KEY FEATURES:
- Low cost installation (Hardware)
- Activation keys unlock software
- 96000 bps in 24 kHz channel
- 48000 bps in 12 kHz channel
- Interface for external ARQ (eg. S 5066)
- Low power consumption (1 W)
- Compact size (33 x 55 x 8 mm)
- Single 100-way connector
- Evaluation kit available

HIGH DATA RATE MODEM

The TC4 is a very compact high-performance V/UHF high data rate (HDR) modem module. The module is intended for integration into V/UHF radios and suitable for mobile or line-of-sight applications.

ADAPTABLE CONFIGURATION

Modem bandwidth is configurable to best suite radio capabilities (24, 12, 9, 6 or 3 kHz).

The low data rates (PSK modulation) are suitable for radios with a non-linear power amplifier (PA). The very high rates use QAM and require a linear PA or can work with wideband FM or AM radios.

MOBILE V/UHF

The TC4 V/UHF modem is suitable for high-speed mobile data communication applications.

High performance Doppler tacking allows operation at up to 250 km/h relative speed (at 80 MHz).
**Primary Interfaces**

<table>
<thead>
<tr>
<th>Primary Interfaces</th>
<th>Use</th>
<th>Details</th>
</tr>
</thead>
</table>
| UART 1             | Data, Config & Control, or Raw Data (option) | Rate: 4800 to 230400 bps  
Electrical: 3.3V LVTTL  
Flow Control (Raw data only): CTS/RTS, XON/XOFF |
| UART 2             | Config & Control (when UART1 is Raw Data) | Rate: 4800 to 115200 bps  
Electrical: 3.3V LVTTL  
Flow Control: None |
| CODEC              | Baseband Audio (Analogue) | Tx (output): 40 D unbalanced 2.0 V p-p  
Rx (input): 10 kΩ unbalanced 1.5 V p-p |
| McBSP              | Data, Config, Control (option) | Synchronous serial I/F McBSP port |

**Discrete Outputs**

- Radio Keyline: Active high
- Discrete Inputs
  - Radio PTT Sense: Active low
  - Reset / Power Down: Active low

**Speed Select**

- Power Saving (Optional): [3:0], Active low
- Supply: 3.3 V DC

### Bandwidth

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>Coding</th>
<th>Data Rates [bps]</th>
<th>Modem Software Options</th>
</tr>
</thead>
</table>
| 24 kHz    | C      | High Rate: 96000, 76800, 64000, 48000  
Low Rate: 32000, 16000, 9600, 4800, 2400 | V1 | V2 |
| 12 kHz    | C      | High Rate: 48000, 38400, 32000, 24000  
Low Rate: 16000, 8000, 4800, 2400, 1200 | ● | ● |
| 9 kHz     | C      | High Rate: 36000, 28800, 24000, 18000  
Low Rate: 12000, 6000, 3600, 1800, 900 | ● | ● |
| 6 kHz     | C      | High Rate: 24000, 19200, 16000, 12000  
Low Rate: 8000, 4000, 2400, 1200, 600 | ● | ● |
| 3 kHz     | C      | High Rate: 12000, 9600, 8000, 6000  
Low Rate: 4000, 2000, 1200, 600, 300 | ● | ● |

### Interleaver Length

<table>
<thead>
<tr>
<th>Interleaver Period [ms]</th>
<th>24 kHz</th>
<th>12 kHz</th>
<th>9 kHz</th>
<th>6 kHz</th>
<th>3 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Select</td>
<td>20</td>
<td>40</td>
<td>53.33</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Speed Select</td>
<td>160</td>
<td>320</td>
<td>426.67</td>
<td>640</td>
<td>1280</td>
</tr>
<tr>
<td>Speed Select</td>
<td>2560</td>
<td>5120</td>
<td>6826.67</td>
<td>10240</td>
<td>20480</td>
</tr>
</tbody>
</table>

**Installation**

- Size: 33 x 55 x 8mm (w x d x h)  
- Power: 3.3V DC, <= 1 W (typ.)

**Environmental**

- Temperature: –40°C to +85°C (operating)  
- Temperature: –40°C to +90°C (storage)

---

**Ordering Information**

<table>
<thead>
<tr>
<th>Stock Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC4-5A-W-M0-5.3</td>
<td>Module: M0 V5A (BIloader only) V5.3</td>
</tr>
<tr>
<td>TC4-5A-W-M0-KEY</td>
<td>Key: H/W Activation (Required)</td>
</tr>
<tr>
<td>TC4-SW-O-V1-5.3</td>
<td>SW MDL-V1 (VHF 562kHz 596000 bps) V5.3</td>
</tr>
<tr>
<td>TC4-SW-O-V2-5.3</td>
<td>SW MDL-V2 (VHF 5612kHz 548000 bps) V5.3</td>
</tr>
</tbody>
</table>

* Contact RapidM for Datasheets