

# High performing P25 and Analog base stations for mission critical networks.

The Tait TB9400 base station is the flexible second generation platform for both P25 digital and Tait analog simulcast solutions with IP connectivity.

It provides multi-mode capabilities: analog conventional in 12.5 kHz channel spacing, P25 conventional, and P25 Phase 1 FDMA and 6.25 kHz equivalent P25 Phase 2 TDMA trunked 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

- Multi-mode platform supporting Analog Conventional, P25 Conventional and P25 Trunking modes
- Simple change of mode through the web interface or 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
- Simulcast and Voting in analog and P25 networks
- Linear Simulcast Modulation (LSM) to increase P25 coverage efficiency
- Migration capability from Tait analog simulcast to P25 conventional and to P25 trunked networks
- Analog line support in analog conventional mode
- 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

## 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 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 with receive only configuration for fill-in site (to allow downlink enhanced coverage)
- 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-DFS 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 auto 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
- 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
- 6.25 kHz equivalent P25 Phase 2 TDMA 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 upgradeable 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

### FREQUENCY BANDS

Frequency	Range	Tait Band	Configuration
VHF	136-156MHz	B2	50W & 100W
	148-174MHz	B3	50W & 100W
UHF	378-420MHz	HH	50W & 100W
	400-440MHz	H1	50W & 100W
	440-480MHz	H2	50W & 100W
	470-520MHz	H3	50W & 100W
700/800MHz	Tx: 762-870MHz*, Rx: 794-824MHz	K4	50W & 100W

\* The actual Rx frequency coverage in this band is 762-776MHz, and 850-870MHz

### REGULATORY

	P25, Analog FM
USA (CFR 47)	B2, B3, HH, H1, H2, H3, K4
Canada (RSS-119)	B2, B3, HH, H1, H2, H3, K4
Europe (EN300-113, EN300-086, EN301-489)	B2, B3, H1, H2
Australia/New Zealand (AS/NZS4768)	B2, B3, H1, H2

### GENERAL

#### Radio specifications

Frequency stability	±0.5 ppm
Channels	1,000
Channel spacing	12.5 kHz 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 2.5kHz/3.125kHz, UHF 5kHz/6.25kHz, 700/800MHz 5kHz/6.25kHz
External frequency reference	10 MHz/12.8 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) 4U rack space
Weight	Single 100 W: 46.5 lb (21.1 kg) Dual 50W : 54.7lb (24.8kg) Single 50W 43.2lb (19.6kg)
Operating temperature	-22°F to +140°F (-30°C to +60°C)

#### Power specifications

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

Power consumption* (UHF)	120VAC	230VAC	12VDC	24VDC	48VDC
Standby (Single 50 and 100 W)	0.370A, 30W	0.510A, 31W	2A, 24W	0.975A, 23W	0.480A, 23W
Tx @ 50W Single	1.9A, 235W	1.1A, 220W	18A, 216W	9A, 216W	4.2A, 202W
Tx @ 100W	3.3A, 395W	1.7A, 375W	32A, 385W	15.5A, 370W	7.4A, 355W

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

### MILITARY STANDARDS 810G

Applicable MIL-STD	Method	Procedure
Low pressure (Altitude 15000ft (4572m))	500.5	2
Humidity	507.5	2
Vibration	514.6	1
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 ~ +1dB	-3 ~ +1dB
Audio distortion	<3% typical (line to RF)	<3% typical (RF to line)

### TRANSMITTER

Modulation types	FM, C4FM, LSM, H-DQPSK
P25 Modulation fidelity (TIA-102)	<2%
Adjacent channel power	-60dBc (ETSI) and -67dBc (TIA-102)
<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
700/800/900MHz	<-20dBm to 9GHz
<b>Output power</b>	
50W	Programmable 5-50W
100W	Programmable 10-100W
Duty cycle	100%

### RECEIVER

Modulation types	C4FM, H-CPM, Analog FM
Radiated spurious emissions	<-57dBm EIRP to 1GHz
Conducted spurious emissions	<-90 dBm to 1GHz

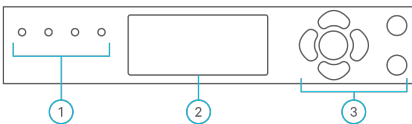
### P25 (TIA102)

Sensitivity	0.22 $\mu$ V (-120 dBm) @ 5% BER
Intermodulation response attenuation	85dB
Adjacent channel rejection	60dB
Co-channel rejection	9dB

### Analog

Sensitivity	-119dBm @ 12dB SINAD (0.25pV)
Selectivity (EIA-603)	85dB (VHF & UHF), 79dB (700/800MHz)
Intermodulation	80dB
Spurious response attenuation	$\geq$ 100dB (ANSI/TIA) and $\geq$ 90dB (ETSI)
FM hum and noise	
VHF/UHF	45dB (ANSI/TIA), 50dB (ETSI)
700/800/900MHz	43dB (ANSI/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 P25 SOLUTION

Backed up by our proven radio network expertise, the TB9400 is part of our larger P25 offering. The Tait P25 solution consists of subscriber units, infrastructure, applications, services and integration with third party interfaces to ensure that your organization can reap all the benefits of the 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](http://www.taitradio.com).

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