX), reverse signalling and/or break-in possibility

SPX for simplex channels:

- push-to-talk control

Security Modes

- 2 dimensional (time and frequency division)
- time division only
- standard or short segments
- with/without modifier key

Cryptology

Triple key principle

- Secret primary key:
9 keys storable in nonvolatile memory
key diversity: 10^8 each
- Secret secondary key:
stored in internal ROM
key diversity: 5×10^6
- Modifier key:
operation user selectable
changed with each synchronization

Period length of cipher program: $2,5 \times 10^5$ h (short fragment) or 5×10^5 hours (standard fragment)

Channel Requirements

- standard voice grade channels
- radio, including: HF, VHF, UHF and SSB
- duplex or simplex
- min S/N ratio: 10 db
- max SSB frequency drift: 100 Hz

Radio Interface

- fully programmable with DIL Switches
- Transmit mode:
 - input sensitivity: 5 mV to 1 V
 - input impedance: 600 Ohm to 10 kOhm
 - output: 5 mV to 1 V, low impedance
 - bandwidth: 300 to 3000 Hz typ
- Receive mode:
 - input sensitivity: 100 mV to 2 V
 - input impedance: 20 Ohm to 10 kOhm
 - output: up to 2 W into 4 Ohm or 3 V into 600 Ohm

Power

- voltage: 11 to 15 V DC, ground negative (24 V DC optional)
- current: 300 mA
- built-in battery for key memory

Dimension and Weight

- 19 cm wide, 10 cm high without support, 33 cm deep
- 3,5 kg

Environmental

- storage: -20° to $+70^\circ$ C
- operation: -10° to $+55^\circ$ C
- humidity: up to 92% rel. h. max.

Construction

- dust and splashproof housing
- snap-on mounting
- support plate with shock absorbers

Auxiliary equipment for GC 104:

- HS 104 (Handset with push-to-talk)
- RC 104 (deluxe handset with remote control)
- RA 104 (Radio Adapter)

Continuous development and improvement is one of our policies, therefore we reserve the right to modify technical specifications without notice.




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