BASIC-BUILT TRUNKING SYSTEM (BTX)

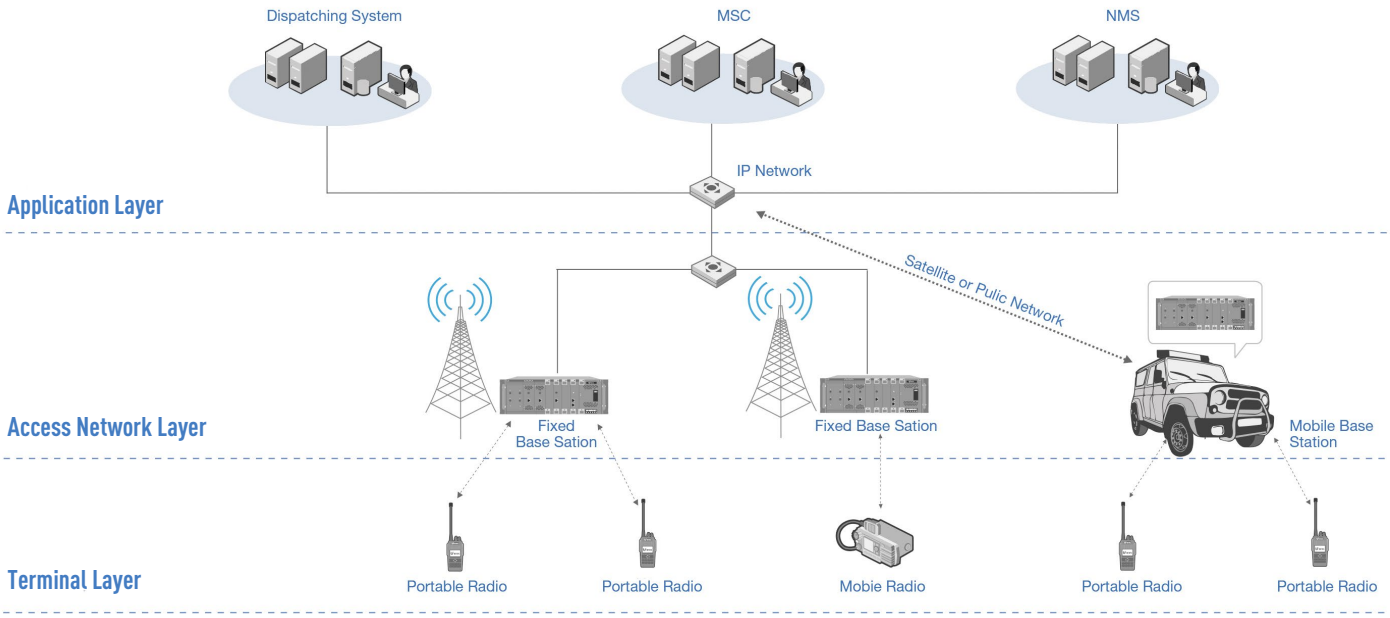
Trunking Basic- Best Solution for Interoperable Collaboration

BelFone
Communications for Efficiency and Safety

OVERVIEW

BTX is a multimedia communication converged management and control system based on IP network, integrates DMR trunking, video, monitoring, text, voice dispatch etc., and focuses on customers from public utilities, transportation, energy, commercial industries. Designed with soft-switching technology, and distributed architecture, it achieves cross-standard, cross-system, cross-region, cross-department, and cross-operator interconnection. BelFone wins a number of independent intellectual property patent technologies to build a comprehensive communication system with complete functions, convenient and reliable, strong expansibility and high security.

TOPOLOGY & NETWORKING



Features & Benefits

Large Coverage

Nonlinear amplifier combined with large coverage technologies makes it possible to achieve the same coverage area with fewer base stations, resulting in a much simpler network structure. This greatly facilitates both operation and maintenance. The cost of networking is lowered, while system reliability is enhanced.

Integrated Network Design

BTX is designed to provide a basic trunking network with minimum facilities. It is meant to be simple and easy to use. The integrated base station works as a single site trunking with expandability to establish multisite network by IP connection to the core network. The MSC is a highly integrated software, which provides switch and interconnectivity with PSTN networks.

Integrated Modular Base Station with Advanced Encryption

With multi-layer encryption, including ARC4, AES256, software-based encryption and hardware-based encryption, ETX system can effectively ward off unwanted signals, and thus greatly increases system security and efficiency.

Superior Reliability

With multilevel redundancy and fallback, BTX system delivers great reliability. The redundancy backup mechanism is employed to retain the integrity of some key devices, for example, base station controller redundancy and main control channel backup, as well as link backup for the network elements.

Elements

Base Station

MSC

Gateway

Software Applications

Terminals

Application

Enterprise

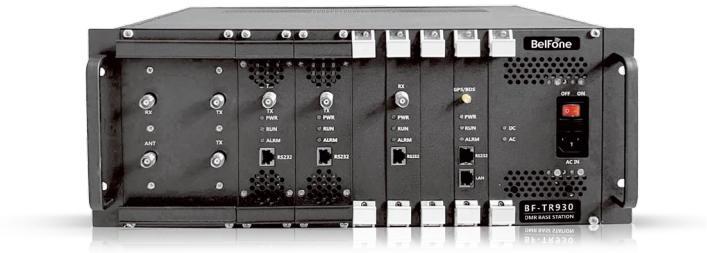
Railway

Airport

Railway

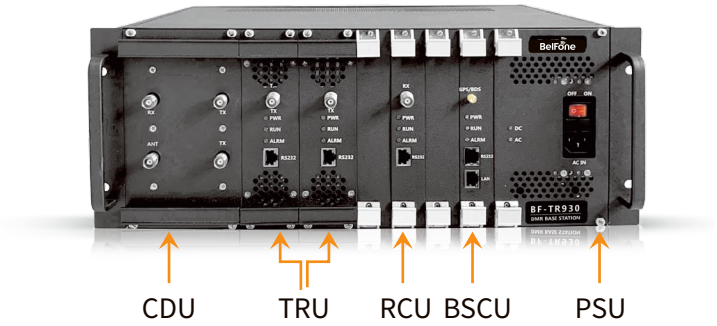
Base Station BF-TR930

Composed of integrated modules of control unit BSC, transmitting unit TXU, receiving unit RXU, duplex combiner COU, and power supply unit, the base station provides wireless coverage and call services for a specific area with resource allocation, call link establishment and maintenance, voice & data services and efficient command & dispatch. With independent data and control lines, all units adopt the plug-in module, which



Features & Benefits

- 19" rack structure based on ATCA
- High Integration modular design, including BCU, TRU, RCU, CDU.
- The standard 2 carriers (4 channels) and 4 carriers (8 channels) with channel unit (RCU, TRU) can be extended to 16 carriers.
- 50W TRU output power
- All IP design, each unit connect with IP, ensure good reliability and stability
- The baseband and B/S control unit adopt plug-in design, each unit is connected by independent data bus and control bus.



CDU: Combiner & Duplex Unit

TRU: Transmitter Unit

RCU: Receiver Unit

BSCU: Base station Controller Unit

PSU: Power Supply Unit

MSC (Mobile Switch Office)

The core network system is mainly used for signaling and service exchange between base stations, and external gateway such as public network gateways, PSTN, and MPT. Moreover, the device supports local hot backup and remote disaster recovery. Built for large scale systems and multiple agencies, the MSC supports a comprehensive list of feature and capabilities to meet the variety of needs of its users.

- IP based architecture
- System API
- Full redundancy
- Log service
- Authentication

- Local MS registration and management
- Roaming MS registration and management
- Base station call signaling exchange
- Voice or data exchange between base stations
- Service and signaling exchange between MSC system
- Support signaling exchange with converged gateway

MSC Server (Core Network)

- With PSTN/PABX Gateway interface
- With MPT Gateway interface
- Small and middle network design, high integration
- Compact size in 19 inch, 2U, design for rack mounted and easy installation
- Support single MSC and distributed multi MSC deployment, expandable
- Support DMR Trunking radios switch, PSTN/Cellular phone (with integrated gateway)

Integrated Gateway

Based on advanced IP softswitch communication technology and digital signal processing technology, BelFone Converged Gateway is a complete IP-based multimedia dispatch solution which can support a unified communication platform to connect radios of different frequency, analog trunking, digital trunking, fixed phones, mobile phones, SIP phones, video surveillance etc., to realize rapid networking between different terminals, multimedia exchange of voice and video data, and interconnection.

- 4G
- Compatible with Digital and Analog
- Converged communication
- IP architecture
- Multi-network Integration
- Multimedia Management
- Hotline Button
- Voice Dispatching
- Data Dispatching
- Trunking Dispatching
- GIS Dispatching

Dispatcher and Recording

With abundant features and enhancements of versatile voice calls, data service, GPS, automatic roaming, terminals control and advanced encryption, BTX dispatcher streamlines real-time distribution of mission-critical information for improved decision making and increased responder awareness and safety, facilitating faster and more accurate response and management.

Voice service	Data Service	Security Service	Location Service	Other Features
Individual Call	Status Message	Authentication	GPS Polling	DGNA
Group Call	Short/Long Message	E2E Encryption	GPS Tracking	Group Patch
Broadcast Call	Emergency Alarm	Override/ Interrupt	Geo-fencing	Voice Recording
All Call	Message Template	Ambient Listening	History Track Query and Replay	Log Management
Emergency Call		Discreet Listening		Radio Status Monitor
PSTN Call		Stun/Revive/Kill		
Full Duplex Cal				
AVL Call				
Including Call				

NMS (Network Management Services)

With abundant features and of device monitoring, management and configuration, fault management, remote upgrading, etc., NMS, consisted of network management client and the server, ensures uninterrupted network communication and transmission, flexible operation of various network applications of higher security of information.

- Device management/monitoring
- Configuration management
- Subscriber management
- Fault management
- Security management
- Remote upgrading

BF-TD950 Professional Portable Trunking Radio

BF-TD950, a full duplex DMR trunking portable radio with IP68 protection, delivers outstanding performance even in harsh environments. The slim and robust body comes with 2" HD color screen, enabling the user to read with ease in various lighting condition. It is a professional radio to enrich your trunking communications experience.

Highlights and Benefits

Enhanced Communication Efficiency

BF-TD950, a full duplex DMR trunking portable radio with IP68 protection, delivers outstanding performance even in harsh environments. The slim and robust body comes with 2" HD color screen, enabling the user to read with ease in various lighting condition. It is a professional radio to enrich your trunking communications experience.

Superior Quality in Harsh Environments

- The IP68 level ruggedness ensures the quality voice calls in toughest conditions like dropping on the concrete, temperature shocks, blowing dust, wind driven rain, etc.
- Ergonomic Design: 2.0" high definition IPS display, readable in all lighting conditions.

Superior Audio Quality

It incorporates advanced audio processing technology to effectively suppress background noise and enhance audio quality to deliver a loud and clear audio.

Advanced Encryption

RAC4& AES256, optional TF card encryption technology ensure safe and private communications, optimizing your information safety.

DMR

Full Duplex Call | Automatic Dual Time Slot | DMR Two Time Slots | Analog and Digital dual modes | GPS | Automatic Roaming | Built-in Bluetooth | DMR Tier III | IP68 | Lone Worker | Man Down

BF-TD930 Economic Portable Trunking Radio

TD930 brings versatile DMR Tier III trunking calls, advanced encryptions and other abundant features at a market price point of DMR conventional radios. This cost-effective trunking and feature-rich radio benefits users from public security to emergency response.

Highlights and Benefits

Multiple Working Modes

- DMR Tier III Trunking
- DMR Conventional- Analog Conventional

Cost-effective Trunking Radio

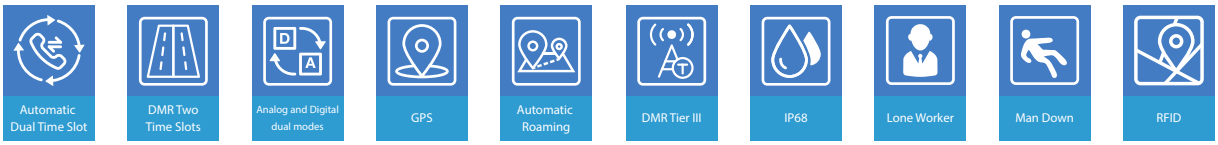
This radio is designed to let users enjoy DMR Tier III trunking advantages of abundant dispatching functions and advanced management at an affordable price.

Indoor and Outdoor Positioning

With better accuracy and precision, built-in GPS and wireless modules enable the supervisor to locate and track team members, which contributes a lot to personnel management and dispatching.

RFID Reader for Patrol

It helps organizations to execute security patrol tours and ensure that the officers will accomplish their tasks within the predefined time intervals.



BF-TM950 DMR TIER III TRUNKING MOBILE RADIO

with strong anti-interference, this efficient mobile radio work in different modes, including DMR Tier III trunking, MPT 1327, DMR and analog conventional, ensuring its interoperabiloty with the legacy analog networks, Operated on a desktop or mounted in a vehicle, its flexible design enables great performance through its simple operation via the handheld microphone, making it an ideal solution for public secerity, rescue, utilities, etc.

Highlights and Benefits

Enhanced Commenication Efficiency

- Incorporating ground-breaking full-duplex call technology to allow simultaneous two-way voice calls, which facilitates crucial information exchange, makes sure the voice call gets through even in peak traffic.
- DMR Trunking Mode enables access to a pool of radio channels, which are dynamically allocated to users when required.

Advanced Encryption to Ensure Information Security

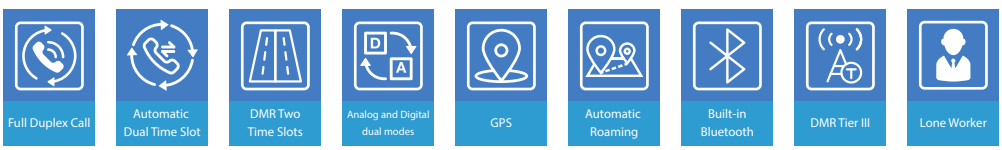
TheRAC4&AES256 encryption technology
TF card encryption

Both Aesthetic, Professional and Ergonomic Mobile Radio Design

20" high definition (320*240) IPS display, readable in all lighting conditions, Remote miunted head support to suitable for actual mobile situations.

Multi Functions for Personnel Protection

- Cover Mode, hide whereabouts in crisis
- Lone worker
- Emergency alarm



BF-TM8250(DT) DMR Tier III Trunking Mobile Radio

The rugged and compact design of BF-TM8250(DT) mobile radio delivers up to 25W of transmitter power for extraordinary reach and coverage, and is designed to keep your entire agency safely connected,and helps to communicate with ease and improve operational efficiency with the performance and reliability.

Highlights and Benefits

Cost-effective Trunking Radio

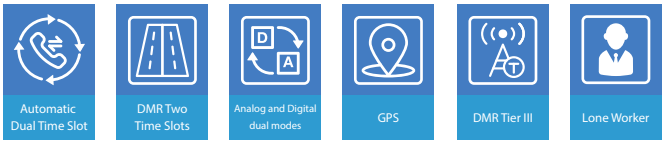
This radio is designed to bring DMR Tier III trunking advantages and versatile features of call, dispatching and management to users at a lower price point.

SFR (Single Frequency Repeater) Feature

Functioning as a single frequency repeater, it allocates one timeslot to receive while the other to transmit; and in DMO mode further extends radio coverage. One device serves two purposes.

User Friendly Design

1.Bright, Color LCD Display: The high contrast color display is easy to read in all kinds of lighting.
2.Power-on Password: Nobody can mess with your radio.
3.Status Voice Prompt: This user-friendly function enables the drivers to keep their eyes on the road.



Specification

Max. Base Station (pcs):	100
Max. CHU	400
Subscriber	15,000
Max. Concurrent Call (line)	200
LDS	16
PSTN/PABX Interconnect	support
MPT Interconnect	support

Base Station

General		
Capacity 1		Up to 100 BSs/ MSO
Capacity 2		Up to 4 carriers/BS
Site Capacity		500
Max. Carriers/ Site		8
Max. Subscribers		200,000
Frequency		350-400MHz; 400-470MHz
Voltage		AC 110 V/220 V
Power consumption		2-carrier: ⩽312W 4-carrier: ⩽625W
Compatible Radios		BF-SCP970, BF-TD950, BF-TD930, BF-TM950
Operating Temperature		-20—50 °C
Storage Temperature		-40—60 °C
Relative Humidity (RH)		5%--95%
Support Dispatch		√
Support DMS		√
Support DVRS		√
Receiver		
Static Sensitivity		-120dBm@BER 5%
Intermodulation Response Rejection		⩾70dB
Spurious Emission	9.00kHz – 1.00GHz	⩽-57dBm@100kHz
	1.00GHz – 12.75GHz	⩽-47dBm@1.0MHz
Transmit		
Transmit Power		Max. 50W/Carrier
Occupied Bandwidth (OBW)		⩽8.5kHz
Modulation Accuracy		±3.15kHz
Frequency Offset		⩽±100Hz
Intermodulation Attenuation		⩽-60dB
ACPR (Adjacent Channel Power Ratio)		⩽-62dB@12.5kHz
Spurious Emission	9.00kHz – 1.00GHz	⩽-36dBm@100kHz
	1.00GHz – 12.75GHz	⩽-30dBm@1.0MHz
Reliability		
MTBF (Mean Time Between Failures)		100,000 hours
MTTR (Mean Time to Repair)		⩽30 minutes

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