High performing, multi-mode base stations for mission critical networks.

The Tait TB9400 "High level" base station is a multi-mode platform for analog conventional, MPT, DMR and P25 systems.

It provides both digital frequency and time division multiple access for FDMA and TDMA operations.

The TB9400 offers a spectrally efficient solution, enabling migration path between modes, with greater capacity and thus future proof your investment. It delivers operational efficiency through features such as internal voter capability, Linear Simulcast Modulation (LSM) and remote network management.

KEY FEATURES

- Simple change of mode through the web interface.
- Dual mode automatic switching between Analog and P25 conventional
- P25 and analog conventional simplex and DFSI support for ease of migration
- Adherence to P25 standards Phase1 and Phase2 (ultra-narrowband 6.25 kHz) for interoperability
- Tait DMR Access and Express solution compatible
- Simulcast and Voting in AS-IP, DMR and P25 networks
- DMR fallback into single site operation
- Linear Simulcast Modulation (LSM) to increase P25 coverage efficiency
- Migration capability from Tait AS-IP to P25 Conventional network, with dual mode, simplex and DFSI capabilities or to Tait DMR simulcast
- Analog line (supporting 4 wire E&M) in analog mode for RF linking connection and local console support
- Efficient system infrastructure scalability based on IP network connectivity
- Extensive range of remote management and monitoring capabilities with a security focus
- Built-in basic spectrum analyzer provides on-site diagnostics
- Modular structure offers variety of build options to satisfy serviceability or space constraints
- Designed to military standard MIL-STD-810G

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FEATURES AND BENEFITS

Delivering on operational needs

- Flexible network design through IP connectivity and linking
- Transfer data and voice across a packet-switched infrastructure using standard IP communications
- Robust design provides mission-critical voice communications
- P25/DMR Voice over IP (VoIP) support
- Cornerstone of a Tait P25 software-upgradable system
- Quality of Service (QoS) assignments for voice and signalling to allow optimal network packet routing
- Simulcast and Voting solutions for analog conventional, DMR Tier 2 and Tier 3, P25 conventional and trunking systems
- Built-in optional central voting facility selects the best quality signal for transmission
- LSM support means digital P25 simulcast networks require fewer sites
- C4FM simulcast operation
- Multi-DFSI support with full control or audio connectivity only in P25 and analog conventional modes
- Simplex support with antenna relay management in P25 and analog conventional modes
- Analog line support in analog conventional mode for console and system connectivity as well as relay and RF linking configurations
- Built-in Continuous Wave Identification (CWID) generation meets FCC call-sign requirements
- Remote software downloads with no impact to operations
- Built-in basic spectrum analyzer provides on-site diagnostics, by way of plotting signal level

Resiliency to manage risk and enhance safety in challenging environments

- Dual software image support for fast rollback
- Dual diversity not required due to Simulcast and automatic macro diversity
- Integrated Web HTTPS secured application to remotely monitor, diagnose and configure
- Tait smart power supply with automatic change from AC to DC for easy battery back-up
- Rated for continuous full output power
- Rugged construction with efficient heatsinks and front-to-rear fan-forced cooling
- Meets relevant MIL-STD-810G test methods

Designed to support effective deployment

- Compact modular design to minimize rack space and improve serviceability
- Migration paths between analog/ P25 conventional/ P25 trunked networks with extensive re-use
- Migration paths from analog/ MPT networks to DMR with extensive re-use
- Front panel user interface to set device IP address, where required

Delivers on Public Safety

- Benefit from the spectral efficiency, multi-vendor interoperability, security, migration and data capability demanded by P25 standards
- Designed and tested with the DMR Tier 2 Conventional and Tier 3 Trunking standards to provide customers with choice of vendor and equipment
- 6.25 kHz equivalent 2-slot TDMA for both voice and data offers spectral efficiency operation
- Ongoing communications during an outage with failsoft

- Tested using the CAP certification program, providing confidence of multi-vendor interoperability

Efficient management with a focus on security

- Remote network management utilizing built-in secure HTTPS web server and SNMP V3 support
- Detailed alarm monitoring and reporting of critical base station/repeater parameters
- 12 digital inputs to monitor external equipment
- Inbuilt diagnostics to allow technicians to remotely confirm optimal operation and identify network faults
- Enhanced security through password protection and access level control on web server
- Multiple user accounts
- System logs to provide audit records
- Ability to configure 1,000 channels to allow single configuration across sites

Future-proofed to protect your investment

- Software configurable, including mode and feature upgrades through software licenses as required
- Software upgradable to add new features and functionality to ensure that your analog/P25 solution is maintained and updated with the ever-changing needs of your market and environment

Wide range of configuration options available

- Configurable as a single channel 100W or 50W unit, or a dual channel 50W unit, with a range of DC and AC power supply options
TB9400
SPECIFICATIONS

FREQUENCY BANDS

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Range</th>
<th>Tait Band</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHF</td>
<td>136-166MHz</td>
<td>B2</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td></td>
<td>148-174MHz</td>
<td>B3</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td>UHF</td>
<td>382-420MHz</td>
<td>H1</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td></td>
<td>400-440MHz</td>
<td>H2</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td></td>
<td>440-480MHz</td>
<td>H3</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td></td>
<td>470-520MHz</td>
<td>H4</td>
<td>50W &amp; 100W</td>
</tr>
<tr>
<td>700/800MHz</td>
<td>Tx: 762-870MHz*</td>
<td>K4</td>
<td>50W &amp; 100W</td>
</tr>
</tbody>
</table>

* The actual Tx frequency coverage in this band is 762.76MHz, and 850-870MHz

REGULATORY

USA (CFR 47)  P25, Analog FM  DMR
Canada (RSS-119)  B2, B3, H1, H2, H3  B3, H1, H2
Europe (EN300-113, EN300-086, EN301-488)  B2, B3, H1, H2, H3  B3, H1, H2
Australia/New Zealand (AS/NS4768)  B2, B3, H1, H2, H3  B3, H1, H2

1 CE: EN300886 Wideband Approved
2 EN301929 Marine Wideband Approved on 100W B3 model

GENERAL

Radio specifications
- Frequency stability: ±0.5 ppm
- Channels: 1000
- Channel spacing: 12.5 kHz in analog
- Frequency increment/channel step: VHF: 2.5kHz/3125kHz, UHF: 5kHz/6.25kHz
- External frequency reference: 10 MHz/12.5 MHz (auto detect)
- Packet data: Repeated on P25 Phase 1 channels

Physical specifications
- Dimensions (HxWxD): 7 x 19 x 15.8 in (177 x 483 x 400 mm)
- Weight: Single 100 W: 46.5 lb (211 kg), Dual 50W: 54.7 lb (24.8kg)
- Operating temperature: -22°F to +140°F (-30°C to +60°C)

Power specifications
- Power Supply: 12V, 24V, 48V, PMU (+ve or -ve earth)
- AC: 88-264V (with Power Factor Correction)
- FSD rating: +/-4kV contact discharge and +/-8kV air discharge

Power consumption* (UHF)
- Standby (Single 50 and 100 W): 0.370A, 30W
- Tx @ 50W Single: 1.9A, 23W
- Tx @ 100W: 3.3A, 395W

*Note: Transmitter. These figures are specific to UHF, for other bands consult the product specification manual.

MILITARY STANDARDS 810G

Applicable MIL-STD
- Low pressure (Altitude 15000ft (4572m)) 500S 2
- Humidity 507S 2
- Vibration 514.6 1
- Shock 516.6 1

ANALOG LINE

Input  Output
- Audio interfaces 600Ω Balanced  600Ω Balanced
- Audio interface level -40dBm to 0dBm nominal (300Hz to 2.55kHz) -30dBm to 0dBm nominal (300 Hz to 2.55kHz)
- Frequency response ±0.5/-2.0dB rel. 1kHz (300Hz to 3000Hz) ±3/-4.5dB
- Passband ripple -3 - +1dB -3 - +1dB
- Audio distortion <3% typical (line to RF) <3% typical (RF to line)
**TB9400 SPECIFICATIONS**

**TRANSMITTER**

<table>
<thead>
<tr>
<th>Modulation types</th>
<th>FM, C4FM, L3M, H-DQPSK, FFSK, 4FSK</th>
</tr>
</thead>
<tbody>
<tr>
<td>P25 Modulation fidelity (TIA-102)</td>
<td>~2%</td>
</tr>
<tr>
<td>Adjacent channel power</td>
<td>-60dBc (E150) and -64dBc (TIA-102)</td>
</tr>
</tbody>
</table>

**Conducted spurious emissions**

- VHF: +36dBm 9kHz to 1GHz and +30dBm 1GHz to 4GHz
- UHF: +36dBm 30MHz to 1GHz and +30dBm 1GHz to 4GHz/12.75GHz

**Output power**

- 50W
- 100W
- Duty cycle: 100%

**RECEIVER**

<table>
<thead>
<tr>
<th>Modulation types</th>
<th>C4FM, H-CPM, Analog FM, FFSK, 4FSK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated spurious emissions</td>
<td>&lt;-57dBm EIRP to 1GHz</td>
</tr>
<tr>
<td>Conducted spurious emissions</td>
<td>&lt;-90 dBm to 1GHz</td>
</tr>
</tbody>
</table>

**P25 (TIA102)**

- Sensitivity: 0.22µV (~120 dBm) @ 5% BER
- Intermodulation response attenuation: 85dB
- Adjacent channel rejection: 60dB
- Co-channel rejection: 90dB

**DMR**

- Unfaded sensitivity ETS 300 113
  - Typical: -122dBm (0.3µW) @ 5% BER
  - Guaranteed: -120dBm (0.22µW) @ 5% BER
- Selectivity ETS 300 113: 1% BER
  - Typical: 282kHz (VHF), 79kHz (UHF)
  - Guaranteed: 78kHz @ 1% BER unfaded
- Blocking rejection: 1MHz
  - Typical: 100dB @ 1% BER

**Analog**

- Sensitivity (EIA-503): -119dBm @ 12dB SINAD (0.35µV)
- Selectivity (VHF): 85dB (VHF), 79kHz (UHF)
- Intermodulation: 85dB
- Spurious response attenuation: 20dB (ANS/TIA) and 90dB (ETS)
  - VHF/UHF: 45dB (ANS/TIA), 50dB (ETS)
  - 700/800/900MHz: 43dB (ANS/TIA)

**FRONT PANEL**

1. Status LEDs
2. 20-character 4-row LCD Display
3. Keypad
4. Flow through ventilation fans x 3 (not pictured)

**TAIT NETWORK SOLUTIONS**

Backed up by our proven radio network expertise, the TB9300 is part of our larger network offering. The Tait network solution consists of radio units, infrastructure, applications, services and integration with third party interfaces to ensure that your organization can reap all the benefits of the DMR or P25 standard in a mission critical environment.

Tait has taken every care in compiling this specification sheet, but we’re always innovating and therefore changes to our models, designs, technical specification, visuals and other information included in this specification sheet could occur. For the most up-to-date information and for a copy of our terms and conditions please visit our website www.taitradio.com.

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