

TETRA – Revolutionising the way the world communicates



EBTS 806 - 870 MHz

Enhanced Base Transceiver System

The Dimetra EBTS now supports the 806 - 870 MHz frequency band.

The Dimetra EBTS provides the TETRA RF link between the Switching and Management Infrastructure (SwMI) and the mobile radio terminals of the Dimetra system.

With reduced power consumption and improved serviceability, the EBTS design accommodates easy installation, commissioning and maintenance.

Dimetra EBTS consists of four sub-systems:



Base radio

TSC: TETRA Site Controller
BR: Base Radio
EAS: Environmental Alarm System
RFDS: Radio Frequency Distribution System

Dimetra EBTS site equipment also includes an external or internal GPS synchronisation system, power supply sub systems and the link interface to the infrastructure. The EBTS is incorporated in a 1.93 m cabinets with lockable doors.

Various configurations are available to meet capacity requirements ranging from 4 to 32 logical channels. The cabinet has front module access and top cable entry. Cable connections are accessed via a junction panel on the top of the cabinet. An EBTS cabinet can accommodate up to 4 BRs (16 logical channels) with RFDS.

To increase channel capacity (up to 32 logical channels per site) additional cabinets with the appropriate number of BRs and associated RFDS equipment can be added.

Primary power for the standard EBTS is 48 VDC (positive earth). With the use of external equipment, the EBTS can also operate from a variety of AC or DC power sources.

TETRA Site Controller (TSC)

The Dimetra TSC provides the remote interface to the TETRA network and controls the EBTS site operation over an Ethernet link. Depending on the system configuration, a TSC controls up to 8 BR = 32 logical channels for the omni site. The TSC provides local site trunked operation and management in case of infrastructure link failure.

The Dimetra TSC contains an SRI (Site Reference ISA) time and frequency reference function. This includes a high stability oscillator which provides the frequency reference and a GPS receiver providing the timing reference. The GPS reference is used to train the oscillator, which eliminate ageing and achieve a higher stability.

The TSC provides an alternative input for remote GPS receiver. TSC redundancy is an optional feature that provides increased site availability.

Base Radio (BR)

The BR is modularised, with separate modules for Power Supply, Exciter, RF Power Amplifier, Receivers and Base Radio Controller.

The Base Radio output power is adjustable, and provides a maximum of 25 watts at the output of the EBTS. The Dimetra BR provides 4 logical channels on 25kHz spaced RF channel assignments.

The Dimetra Base Radio incorporates 3 diversity reception for increased 'talk-back' range, performance and reliability. All receivers in a BR operate on the same frequency.

The operational condition of the BR is displayed on the front panel of the Base Radio Controller.



TETRA Site Controller



Environmental Alarm System (EAS)

Each Dimetra EBTS incorporates an EAS to provide remote control functions at the EBTS site. The EAS provides a total of 48 inputs for monitoring EBTS functions and radio site environmental conditions such as intruder alarm and primary power failure. Up to eight outputs are provided to enable remote control functions such as standby generator start up.

Radio Frequency Distribution System (RFDS)

The Dimetra RFDS consists of

- Cavity combiners
- Receiver multicoupler tray
- Duplexers

Cavity combiners reduce insertion loss, maximise RF power dissipation and increase channel capacity.

The nominal minimum frequency separation for cavity combiners is 150kHz. The EBTS provides triple receiver diversity which increases inbound sensitivity.

With a receiver multicoupler tray, the signal from the 3 diversity antennas is amplified and distributed to the Base Radio receivers.

The EBTS is available with internal duplexers. The duplexers allow for the transmitters and receivers to share the common antennas. This feature minimises the antenna count per site and reduces installation and operating cost.



EBTS

Enhanced Base Transceiver System

TETRA 806–825 MHz Rx/851–870 MHz Tx

General

Dimensions HxWxD	mm	Prime/expansion rack: 1930 x 600 x 600 Base Radio: 222 x 483 x 425
Weight EBTS (4 BRs) Base Radio	kg	311 max. 30
Power Supply	V DC	–48 (positive earth)
Power Consumption EBTS (4 BRs at 25W after combining) EBTS (2 BRs at 25W after combining)	Watts	(at 48V DC) 1800 max 1000 max
Operating Temperature	° C	0 to +40
Bearer circuit termination		X.21

RF Specifications

Frequency Band	MHz	851–870 Tx (806–825 Rx)
Transmitter/Receiver Separation	MHz	45, TX High
Tx – Tx spacing	kHz	150 (min)
Transmitted RF Power at output of EBTS per Base Radio (up to 6 BR's)	Watt	2 to 25 max. (adjustable)
Receiver Sensitivity at EBTS input connector static 4% BER (typical)	dBm	–115
faded 4% BER (typical)	dBm	–106
Antenna Receive Diversity	dB	Triple

All specifications use the ETS 300 394-1 method for measurement. All values subject to change without notice.

Important Note

The features and facilities described in this brochure should be used for indicative purposes only. Availability of features and facilities will be dependent on Motorola's scheduled product development programme.

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