

# 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 Phase 1, with AC or 13.8V DC powered options.

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

For P25 the TB7300 provides P25 Phase 1 FDMA operation for conventional and trunking.

Simulcast is supported in the following LMR modes: analog AS-IP, DMR Tier 2 and Tier 3, and P25 Phase 1 conventional.

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

The TB7300 provides a solution for small to medium radio networks, and can also operate as a simple repeater.

## KEY FEATURES

- Multi-mode platform supporting Analog Conventional, AS-IP (Analog Simulcast over IP), MPT, DMR Conventional and Trunking (TDMA) and P25 Conventional and Trunking (Phase 1 FDMA)
- Dual mode automatic switching between Analog and DMR Tier 2 (single repeater)
- Simple change of mode through the web interface, or program complex operations with TaskBuilder
- Ultra-narrowband 6.25kHz equivalent technology for DMR modes (2 x TDMA channels in 12.5kHz)
- 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 13.8V DC or AC 120V to 230V 50/60Hz mains power supply options
- High performance receiver covers full frequency range with no manual adjustment



## 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
- The TB7300 is compatible with TB9300 (DMR only) and TB9400 bases in analog, DMR, and Phase 1 P25. Also, a TB7300 Transportable version is available for incident management
- Control, customize, and enhance base station operations with TaskBuilder, by creating rules that extend the functionality of the base station. Rules can control channel changes, digital outputs, timers, and alarms, based on events and external signals
- Configurable power save for conventional systems which provides <6.7W idle current for VHF and <7.7W idle current for UHF applications (hardware dependent)

### 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
- Integrated Web https secured application to monitor, diagnose and configure
- Rugged design meeting relevant MIL-STD-810G 516.6 Shock

### Developed for compact effectiveness

- 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

- Base station/repeater with TB9400 Base Station receiver performance
- Output power selection from 2W to the maximum transmit power 35W/40W/50W depending on the frequency band

### Designed to support effective deployment

- Analog line supporting RF linking, repeater relay and local console connection
- Multi-DFS support with full control or audio connectivity only in P25 and analog conventional modes
- Simplex operation capable in DMR, 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 and P25 open industry standards
- DMR voice and data spectral efficiency 2-slot TDMA channels (6.25kHz equivalent)
- Tested using the IOP certification program developed by the DMR Association, providing confidence of multi-vendor interoperability
- Tested and compliant to the P25 Compliance Assessment Programme (CAP)

### 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 4,000 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 LMR solution is maintained and updated with the ever-changing needs of your market and environment

# TB7300

## SPECIFICATIONS

### FREQUENCY BANDS

| Frequency  | Range      | Tait Band | Configuration |
|------------|------------|-----------|---------------|
| VHF        | 136-174MHz | B1        | 50W*          |
| UHF        | 400-470MHz | H5        | 40W*          |
|            | 470-520MHz | H3        | 40W*          |
| 700/800MHz | 762-870MHz | K4        | 35W*          |

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

### REGULATORY

|                                          | DMR, MPT, AS-IP, Analog FM | P25            |
|------------------------------------------|----------------------------|----------------|
| USA (CFR 47)                             | B1, H5, H3, K4             | B1, H5, H3, K4 |
| Canada (RSS-119)                         | B1, H5, K4                 | B1, H5, K4     |
| Europe (EN300-113, EN300-086, EN301-489) | B1, H5, H3                 | B1, H5, H3     |
| Australia/New Zealand (AS/NZS4768)       | B1, H5, H3                 | B1, H5, H3     |

\* FCC Approved

\*\* CE Approved

### GENERAL

#### Radio specifications

|                     |                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency stability | +/- 0.5 ppm                                                                                                                                                                           |
| Channels            | 4,000                                                                                                                                                                                 |
| Channel spacing     | 12.5kHz and 25kHz** in analog<br>12.5kHz provides 1 FDMA voice or data channel in P25 Phase 1 mode<br>12.5kHz provides 2 TDMA voice or data channels (6.25kHz equivalent) in DMR mode |

|                                  |                                                   |
|----------------------------------|---------------------------------------------------|
| 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)<br>1U Rack Space |
| Weight                | AC: 17.2lb (7.8kg), DC: 14.8lb (6.7kg),               |
| Operating temperature | -22° to +140°F (-30° to +60°C)                        |

#### Power specifications

|                 |                                    |
|-----------------|------------------------------------|
| Power Supply AC | 120V to 230V AC 50/60Hz***         |
| Power Supply DC | 13.8V Typical (11 - 15 VDC range)* |

#### Output power

|        |                    |
|--------|--------------------|
| VHF    | Programmable 2-50W |
| UHF    | Programmable 2-40W |
| 800MHz | Programmable 2-35W |

#### 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 |
| AC input                           | IEC connector  |
| DC input                           | Screw terminal |

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

\*\*When P25/AS-IP capable firmware is loaded (not available with DMR/Analog firmware)

\*\*\*Note: For AC powered, TB7300 screw terminals are a 13.5V at 1Amp auxiliary output

### MILITARY STANDARDS 810G

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

# TB7300

## SPECIFICATIONS



### 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                   | -                                       |

### 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)             |                    |
| <b>Conducted spurious emissions</b>   |                                                         |                    |
| 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%                                                    |                    |
| <b>Power Consumption</b>              |                                                         |                    |
| Standby                               | DC: 0.83A, 11.5W @ 13.8V                                | AC 20W @ 120/230V  |
| Tx @ 50W                              | DC: 9.6A, 133W @ 13.8V                                  | AC 200W @ 120/230V |

### RECEIVER

|                                       |                                                                                            |
|---------------------------------------|--------------------------------------------------------------------------------------------|
| Modulation types                      | 4FSK, FM, C4FM                                                                             |
| Radiated spurious emissions EIA-603-D | <-57dBm EIRP to 1GHz                                                                       |
| Conducted spurious emissions          | <-90dBm to 2GHz                                                                            |
| <b>P25 (TIA102)</b>                   |                                                                                            |
| Sensitivity                           | 0.22μV (-120 dBm) @ 5% BER                                                                 |
| Intermodulation response attenuation  | 85dB                                                                                       |
| Adjacent channel rejection            | 60dB                                                                                       |
| Co-channel rejection                  | 9dB                                                                                        |
| <b>DMR</b>                            |                                                                                            |
| Sensitivity                           | -122dBm (0.18μV) @ 5%BER                                                                   |
| Unfaded sensitivity ETS 300 113       |                                                                                            |
| Typical                               | -122dBm (0.18μV) @ 1% BER                                                                  |
| Guaranteed                            | -120dBm (0.22μV) @ 1% BER                                                                  |
| Selectivity ETS 300 113               |                                                                                            |
| @ 1% BER                              | ≥82dB (VHF), ≥79dB (UHF)                                                                   |
| Intermodulation response attenuation  | ≥78dB @ 1% BER unfaded                                                                     |
| Blocking rejection                    |                                                                                            |
| > 1MHz                                | 100dB @ 1% BER                                                                             |
| <b>Analog</b>                         |                                                                                            |
| 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.taitcommunications.com](http://www.taitcommunications.com).

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