CYBER & SECURITY SOLUTIONS

DTA-NODE

TETRA RADIO BASE STATIONS SERIES

LEONARDO

DTA Evolution in continuity

Adaptanet® DTA-Node is a new step forward in Leonardo TETRA Radio Base Stations. Designed to ensure compatibility with previous generation Adaptanet® BS-Node systems, it features flexibility and efficiency required by demanding PMR users and ensures the reliability and security required for the challenges of the next years.

Leonardo DTA-Node is the result of an evolution process of company in TETRA technology. Distinguished by an innovative hardware architecture, the Adaptanet® DTA-Node series maintains leading features of BS Node and BS Node-C radio base stations, adding a new level of modularity and flexibility and maintains full interoperability with previous RBS generation that can be used in mixed configurations under the control of Leonardo CSP core network.

DTA: A NEW FLEXIBLE ARCHITECTURE

DTA is the new family of Leonardo convergent modular multi technology radio base stations, leveraging powerful hardware modules, increased security and high degree of flexibility. Complex TETRA networks can be realized by combining the same building block, called DTA carrier, implementing a complete transceiver in terms of computational power, synchronization capabilities, radio and terrestrial interfaces.
DTA carrier is encased in 19 inches standard shelf allowing modularity in node construction and provides Ethernet ports for interconnection with the external world.
Each DTA carrier module provides all the TETRA functionality, with two or three-way receiving diversity, and it is constituted by three boards providing:

- → Radio Transceiver Base Band functions
- → Radio frequency Unit function
- → Power Supply Unit function.

Current TETRA DTA Carrier features a 25W RF power after branching and is housed in a rack mountable 2U chassis.

FROM DTA CARRIER TO DTA NODE

Several DTA carriers can be stacked to compose a complete base station with the addition of branching elements, Power Distribution Unit (PDU) and I/O expansion unit. DTA-Nodes are fully compliant with Adaptanet® TETRA networks and can be mixed to our existing BS Nodes in technology homogeneous but mixed architecture infrastructures.
The TETRA DTA-Node normally operates under control of application layers provided by the core element CSP-CM (CSP Communication Manager), but it can also work stand-alone from the rest of the network in so-called “Fall-back” mode (isolated mode).
In this situation the DTA-Node is able to provide some limited telephonic services to the mobile users under its coverage area. A DTA-Node contains:

- → DTA carriers
- → Branching unit including combiners, duplexers, VSWR meter, LNA, splitter and filters ensuring the correct matching and handling of DTA carriers and antennas

configuration
- → Interface modules providing I/O expansion and simplifying LAN and power connections
- → Power Distribution Unit (PDU).

The **DTA-Node** can be configured with hybrid or cavity combiners according to the requirements and can be providing with 2 TRX or 4 TRX version (Bi or Tri-Diversity).

DTA-Node-C is a 2 TRX hybrid combiners TETRA base station deployed in a compact shelf configuration, designed to be fitted in 19 inched standard shelf.

DTA CARRIER VARIANTS

Thanks to the flexibility of the architecture, the following variant of DTA carrier are provided and certified:
- → 380-470 MHz (UHF), High Power

REDUNDANCY AND RELIABILITY

Availability, maintainability and ease of use are ensured by a combination of hardware characteristics and architectural features that allow to implement effective and robust professional networks solutions.
DTA-Node supports remote firmware upgrade, SNMP management and eased maintenance thanks to modular approach that allows low MTTR.

DTA-Node is also characterized by enhanced cyber security with cyber agent and embedded firewall.

The DTA-Node is able to detect faults related to external conditions (i.e. data link connection loss or excessive VSWR on active antennas), or failure of internal modules through built-in observation points and periodic diagnostic.

Fault tolerance characteristics have been enhanced with:
- → Capability of self-reconfiguration in case of failures. In particular, the failure of the radio transceiver will not have any impact on the others.
- → Redundancy of link toward other network elements, with autonomous capability of switching to one of them when the other fails.
- → Possible redundancy of major modules, all data routes and main power supply
- → Capability of automatically activated fallback mode in the event of an interruption in both the DTA-Node links in order to allow the functionality within the coverage area.

TECHNICAL SPECIFICATIONS

DTA carrier	
Frequency bands	380-470 MHz
Output power	70W
Power supply	48 Vdc isolated (44 to 60Vdc)
Consumption	Typical 235W (@48 Vdc)
Clock	Synchronization by internal GPS receiver
Channel spacing	25 kHz
Duplex spacing	10 MHz
Modulation type	P/4 DQPSK
Operation	Full duplex
Dimensions	(HxWxD, external) 87.2 x 482.5 x 339 mm [3,44 x 19" x 13,35 in]
Weight	About 15 kg [33,07 lb]
External interfaces	• no. 2 RJ-45 LAN connections • no. 1 DB15 (6+6 IO) • no. 1 N female RF connector • 2 (+1) female SMA RF connector • Mini USB RS232 terminal • no. 2 4W E&M • no. 1 (+1) female SMA GPS antenna connector
Protection degree	IP20 according to ETSI EN 60529
External interfaces	• no. 3 N female RF connector • no. 2 female SMA RF connector (for external GPS antenna) • no. 2 RJ-45 LAN connections • no. 2 48Vdc isolated power line • no. 24 input • no. 8 output

Environmental conditions	
Operation	ETSI EN 300 019-2-3 class T3.1E with extended temp. -30°C to +60°C [-22°F to 140°F]
Storage	ETSI EN 300 019-2-1 class T1.2 (-40°C to +85°C) [-40°F to 121°F]

DTA-Node	
Frequency bands	380-400 MHz / 410-430 MHz / 450-470 MHz
TETRA power class	2 (+44 dBm) (@antenna connector according to ETSI EN 300-392-2)
Power supply	48 Vdc isolated (44 to 60Vdc)
Receiver type	Class A, 2 ways diversity (3 ways diversity as option)
Rx sensitivity	-119,5 dBm @BER 4%
Clock	Synchronization by internal GPS receiver
DTA-Node 2-TRX	• Consumption: typical 520W (@48 Vdc) / with hybrid combiner, power class 2 • Dimensions: (HxWxD, external) 14U x 600 x 600 mm [14U x 23,66 x 23,66 in] • Weight: ~135 kg (max. configuration) [297,6 lb]
DTA-Node 4-TRX	• Consumption: typical 990W (@48 Vdc) / with hybrid combiner, power class 2 • Dimensions: (HxWxD, external) 20U x 600 x 600 mm [20U x 23,66 x 23,66 in] • Weight: ~180 kg (max. configuration) [396,8 lb]
DTA Node-C	• Consumption: maximum 520W ±5% (@48 Vdc) / with hybrid combiner, power class 2 • Dimensions: (HxWxD, external) 13Ux440x495 mm [13U x 17,32 x 19,49 in] • Weight: ~96 kg (max. configuration) [211,6 lb]
DTA-Node compliances	
CE Mark	Compliance to RED Directive 2014/53/EU, RoHS Directive 2011/65/EU
Standards	• RADIO: ETSI EN 303 758, ETSI EN 300 394-1 and ETSI EN 303 413 • EMC: ETSI EN 301 489-1, ETSI EN 301 489-5 and ETSI EN 301 489-19 • SAFETY: CENELEC EN 62368-1 and CENELEC EN 50385

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