

# Tough and efficient DMR Tier 3 trunked node for mission-critical networks.

The Tait TN9300 node controller is at the heart of Tait Digital Mobile Radio (DMR) Tier 3 trunked solutions. Rich in features and interfaces, it follows DMR Standards and inherits Tait MPT1327 functionalities.

Tait TN9300 trunked networks are digital systems specifically designed to provide mission-critical communications over wide geographic areas.

Tait TN9300 system provides essential applications for your operation such as location management and over-the-air reprogramming. Also, it can be included in specific solutions that are adjustable for your needs such as GridLink.



## KEY FEATURES

- Scalable solution for efficient and cost-effective network design
- Supports trunked simulcast operation
- Flexible voting options to optimize radio movements between sites
- Improved workforce safety and efficiency with flexible voice and data management
- Efficient scalability of system infrastructure based on IP network connectivity to the DMR node controller
- Robust design provides multiple levels of redundancy for reliable communications
- Standard-based functionalities for interoperability and increased capability
- Customization possible for fulfilling particular user needs
- Encryption and subscriber authentication provide secure communications
- Reports general statistics for visibility of system health
- Multiple interfaces and system-to-system connectivity via gateways can connect external partner's solution equipment or extend the network
- Easy to migrate from TaitNet MPT1327 or TaitNet MPT-IP
- Multi-layer architecture for improved performance
- Integrated into Tait data management services
- Remote management for greater operational efficiency

### FEATURES AND BENEFITS

#### Tait DMR node controller

- The TN9300 node controller's main function is to establish calls for the DMR Tier3 trunked network radio fleet
- Its innovative software architecture is composed of multiple functional layers: the Linux operating system, the Tait DMR node controller application, and the Tait Admin application responsible for managing the hardware platform
- Other core network applications can also be present, such as the channel group manager application, enabling DMR Simulcast, G.711 connector for SIP/G.711 integrations or API connector for Tait Services real-time monitoring and reporting
- Our commitment to DMR open-standards ensures opportunities for multi-vendor solutions with standardized interfaces. A single-sourced DMR trunked network reduces the risk of network elements not inter-operating, and also provides one point of call for network service and support

#### Scalable and flexible for efficient and cost-effective network design

- Highly flexible and scalable, the Tait DMR trunking systems are tailored to market size requirements with Tait DMR Access and Express solutions (single site trunking and up to 6 or 20 sites respectively)
- The Tait TN9300 server options are also available in 3 levels: Low, Mid and High. These levels allow the hardware platform to match the system capacity desired
- The TN9300 node controller architecture is inherited from the MPT node and is similar to the MPT-IP node, thus allowing a smooth migration from MPT to DMR if required
- Standard and proprietary enhancements facilitate radio movements between sites using advanced voting

#### The TN9300 ensures:

- Maximum spectrum efficiency with trunking and 2 slot TDMA
- Connection to legacy analog consoles using a Network Gateway
- Connection to other systems or networks, like Tait TeamPTT cellular solution

- Communication with PSTN connections
- Flexible network design with IP connectivity
- Different traffic load demands at each site are catered for

#### Secure communications

- Network and information security ensures private communications
- The TN9300 offers a range of access levels to protect against unauthorized network changes
- Network access logs provide a historical record of changes, should audit trailing be required
- Subscriber units are authenticated on the network before they are given access

#### Remote management for greater operational efficiency

The web-based user interface allows easy remote configuration and management of system elements, including:

- Channel management
- Control channel authorization
- Fleet management for greater control of resources
- Add/delete portable and mobile radios
- Create, modify and delete talk groups
- Software upgrades to ensure your network runs in an optimal manner
- System/network configuration changes
- IP address changes
- SNMP v2c
- Auditing capabilities, such as log files with selectable logging levels, and an audit trail to identify system changes
- Call records, system alarms, and event logs

#### Robust design provides multiple levels of redundancy for reliable communications

- A Tait DMR network has multiple levels of redundancy to ensure operations continue in the event of server failure. This includes system node controller redundancy and isolated site operation
- High availability server clusters are constantly mirrored and change over within seconds if there is a hardware or software failure. Fall-back mode also ensures the network continues to operate even if a site is disconnected from the network

#### Data Services

- Embedded signaling within voice for location and talker ID
- Short data messages for location, status, and text
- Packet data over traffic channels for work force Management, Telemetry, SCADA, and customer-specific applications
- IP Data and OTAP capabilities
- User data services such as fast polling location using an adjacent slot/alternate channel

#### Improved worker safety with both voice and data

- DMR supports multiple call types:
  - group calls
  - broadcast calls
  - transmit interrupt
  - all hands
  - emergency
  - announcement
  - unit-to-unit
  - data messaging (status and text supplementary services: Short data services and IP service, radio inhibit/stun, authenticated registration ensuring that users can communicate when and how they need to)

#### Future-proofed to protect your investment

- DMR is an efficient digital communications solution and a logical replacement for MPT, MPT-IP and other analog networks. Tait DMR solutions are compliant with the European Telecommunications Standards Institute (ETSI) DMR standards and interfaces, ensuring network interoperability and easy expansion in the future

#### Media Recording

- Tait TN9300 DMR networks can be provided with the ability to record voice calls and metadata such as user or group ID
- Media recorders can be connected to dispatch equipment (for recording calls involving the dispatcher) or to the Tait DMR node (for recording all calls)

# TN9300 Trunked

## SPECIFICATIONS

### INTERFACES

Dispatch console (AIS and DIP)  
Telephone PSTN /PABX (SIP)  
Voice Recorder (AIS and Tait proprietary VRP)  
Inter-Network (AIS, INP)  
Conventional line (4 or 6-wire E&M via G.711 connector and TN9271 network gateway)  
Location server (LIP and monitoring services API)  
Tait EnableInsight Service (Tait Data API)

### FLEET AND SUBSCRIBER MANAGEMENT

Numbering schemes: DMR standard, MPT1327, MPT1343, ANN  
Add/remove fleet  
Add/remove subscribers  
Customize call type permissions  
Add/remove multiple groups  
Add a broadcast call group  
Add a system call group  
Group location restrictions  
Subscriber location restrictions

### OVER THE AIR CALL TYPES

Group call  
Unit-to-unit call initiate  
Unit-to-unit call receive  
Emergency group call  
Broadcast group call  
Encrypted group call  
Inter-fleet call  
All-ident call

### PSTN CALL TYPES

Unit to PSTN call  
PSTN to unit call  
PSTN to group call  
Emergency call

### SERVICES

#### Data

Packet Data (confirmed/unconfirmed) ½ rate, ¾ rate, full rate, single slot, dual slot  
IP data  
USBD (control channel and/or alternate channel)  
Short data message

#### Supplementary services

Status message  
Radio check  
Radio inhibit/uninhibit  
Diversion/call forward

#### Core features

Dual control channel option  
Transmission trunking  
Message trunking  
Transmit interrupt  
Subscriber unit registration/deregistration  
Subscriber unit (re-)affiliation with group  
Subscriber authentication  
Embedded signaling: talker ID, location, and other  
Group call late entry  
Call queuing  
Console pre-emption  
Priority talk group monitor & override  
Roaming support

### SUPPORTING APPLICATIONS

Location (polling)  
Over-the-air programming

# TN9300 Trunked

## SPECIFICATIONS

### GENERAL

Feature	Details
Mode of operation	DMR Tier 3 trunking, with optional Simulcast
Channel frequencies	Channel addressing supports the use of non-continuous frequency allocations
System tiering options	Access (single site), Express6 (up to 6 sites), Express20 (up to 20 sites) and Full (up to 250 sites per network)
Supported servers	Kontron CG2300, Dell R230, Sintrones SBOX-2620
System to system	Up to 9 DMR Tier 3 system connections via a TN9500 inter-network gateway
Number of groups	2,000
Number of radios supported	500,000
Maximum radios registered at a site	10,000 radios
Encryption	AES, DES, ARC4
Tait base station supported	TB9300, TB9400, TB7300
Redundancy	Node, site, geographic
Fault tolerance	Automatic change over to a redundant server in the event of a hardware, software or network failure Isolated site (network failure). Switch to single-site trunking at that site Backup control channel (base station failure). Control channel allocated to a different base station
DMR Association IOP tested Reports	Report available on request Channel loading, busy hour statistics

### PERFORMANCE/CAPACITY

SYSTEM TYPE:	Full		Express20	Express6	Access
PLATFORM:	High Level	Mid Level	High/Mid/Low Level	High/Mid/Low Level	TB9300/TB9400/TB7300
Physical Sites per Network	250	100	20	6	1
Physical Channels per Network	1000	250	80	24	4
Physical Channels per Site	20	20	20	20	4
Nodes per Network	20	20	2	1	None
Concurrent Audio Connections per Node	250	100	100	48	7
Concurrent DIP/Telephony/AIS Connections per Network	300 peak only	150 peak only	24	24	No support of these interfaces
Concurrent Data Calls to the packet data gateway per Network (Single Slot)	100	50	24	24	No support of packet data
High Availability supported	Yes	Yes	Yes	No	Not applicable

NOTE: High: Kontron, Mid: Dell, Low: Sintrones

### DMR SPECIFICATIONS

ETSI TR 102 398 V1.4.1 General System Design.  
 ETSI TS 102 361-1 V2.5.1 DMR Air Interface (AI) protocol.  
 ETSI TS 102 361-2 V2.4.1 DMR voice and generic services and facilities  
 ETSI TS 102 361-3 V1.3.1 DMR data protocol.  
 ETSI TS 102 361-4 V1.9.2 DMR trunking protocol

### TAIT DMR SOLUTION

Backed up by our proven radio network expertise, the TN9300 is part of our larger DMR offering. The Tait DMR solution consists of radio units, infrastructure, applications, services, and integration with third party interfaces. It ensures that your organization can reap all the benefits of the spectrally-efficient DMR 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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