TB7300
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 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-DFSI 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

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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
	12.5kHz provides 1 FDMA voice or data channel in P25 Phase 1 mode
	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)
	1U Rack Space
Weight	AC: 17.2lb (7.8kg), DC: 14.8lb (6.7kg),
Operating temperature	-22º to +140ºF (-30º to +60ºC)
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

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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	
Sensitivity	-122dBm (0.18uV) @ 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
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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Tait International Limited offices and facilities are certified for ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System) and ISO 45001:2018 (Occupational Health and Safety Management System) for aspects associated with the design, manufacture and distribution of radio communications and control equipment, systems and services. Tait Managed Services are certified for ISO 27001:2013 (Information Security Management System).

Authorized Partners

Quality
Management
ISO 9001

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Management
ISO 14001:2015

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