DAMM® MultiTech Outdoor Base Station BS422

The world's only outdoor base station featuring multiple technologies in one single core-connected system: TETRA, DMR Tier III, TEDS and Analog. This technology-independent solution features multiple carriers as well as frequency sharing in one box within either UHF or VHF frequency ranges.

Core-connected
No more need for gateways or bridges! With the core-connected BS422 multiple technologies can easily be combined in one coherent system. Or the one technology that matches a current need can be chosen – and scaled anytime to meet changing voice and data needs with a simple click.

Multiple technologies – one software
With everything covered by one system, operation, maintenance and repairs are simply easy. Multi-technology networks can be managed in a single network management tool with one central subscriber register. Applications like dispatchers and voice and data log systems can be used across all technologies, and all technologies use the same gateways.

Seamless integration
The BS422 can be set up as a stand-alone system. It can also be seamlessly integrated into any existing DAMM single-tech network.

Reduce frequency license costs
Frequency sharing allows adjacent BS422s to use the same frequencies. This is a significant benefit in low-density networks and gives the possibility to cover e.g. a railway line with just two frequency pairs.

Simplify repeater systems
With frequency sharing an indoor repeater system can be built without optical fibres. The same hardware can be used as base station and repeater unit, increasing redundancy and simplifying the network architecture by having one unified network management system and reduced spare part stock.

Base station geo-redundancy
With the BS422 network availability can be brought to a new level. Two BS422s located at two sites can act as one fully redundant base station, sharing the same frequencies. This will add redundancy not only to the base station, but also to the whole antenna system.

Reduce infrastructure costs with VHF
Save on infrastructure costs by utilizing VHF frequencies to obtain the same coverage as UHF using fewer base stations.

Rugged and compact design
The BS422 is built to withstand harsh conditions – from extreme cold to extreme heat and also wet conditions thanks to its IP65 encapsulation. Its compact and light-weight design makes it easy to install everywhere from masts to tunnels and on the back of a truck.

No single point of failure
At the core of the BS422 is a decentralized architecture, which ensures that all system information is constantly replicated to all sites in the network. This means that the system does not have any single point of failure. This way, local call and data traffic will run without interruption, even if one site loses its connection to the rest of the network.

Flexible and future-proof
The flat decentralized IP architecture and intuitive software also enable effortless, self-configuring site expansion. The BS422 can be used with single or multiple carriers as well as single or multiple technologies, giving maximum flexibility.

TETRA, DMR or Analog over LTE or WiFi can be used with the DAMM TetraFlex PTT app.

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Key specifications

The DAMM BS422 Outdoor Base Station is the first product in DAMM's MultiTech System. It features multi-technology, multi-carriers, multi-frequency and frequency sharing and is core-connected, eliminating the need for any bridges or internal gateways.

- Compact, low-weight and rugged outdoor base station
- Powerful integrated controller and optional SSD drive
- Improved redundancy
- Input power: PoE or external powering
- Built-in or external GNSS receiver available
- Antenna setup: One antenna per box, minimum two antennas for diversity. Optimized for a setup with two boxes and two antennas
- Two-way receive diversity for all technology modes
- Synchronization: 1PPS, PTP (IEEE1588) via LAN, GNSS (GPS, Galileo, Glonass)

RX – Freq. Range	TX – Freq. Range	Duplex Spacing	Duplex Bandwidth	Physical carrier bandwidth	Band
68-87.5MHz	68-87.5MHZ	2.5MHz	0.5MHz	75kHz	Mid VHF
146-174MHz	150-174MHz	4.6MHz	1MHz	150kHz	VHF
350-360MHz	360-370MHz	10MHz	5MHz	300kHz	UHF
380-390MHz	390-400MHz	10MHz	5MHz	300kHz	UHF
410-420MHz	420-430MHz	10MHz	5MHz	300kHz	UHF
450-460MHz	460-470MHz	10MHz	5MHz	300kHz	UHF
805-825MHz	850-870MHz	45MHz	14MHz	300kHz	800 MHz

Mechanical	
Dimensions (HxWxD) (excl. mounting bracket)	340x250x205mm
Weight	12kg
Wind area	0.08m^2
Operating temperature	-25°C to +55°C
Storage temperature	-40°C to +85°C
Encapsulation	IP65

Power	
Input voltage	-48VDC
Power consumption	95W at 10W TETRA
	150W at 25W TETRA
	200W at 50W DMR/Analog
	115W at 10W TEDS

RX sensitivity	
TETRA, w/diversity. Static	-124dBm
TETRA w/o diversity. Static	-121dBm
TETRA w/diversity. Dynamic TU50 @ 4% BER	-118dBm
TETRA w/o diversity. Dynamic TU50 @ 4% BER	-112dBm
DMR/Analog w/diversity. Static	-124dBm
DMR/Analog w/out diversity. Static	-121dBm

DAMM MultiTech Platform featuring the BS422 Outdoor Base Station

BS422
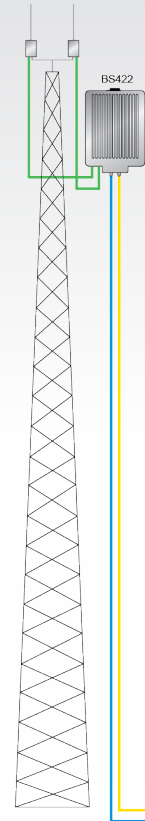
- Ethernet LAN/WAN
- Coaxial
- Power supply -48VDC

Standards and approvals
- TETRA specification EN 300 394-1 v. 3.1.1; please refer to the DAMM TetraFlex feature list
- DMR specification, EN 300 113 v. 2.2.1
- Analog specification, EN 300 086 v. 2.1.2
- Multi-channel specification EN 303 039 v. 2.1.2
- IOP certification; please see www.tcca.info, www.dmrassociation.org and www.dammcellular.com for details
- DS/EN ISO 9001:2008, DS/EN ISO 14001:2004, DS/OHSAS 18001:2008, DS/EN 50121-4:2006

TETRA mode
- Frequency sharing
- Market-leading power efficiency
- Integrated duplexer and diversity receiver

DMR Tier III mode
- DMR Tier III outdoor base station with integrated duplexer and diversity receiver
- Supports wide range of DMR terminals
- Frequency sharing

TEDS mode
- A compact TEDS outdoor base station
- Data rate: between 10 and 530kbit/s
- Mission-critical data communication

Analog mode
- Easy migration from Analog to TETRA or DMR III
- Frequency sharing option
- Supports conventional FM radio