SELEX Communications
A Finmeccanica Company

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BS-T2
TETRA Radio Base Station

DESCRIPTION

SELEX Communications' TETRA (TErrestrial Trunked RAdio) Radio Base Station (BS) series T2 is a state-of-the-art equipment in its class.

The BS series T2 is specially designed to cope with the operational requirements typically requested by professional users in radio mobile digital networks, for emergency situations or fast response operation.

BS-T2 is responsible for connecting all the terminals (handportable, vehicular station, fixed station etc.), located within its coverage area, to the TETRA network infrastructure. In normal mode of operation each BS-T2 is directly controlled by one Switching and Control Node (SCN) that connects the BS-T2 to TETRA network.

The link with all the peripherals is obtained through the radio coverage, in accordance with TETRA air interface protocol standard.

The TETRA BS-T2 operates in several bands of the frequency spectrum fully covering customers requirements and different operational scenarios.

MAIN FEATURES

SELEX Communications' BS-T2 has 2 main operation modes:

- **Normal mode**; the Base Station is directly connected with a Switching and Control Node (SCN).
- **Fallback mode**; the Base Station has no connection with a SCN and realize a stand alone site.

The main features supported by BS-T2 during normal mode operation are:

- management of the link with the SCN;
- management of multiple transceivers (TRX) (up to 4 carriers);
- management of up to 2 independent cells with associated different RF carriers (up to a total number of 4 carriers);
- implementation of TETRA air interface protocol up to Layer 2;
- management of security algorithms;
- full Duplex and Half Duplex operation;
- carrier transmission combining;
- 2-way diversity reception capability;
- radio frequency (RF) duplex capability to transmit and receive on the same antenna;

- fault management relevant to external interfaces (such as those supporting the SCN link) and internal modules failures;
- status monitoring of internal modules and interface cards;
- alarms report to Network Management System (NMS) and BS-T2 Local Terminal;
- events and alarms log;
- capability to collect site alarms and drive actuators;
- maintenance and configuration operations both locally and remotely;
- diagnostic testing activities, using specially devoted tools, to identify potential anomalies within the equipment.

In case of a failure in the link interconnecting the BS-T2 with the SCN (or in case of a single site deployment without SCN) the BS-T2 automatically switches to fallback mode.

In this operation mode the base station provides users, within the radio coverage, with the following services:

- half and full duplex individual call (both voice and data transfer);
- group call (both voice and data transfer);
- emergency calls;
- short data message service;
- multi-slot (up to 4 slots) circuit mode data.

The following features are also available:

- management of multiple transceiver (up to 4 carriers) and cells (up to 2);
- automatic reconfiguration in case of failure of a transceiver;
- user management a simplified form;
- implementation of TETRA air interface protocol up to Layer 3;
- Full Duplex and Half Duplex operation;
- carrier transmission combining;
- 2-way diversity reception capability;
- RF duplex capability to transmit and receive on the same antenna;
- status monitoring and fault management of internal modules;
- alarms report to BS-T2 Local Terminal;
- events and alarms log;
- capability to collect site alarms and to drive actuators;
- local maintenance and configuration operations;
- diagnostic testing activities, using specially devoted tools, to identify potential anomalies within the equipment.

The BS-T2 is specifically designed in order to support a high level of performance on a 24 hours a day basis, also in case of failure of some of the internal modules or of network infrastructure. The high level of fault tolerance is obtained due to the following peculiar features of BS-T2:

- modular architecture;
- redundancy of major modules and main power supply;
- capability of self-reconfiguration in case of failures;
- capability of working in a stand-alone mode without the link with the SCN;
- capabilities of working also without main power supply (220 VAC).

In each site an external UPS (Uninterruptible Power Supply) is available, and it is equipped with a battery pack suitably sized. During normal conditions, the UPS connected to the AC power supply will supply the BS-T2 (-48 VDC) and will charge the battery pack so that, in case of the main power supply failure, the batteries provide proper supply to the BST2.

BS-T2 is usually delivered with at least two transceivers in order to provide transceiver fault tolerance.

Each transceiver has its own power supply module, and therefore there is not any dependence among radio transceivers.

TECHNICAL CHARACTERISTICS

Power class (hybrid configuration, max 2 carriers per antenna):	Class 2 (EN 300 392-2) 44 dBm (25 W), ±2 dB according to ETSI EN 300 394-1 at antenna connectors
Power range:	10 dB (2 dB steps)
Frequency band:	BS-400: 380 ÷ 400 MHz / BS-430: 410 ÷ 430 MHz / BS-470: 450 ÷ 470 MHz / 800 MHz
Duplex spacing:	10 MHz
Diversity:	2 ways
Power supply:	- 48 VDC nominal (positive ground), range -44÷-60 VDC
Bandwidth:	5 MHz
Environmental aspects:	• Operation: ETSI ETS 300 019-1-3, class 3.1E • Storage: ETSI ETS 300 019-1-1, class 1.2 • Transportation: ETSI ETS 300 019-1-2, class 2.2 • EMC: Compliant to ETSI EN 301 489-18
Power consumption:	• TSU-200: 200 W max. at 48 V DC for redundant configuration • TTU: 300 W max. for each TRX, at 48 V DC

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Printed in Italy. e-P-IT-154/V1/07/Y