# RT1
## Wearable Voice & Position Encryptor

TAC
DIVISION



GPS / GLONASS

Radio

Actual Size

Handset / Headset

## Features and Benefits

- AES-256 Encryption: Voice & Position Transmissions
- GPS & GLONASS Positioning Built-in
- 600 – 2400 bps Automatic Digital Voice Rates
- TWELP* Vocoder - High Voice Clarity
- Dedicated MEDIVAC and ATTACK Alert Buttons
- Automatic Clear Voice Reception (FM/SSB)
- Best-in-class RapidM Voice Modem Performance
- V/UHF & HF Transceiver Compatible (SSB & FM)
- Cross-Vendor Radio Interoperability
- Extended Range, including BLoS Links
- Automatic Periodic Position Transfer
- Over-the-Air compatible with RT3, RT5 and RT7
- RT1 Handset / Headset / Speaker-Mic Variants
- 4.5 – 18 V DC Input with Surge Protection
- 2 Year Warranty
- Zeroize Function
- Blue Force Tracking via TacPoint

*\* TWELP Voice Coding by DSP Innovations Inc. (www.dspini.com)*

## Secure Voice & Position For Any Radio

The **RapidM RT1** provides communication clarity to frontline soldiers whilst providing commanders with vital blue-force position information. The **RT1** is a high performance in-line secure digital voice modem with built-in GPS.  The **RT1** allows radios from different vendors to interoperate securely.

## Information Security

All radio communications are vulnerable to eavesdropping. The **RT1**'s built-in AES encryption means that all communications are secured by a trusted algorithm.

## Position Tracking & Emergency Alerts

The **RT1** can be configured to send out periodic position reports. These can be received and displayed by **RapidM RT5** units and the **TACPOINT** PC software. The **TACPOINT** software can also pull positions from **RT1** units, if so configured.

The **RT1** provides dedicated buttons for broadcasting MEDIVAC or ATACK alerts including position in emergency situations. These alerts are audible to other **RT1** users and visible on the **TACPOINT** Situational Awareness map display.

## Superior Modem Performance

Long-range communication is prone to interference and noise. Both digital voice and data operation benefits from RapidM's superior technology and experience in HF modem design. The latest generation Vocoder-modem-combination dramatically improves voice quality in adverse channel conditions, extending the range of voice communications.

REACHING
BEYOND
BOUNDARIES

| | |
|---|---|
| **KEY FILL** | 256 different user selectable cryptographic keys.<br>New key sets can be generated via **KMS-256** and loaded via **CLS** software which runs on a MS Windows tablet/laptop.<br>Key Fill and configuration happens via a Serial or Bluetooth interface. |
| **SECURITY** | Advanced Encryption Standard (AES), 256-bit key length.<br>Key index selection via keypad. |
| **MODEM** | High performance serial tone HF and V/UHF modem (Beyond Line of Sight [BLoS] compatible) featuring adaptive equalization.<br>Dedicated digital voice waveform HF-2T. |
| **VOCODER** | **TWELP:** Tri-Wave Excited Linear Prediction high performance vocoder.<br>600, 1200 & 2400bps Low-rate Vocoder: Automatic Data Rate Change.<br>300bps for incoming point-to-point robust voice calls. |

| TWELP DIGITAL VOICE PERFORMANCE | VOCODER RATE [bps] | END-TO-END LATENCY [s] | PESQ | CHANNEL USE | SPEECH QUALITY | | UNDERSTAND-ABILITY LIMIT SNR [dB] | |
|---|---|---|---|---|---|---|---|---|
| | | | | | INTELLIGIBILITY | SPEAKER RECOGNITION | CCIR POOR | AWGN |
| | 2 400 | 1.6 | 3.1 | Ground Wave | Very Good | Good | 6.5 | 0.5 |
| | 1 200 | 2.2 | 3.0 | Sky Wave | Good | Acceptable | 4.0 | -0.5 |
| | 600 | 2.2 | 2.4 | Sky Wave | Acceptable | Fair | 0.5 | -3.0 |

| HARDWARE | | ENVIRONMENTAL | |
|---|---|---|---|
| **WEIGHT** | 170 g  with mounting strap (excludes handset & cables) | **SAFETY** | IEC/EN 60950 |
| **SIZE** | 117 x 52 x 20  mm | **EMC/EMI** | MIL-STD-461 |
| **COLOUR** | Olive Drab / Military Green  (RAL6022) | **SHOCK** | MIL-STD-810F: 40G, 15 - 23 ms |
| **MOUNTING** | 1" webbing strap. MOLLE / PADS compatible | **VIBRATION** | Composite wheeled vehicle 10Hz – 2000Hz, @2.5g |
| **POWER INPUT** | 4.5 - 18 V DC | **TEMPERATURE** | -40°C to +65°C (operating), -40°C to +85°C (storage) |
| **BLUETOOTH** | Key Fill & Configuration interface (via **CLS**) | **HUMIDITY** | MIL-STD-810F: 0 to 90%, non-condensing |
| **GPS / GLONASS** | 12 channel, -165 dBHz, active patch antenna | **INGRESS** | IP67, 1m for 30 min |

| INTERFACES | | DESCRIPTION |
|---|---|---|
| **HANDSET / HEADSET** | | **Phones**: Hardware configurable Output: Unbalanced 25mW into 1000 Ω or Balanced  1.3W into 8 Ω.<br>**Microphone:** Unbalanced Input, Mic Bias (configurable), PTT input. |
| **BLUETOOTH** | | **Bluetooth Interface:** For Configuration and FILL connection to *Config Load Software (CLS)* |
| **RADIO** | **SECURE AUDIO** | **Baseband Audio In:** Balanced / Unbalanced (cable configurable), 7V$_{RMS}$ Maximum Level, 900 Ω to 1000 Ω Input Impedance.<br>**Baseband Audio Out:** Balanced / Unbalanced (cable configurable), 3mV$_{RMS}$ to 1.77V$_{RMS}$, 320 Ω Output Impedance.<br>**Keyline:** Open Collector (36 V, 250mW tolerant). |
| | **POWER SUPPLY** | 4.5 – 18 VDC, 2000 mW max. |
| | **SERIAL PORT** | RS-232: Software update and Configuration and FILL connection to *Config Load Software (CLS)* |
| **KEYPAD / UI** | | Individual keys: SECURE/PLAIN, Volume +, Volume -, MEDIVAC and ATTACK alert broadcast (triple-press).<br>Via key combinations: Zeroize, Crypto Key selection, Bluetooth enable, Serial port enable.<br>Clear voice warning side-tone, Audio voice-prompt alerts and indication side-tones. |

## ORDERING INFORMATION

| **RT1 Stock number depends on option variant:** | **RT1-R101rrhCTE4** |
|---|---|

Where **rr** must be substituted for one of the following radio interface option abbreviations:

And **h** must be substituted for one of the following audio side option abbreviations:

**RADIO**

Ferrite

Mounting strap included

**RT1 User Manual**

**UH** U-329 Connector for HF Radio

**UV** U-329 Connector for V/UHF Radio

**NH** Unterminated for HF Radio

**NV** Unterminated for V/UHF Radio

**\*\*** Contact RapidM for radio specific connector options

**H** H-250 Handset

**E** Tactical Headset

**F** Speaker Mic

**U** U-328  Connector

**N** Unterminated

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