

# Base station

A resilient, cost effective, flexible and expandable TETRA base station

## BS411

- 1-8 carriers in one single 19" rack
- Redundant base station controller
- RX antenna diversity
- Tower mounted duplexer and RX amplifier
- Motor tuned combiner system
- GPS time and frequency synchronized

DAMM TETRA base station system provides professional mobile radio users and system operators with a resilient and cost effective product conforming to ETSI's TETRA specification.

DAMM base station program is making use of the latest progress in state of the art technology in order to optimise flexibility, reliability and quality and to fulfil high requirements for service availability. By introduction of redundancy schemes of all critical components and a carefully designed architecture the result is a highly robust and cost effective product.

Heavy integration of microprocessor and DSP technology in the transceiver (TR) part and base station controller (BSC) has been deployed giving control of almost all functions and access to a large number of test points.

The built-in CF-card disk for configuration selections and calibration parameters, has eliminated nearly all hard-to-access mechanical adjustments.

The BSC is the heart of the system and by incorporating a mounted switch, Pentium PC and co-processors it provides a solid platform for TETRA system vendors to integrate their TETRA functionality and applications on the base station.

Communication channels makes it possible to do software upgrades and download new software and to supervise, diagnostic and control the settings and functionality of the BS411 locally or remotely.

DAMM TETRA base station system fully support voice and data services in full and half-duplex modes. This ensures the ability to support a variety of terminals from a wide range of suppliers.

DAMM base station BS411 can be configured with up to 8 TETRA carriers in a 19 inch rack giving in total 32 logical channels with access to all functions and terminals from the front.

Excellent quality performance and good coverage is obtained by means of using a DAMM tower mounted duplexer (TMD) solution with the possibility to operate with dual diversity, using only two antennas.

DAMM base station BS411 is equipped with motor tuned cavity combiner with built-in controller.

Extremely low power consumption with power supplies which support the connection to external 100-240 VAC, 47-63Hz or -48 VDC, n+1 operation and support for external battery back up characterize DAMM BS411.

The base station system is fully time and frequency synchronized by means of built-in GPS receiver.

Connectivity for external interfaces to PSTN, ISDN and PDN-gateways is supported.



# The technology of BS411

## Antenna interface unit

- Built-in DC-feed and alarm for TMA/TMD
- RF test loop converter
- DC control to TMA/TMD for antenna/amplifier measurements
- Power detectors for forward and reflected TX antenna power

## Tower mounted duplexer and RX amplifier

- Dual RX amplifiers for diversity
- Duplex filter to combine TX and one RX antenna
- Tower or ground installed
- Built-in RX antenna return loss measurement feature
- Built-in amplifier measurement feature
- Accepts low-cost thin cables (up to 8dB)
- IP classification code: IP65

## Base station controller

- High performance low-power Pentium PC
- Windows XP-embedded operating system
- Compact flash disk
- Ethernet 10/100 Mbit, RJ45 connector
- Four E1 interfaces 75/120 ohm
- PCM cross connect/switch with 8kBit switching capability
- Automatic switch-over to redundant BSC at failure
- GPS built-in for time and frequency synchronization
- O&M interface via RS232 and TCP/IP

## Power supply

- -48 VDC or 100-240 VAC input voltage
- +14V/+26V output voltages
- Support for external battery back-up

## Transceiver

- Synthesizer channel step of 12,5kHz
- TETRA and as option TETRA / analogue dual mode
- 1-25W in TETRA mode
- 2 to 50W in analogue mode
- Dual RX antenna diversity as standard
- Software update from BSC
- High performance DSP implementation
- Highly flexible software controlled functionality
- Fully GPS controlled synchronous operation

Tower Mounted Duplexer



## General

Specification	ETS 300 394-1
Frequency bands	300-310/336-346MHz, 350-360/360-370MHz, 380-390/390-400MHz, 410-420/420-430MHz, 450-460/460-470MHz, 805-825/850-870MHz Other frequencies on request
Filter bandwidth	5MHz, typ., 300-346MHz ~ 10MHz 805-870MHz ~ 14MHz
Carrier separation	25kHz
TX power before combiner	Max 25W TETRA
TX power ant. connector	10W TETRA, typ.
Receiver diversity	Dual as standard
RX sensitivity static	-117 dBm
RX sensitivity dynamic	-112 dBm
Cavity combiner system	Motor tuned with support for up to 16 carriers per antenna/cell
Hybrid combiner system	Available as option for max. 4 carriers
Power source	-48 VDC, positive pole grounded, or 100-240 VAC
Dimensions model 36U (HxWxD)	1721 x 542 x 520 mm
Number of channels	2-8 channels
Weight fully equipped	143 kgs
Operational temperature range	-20 - +55 Celsius
Power consumption fully equipped	975W (typ.) for DC-input
IP classification code	IP20

