## TB**7300**
SPECIFICATIONS

**tait** communications

# High performing, multi-mode, 1U slimline base station/repeater.

**The Tait TB7300 base station is a multi-mode platform for analog conventional, MPT, DMR and P25 conventional.**

**In DMR, the TB7300 provides a TDMA 6.25kHz equivalent operation and is fully compliant with DMR Tier 2 and Tier 3 standards.**

**In P25, the TB7300 provides dual mode analog/P25 and P25 conventional operation with DFSI interface.**

**Simulcast is supported in the following LMR modes: analog AS-IP, DMR Tier 2 and Tier 3, and P25 conventional.**

**This rugged slim, 1U design, IP connected base station offers a spectrally efficient solution.**



### KEY FEATURES

- Multi-mode platform supporting Analog Conventional, AS-IP (Analog Simulcast over IP), MPT, DMR Conventional, DMR Trunking and P25 Conventional modes
- Change of mode through the web interface
- Ultra-narrowband 6.25kHz equivalent technology for DMR modes (2 x TDMA channels in one 12.5kHz channel)
- Adherence to the DMR Tier 2 & Tier 3 standards
- Tait DMR Access and Express solution compatible
- Simulcast and Voting in AS-IP, DMR and P25 Conventional networks
- DMR fallback into single site operation
- Migration capability from Tait MPT to DMR Tier 3 trunked network
- MPT fallback into MPT single site operation or Analog conventional channel
- 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
- 1U slimline design with 13.8VDC Input power typical
- Based on the TB9300 DMR receiver performance

## 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

- P25/DMR Voice over IP (VoIP) support

- 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, and P25 conventional systems

- Remote software downloads with no impact to operations

- Built-in basic spectrum analyzer provides on-site diagnostics, by way of plotting signal level

- In a DMR network, the TB7300 is compatible with TB9300 bases. In analog and P25 the TB7300 is compatible with the TB9400. Also, a TB7300 Transportable version is available for incident management

### Integrated solution component

- The heart of single site trunking system with integrated node controller forming the Tait DMR Access solution

- Part of the Tait DMR Express solution with the TN9300 Node controller for small to medium DMR trunking networks

- Compatible with the TB9300 series to create mixed sites or systems

### 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 voting efficiency

- Integrated Web https secured application to monitor, diagnose and configure

- Rugged design meeting relevant MIL-STD-810G 516.6 Shock

### Developed for compact effectivenes

- Slim 1U base station easy to transport and install

- Economical solution with real estate savings, an ideal choice when space for RF equipment is limited

### Using the best of Tait base station to complement the Tait offering

- In DMR, base station/repeater with TB9300 Base Station receiver performance

- Output power selection from 2W to the maximum transmit power 40W/50W depending on the frequency band

### Designed to support effective deployment

- Analog line supporting RF linking, repeater relay and local console connection

- 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

- Migration paths between analog/ P25 conventional networks with dual mode capability

- Migration paths from analog/ MPT networks to DMR with extensive re-use

### Delivers on the benefits of the LMR standards

- Designed and tested with the DMR Tier 2 Conventional and Tier 3 Trunking standards to provide customers with choice of vendor and equipment

- 6.25kHz equivalent 2-slot TDMA for both voice and data offers spectral efficiency

- Tested using the IOP certification program developed by the DMR Association, providing confidence of multi-vendor interoperability

- Designed to the P25 Standards

### 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 feature upgrades through software licenses

- Software upgradeable to add new features and functionality to ensure that your DMR solution is maintained and updated with the ever-changing needs of your market and environment

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## FREQUENCY BANDS

| Frequency | Range | Tait Band | Configuration |
|---|---|---|---|
| VHF | 148-174MHz | B3 | 50W* |
| UHF | 400-470MHz | H5 | 40W* |
| | 470-520MHz | H3 | 40W* |

\* Note: please check the specification manual for the exact value tolerance

## REGULATORY

| | DMR, MPT, AS-IP, Analog FM | P25 |
|---|---|---|
| USA (CFR 47) | B3, H5 | (B3, H5) compliance in progress |
| Canada (RSS-119) | B3, H5 | (B3, H5) compliance in progress |
| Europe (EN300-113, EN300-086, EN301-489) | B3, H5, H3 | (B3, H5) compliance in progress |
| Australia/New Zealand (AS/NZS4768) | B3, H5, H3 | (B3, H5) compliance in progress |

## GENERAL

**Radio specifications**

| | |
|---|---|
| Frequency stability | +/- 0.5 ppm |
| Channels | 1,000 |
| Channel spacing | 12.5kHz in Analog and P25 conventional, 2 channels of TDMA 6.25kHz equivalent in DMR |
| Frequency increment/channel step | VHF 2.5/3.125kHz (or multiples of), UHF 5/6.25kHz |
| External frequency reference | 10MHz/12.8MHz (auto detect) |
| DMR Packet data | 1/2 Rate, 3/4 Rate, Full rate, Single Slot |

**Physical specifications**

| | |
|---|---|
| Dimensions (HxWxD) | 1.7 x 19 x 15.8in (44 x 483 x 400mm) 1U Rack Space |
| Weight | 14.8lb (6.7kg) |
| Operating temperature | -22° to +140°F (-30° to +60°C) |

**Power specifications**

| | |
|---|---|
| Power Supply DC | 13.8V Typical (11 - 15 VDC range)* |
| ESD rating | +/-4kV contact discharge and +/-8kV air discharge |

**Output power**

| | |
|---|---|
| VHF | Programmable 2-50W |
| UHF | Programmable 2-40W |

| **Connectors** | | |
|---|---|---|
| | Transmitter | N-type female |
| | Receiver | BNC female |
| | External reference frequency input | BNC female |
| | 1 PPS input | BNC female |
| | Network ethernet port | RJ45 |
| | Serial port | RJ12 |
| | Analog line and I/O connector | 25-way D-range |
| | DC input Power Supply Input Block | Screw terminal |

\* Note: please check the specification manual for the exact value tolerance

## MILITARY STANDARDS 810G

| Applicable MIL-STD | Method | Procedure |
|---|---|---|
| Shock | 516.6 | 1 |

## ANALOG LINE

| | Input | Output |
|---|---|---|
| Audio interfaces | 600Ω Balanced | 600Ω Balanced |
| Audio interface level | -30dBm to 0dBm nominal (300Hz to 2,550Hz) | -30dBm to 0dBm nominal (300 to 2,550Hz) |
| Frequency response | +0.5/-2.0dB rel. 1kHz (300Hz to 3,000Hz) | |
| Passband ripple | -3 to +1dB | -3 to +1dB |
| Audio distortion | <3% typical (line to RF) | <3% typical (RF to line) |
| Rx Gate | - | Logic state: active low |
| Tx Key | Logic state: active low | - |

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| TRANSMITTER | |
|---|---|
| Modulation types | 4FSK, FM, C4FM |
| P25 Modulation fidelity (TIA-102) | <2% |
| Adjacent channel power 12.5kHz static | 60dB, complies with EN 300 113 v2.2.1 (DMR) |
| **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 |
| Duty Cycle | 100% |
| **Power Consumption** | |
| Standby | 0.83A, 11.5W @ 13.8V |
| Tx @ 50W | 9.6A, 133W @ 13.8V |

| RECEIVER | |
|---|---|
| Modulation types | 4FSK, FM, C4FM |
| Radiated spurious emissions  EIA-603-D | <-57dBm EIRP to 1GHz |
| Conducted spurious emissions | <-90dBm to 2GHz |
| | |
| **P25 (TIA102)** | |
| Sensitivity | 0.22μV (-120 dBm) @ 5% BER |
| Intermodulation response attenuation | 85dB |
| Adjacent channel rejection | 60dB |
| Co-channel rejection | 9dB |
| | |
| **DMR** | |
| Unfaded sensitivity ETS 300 113 | |
| Typical | -122dBm (0.18μV) @ 5% BER |
| Guaranteed | -120dBm (0.22μV) @ 5% BER |
| Selectivity ETS 300 113 | |
| @ 1% BER | ≥82dB (VHF), ≥79dB (UHF) |
| Intermodulation response attenuation | ≥78dB @ 1% BER unfaded |
| Blocking rejection | |
| > 1MHz | 100dB @ 1% BER |
| | |
| **Analog** | |
| Sensitivity | <−119dBm (0.25μV) (12dB SINAD, centre of switching range) at 25°C (de-emphasized response) |
| Selectivity (EIA-603) | 85dB (VHF & UHF) |
| Intermodulation | 80dB (ETSI ) |
| Spurious response attenuation | ≥100dB (ANSI/TIA) and ≥90dB (ETSI) |
| FM hum and noise | |
| VHF/UHF | 45dB (ANSI/TIA), 50dB (ETSI) |

## TAIT NETWORK SOLUTIONS

Backed up by our proven radio network expertise, the TB7300 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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