TB**7300**
SPECIFICATIONS

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, with AC or 13.8V DC powered options.

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, Phase 1 P25 trunking, 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.

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, DMR Trunking and P25 Conventional modes
- 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 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 13.8V DC or AC 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

- 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

- 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 <6W idle current for VHF and <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

- 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 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

- 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 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 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	136-174MHz	B1	50W*
	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)	B1, B3, H5, H3*	B1[1], B3, H5, H3*
Canada (RSS-119)	B1, B3, H5	B1[1], B3, H5
Europe (EN300-113, EN300-086, EN301-489)	B1, B3, H5**, H3**	B1[1], B3, H5**, H3**
Australia/New Zealand (AS/NZS4768)	B1, B3, H5**, H3**	B1[1], B3, H5**, H3**

* FCC Approved
** CE Approved

GENERAL

Radio specifications

Frequency stability	+/- 0.5 ppm
Channels	4,000
Channel spacing	12.5 kHz and 25kHz** in analog
	Phase 1 - FDMA channel is 12.5KHz, and Phase 2 - 2 TDMA voice channels is 6.25 kHz equivalent in P25
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	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)*
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
	AC input	IEC connector
	DC input	Screw terminal
	Power Supply Input Block	

* 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

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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)
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	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

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.taitcommunications.com.

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Authorized Partners

Quality Management
ISO 9001

Environment Management
ISO 14001:2015

Occupational Health & Safety Management
ISO 45001:2018

DMR DIGITAL MOBILE RADIO ASSOCIATION

P25