



MOTOTRBO™

PROFESSIONAL DIGITAL TWO-WAY RADIO REPEATERS





ACCELERATE PERFORMANCE

MOTOTRBO™ PROFESSIONAL DIGITAL TWO-WAY RADIO SYSTEM THE FUTURE OF TWO-WAY RADIO

Motorola is a company of firsts with a rich heritage of innovation. We continue to invent what's next, connecting people, delivering mobility and making technology personal. Versatile and powerful, MOTOTRBO combines the best in two-way radio functionality with digital technology, making it the ideal communication solution for your business. You get enhanced features, increased capacity, integrated data applications, exceptional voice quality and extended battery performance. This means more productive employees and lower operating costs for your business.

THE DIGITAL DIFFERENCE

Two-way radio has been a successful analogue communication solution for generations, and it proves itself every day in countless deployments around the world.

But in today's technologically advanced environment, a new platform is possible, a digital platform that breaks through to new levels of performance and productivity.

In the same way digital technology has transformed other media, it is now revolutionising the way mobile professionals communicate. The time to take advantage of digital two-way radio technology is now.

TAKE ADVANTAGE OF DIGITAL

Digital two-way radios offer several advantages over analogue solutions, to name a few:

- Clearer audio to help assure messages are understood without background noise and static
- Integrated data applications such as text messaging, GPS-based location tracking, work order ticket management and much more
- 40% longer battery life for extended work shifts
- Increased capacity – twice the number of users for the price of one frequency license

TDMA – THE BEST CHOICE

There are two primary digital radio technologies: Time-Division Multiple-Access (TDMA) and Frequency-Division Multiple-Access (FDMA).

While both digital technologies provide significant benefits over analogue, TDMA is the best choice.

TDMA technology delivers advantages over FDMA

- *Double your capacity per channel with less than half the infrastructure per channel*
TDMA divides your existing channels into two time slots enabling you to double the number of users on your system or utilise data applications. A second call does not require a second repeater, resulting in lower costs for you, as you do not need to purchase, install and maintain additional infrastructure equipment.
- *Double your capacity without the hassle*
TDMA provides two time slots on your existing licensed channels, doubling your capacity. There is no increased risk of interference, and there is no need for new licenses, simply amend your existing licenses to specify digital. Compatibility with all legacy radios working in 12.5 kHz analogue channels is also maintained by TDMA.
- *Longer battery life*
TDMA uses only half of the transmitter's capacity, resulting in longer battery life. During long work shifts or where productivity enhancing data applications place an increased power demand on the radio, this extended battery life is invaluable.
- *Advanced features*
TDMA enables smart control features like "transmit interrupt" that makes it possible to interrupt lower priority communication so critical instructions can be delivered exactly when they're needed. And to help you maximise your infrastructure investment, TDMA can transmit voice and data on the same channel.

STANDARDS BASED, FUTURE READY SOLUTION

MOTOTRBO is designed to comply with the globally recognised European Telecommunications Standard Institute (ETSI) Digital Mobile Radio (DMR) Tier 2 standard for professional two-way radio users.

DMR is widely backed by industry leading two-way radio manufacturers, and it is the most widely deployed digital mobile radio technology for professional radio users around the world. This open standard assures long-term stability and develops a community of manufacturers who build interoperable equipment that can compete on features, benefits and price.

The DMR Association represents a collection of companies and organisations that manufacture DMR equipment, supply related products and service or support the standard in other ways. Motorola is an active member of the DMR Association so you can be assured that MOTOTRBO will always be a robust and future-ready digital radio solution.





UNIQUE MOTOTRBO™ SYSTEM BENEFITS FOR ENHANCED PRODUCTIVITY

MOTOTRBO offers a robust, standards-based solution that can be tailored to meet your unique coverage and feature needs. This versatile portfolio provides a complete system of portable radios, mobile radios, repeaters, accessories, data applications, and services, a comprehensive communication solution for your business. MOTOTRBO:

- **Integrates voice and data** into one device to increase your operational efficiency and support integrated applications including MOTOTRBO Text Messaging Services. Also features an integrated GPS module for use with third-party location-tracking applications.
- Uses Time-Division Multiple-Access (TDMA) digital technology to provide **twice the calling capacity** (as compared to analogue or FDMA radios) for the price of one frequency license. A second call doesn't require a second repeater, saving you equipment costs.
- In digital mode, provides **clearer voice communications** throughout the coverage area, as compared to analogue radios, rejecting static and noise.
- Offers **enhanced battery life**. MOTOTRBO digital two-way portable radios can operate up to 40 percent longer between recharges compared to typical analogue radios.
- Provides **easy migration** from analogue to digital with the ability to operate in both analogue and digital modes.
- **Enables additional functionality** including dispatch data, enhanced call signaling, basic and enhanced privacy-scrambling and option board expandability.
- Features the **transmit interrupt** suite - voice interrupt, remote voice dekey, emergency voice interrupt or data over voice interrupt - to help prioritise critical communication exactly when needed.

EXTENDED COVERAGE WITH IP SITE CONNECT

Imagine using your MOTOTRBO digital two-way radio to speak instantly to a colleague in a plant on the other side of the world.

The IP Site Connect digital solution uses an IP network to extend the coverage of your MOTOTRBO communication system no matter where you may be located.

You can communicate easily among geographically dispersed locations located across the city, state or country. You can create wide area coverage and automatically roam from one coverage area to another with no manual intervention. Or you can simply enhance coverage at a single site like a high-rise building that contains physical barriers.

IP Site Connect enables you to extend the voice and data communication capability of your workforce far beyond what two-way radio has ever achieved before. This means dramatically improved customer service and increased productivity.

INCREASED CAPACITY WITH CAPACITY PLUS SINGLE-SITE TRUNKING

As a scalable, single-site digital trunking solution, Capacity Plus expands the capacity of your MOTOTRBO communication system even further. Over a thousand radio users can quickly and efficiently share business-critical voice and data communication on the same system without impacting on call set-up times or reliability.

MOTOTRBO INTEGRATED DATA ENABLES ADVANCED APPLICATIONS

ONE DEVICE FOR VOICE AND DATA

In addition to voice, MOTOTRBO supports text messaging, GPS location tracking capability, and custom applications from Motorola's Professional Radio Application Partner Programme such as telephony, dispatch, work order ticket solutions and much more. MOTOTRBO keeps your employees connected to the information they need to be more efficient, with the convenience of one device.

CONVENIENT AND DISCRETE MOTOTRBO TEXT MESSAGING

Text messaging enables your employees to quickly and easily share information when voice communication isn't practical. It is ideal in loud environments, for delivering messages that don't need an immediate response, or when voice communication could be disrupting to guests, students, customers, or patients.

MOTOTRBO text messaging communicates between radios, radios and dispatch systems, and even radios to any email capable device.

TRACK VEHICLES AND PEOPLE WITH INTEGRATED GPS

Every MOTOTRBO radio has an integrated GPS module to use for tracking people outside your facility, vehicles or other remote assets operating in your coverage area. Unlike other GPS capable radios, MOTOTRBO's module is integrated into the handset so there is no clumsy additional equipment to attach, carry or maintain.

This enables you to better manage your mobile work force and quickly respond to incidents by locating the nearest employee and dispatching them to the scene. It also makes it easier to manage your fleet so you can make deliveries and drive routes more efficiently.

For utility crews, taxi services, the hospitality industry, and countless other industries, the ability to see where your vehicles and employees are located with just a glance is invaluable. Your employees will be far more efficient and your customer service can improve significantly.



CUSTOM DATA APPLICATIONS WITH MOTOROLA'S PROFESSIONAL RADIO APPLICATION PARTNER PROGRAMME

MOTOTRBO which can accommodate custom data applications that adapt the radios to support your specific business tasks.

You can, for example, work with third-party developers or your own IT staff to extend the functionality of MOTOTRBO using Motorola's Professional Radio Application Partner Programme.

With this development tool you can create unique applications such as a program to help you manage your work order tickets, to integrate your dispatch and billing systems, to link your MOTOTRBO radios to your telephone system, or to connect to email.

MOTOTRBO is a powerful tool for communication with the flexibility to adapt to your work force, your customers and your business.



MOTOTRBO™ SYSTEM COMPONENTS AND BENEFITS



DR 3000 REPEATER

- 1 100% continuous duty at 40W/UHF and 45W/VHF.
- 2 Supports two simultaneous voice or data paths in digital TDMA mode.
- 3 Integrated power supply with connector for optional external DC battery backup.
- 4 Operates in analogue or digital mode, bright, clear, colored LEDs indicate mode.
- 5 LEDs clearly indicate transmit and receive modes in both channel slots.
- 6 Rack- or wall-mountable, compatible with desktop housing as well.
- 7 Sturdy handles make installation and handling easier.

REPEATER STANDARD PACKAGE

- Repeater
- AC Power Cord
- Two-year Standard Warranty

ADDITIONAL FEATURES

- Automated battery back-up capability
- Expanded coverage across multiple sites with IP Site Connect*
- Increased voice and data capacity with Capacity Plus single-site trunking*
- Dynamic mixed mode capability allows for automatic switching between analogue and digital mode
- Repeater diagnostic and control software provides remote or local site monitoring

*Digital mode only

MOTOTRBO REPEATER SPECIFICATIONS



VHF/UHF

DR 3000

General Specifications

Channel Capacity	16
Typical RF Output Low Power UHF1 and VHF High Power UHF2 (450-512 MHz) High Power UHF2 (512-527 MHz) High Power UHF1 High Power VHF	1-25 W 1-40 W 1-25 W 25-40 W 25-45 W
Frequency	136-174 MHz (VHF) 403-470 MHz (UHF1) 450-527 MHz (UHF2)
Dimensions (HxWxL)	132.6 x 482.6 x 296.5 mm
Weight	14 kg
Voltage Requirements	100-240 V AC (13.6 V DC)
Current Drain: Standby	>0.2A (100 V AC) >0.1A (240 V AC) >1.5A (typical) (13.4 V DC)
Transmit Low Power	>2.0A (100 VAC) >1.0A (240 VAC) >9.0A (typical) (13.4 VDC)
High Power	>2.5A (100 V AC) >1.25A (240 V AC) >12.0A (typical) (13.4 V DC)
Operating Temperature Range	-30°C to +60°C
Max Duty Cycle	100%
Digital Protocol	ETSI-TS 102 361-1, 2 & 3

Receiver

Frequency	136-174 MHz (VHF) 403-470 MHz (UHF1) 450-527 MHz (UHF2)
Channel Spacing	12.5 kHz / 20 kHz / 25 kHz
Frequency Stability (-30° C, +60° C, +25° C)	+/- 0.5 ppm
Analogue Sensitivity	0.30 uV (12 dB SINAD) 0.22 uV (typical) (12 dB SINAD) 0.4 uV (20 dB SINAD)
Digital Sensitivity	5% BER: 0.3 uV
Intermodulation	70 dB
Adjacent Channel Selectivity	60 dB @ 12.5 kHz 70 dB @ 20/25 kHz
Spurious Rejection	70 dB
Audio Distortion @ Rated Audio	3% (typical)
Hum and Noise	-40 dB @ 12.5 kHz -45 dB @ 20/25 kHz
Audio Response	+1, -3 dB
Conducted Spurious Emission	-57 dBm < 1GHz

Transmitter

Frequency	136-174 MHz (VHF) 403-470 MHz (UHF1) 450-527 MHz (UHF2)
Channel Spacing	12.5 kHz / 20 kHz / 25 kHz
Frequency Stability (-30° C, +60° C, +25° C)	+/- 0.5 ppm
Power Output Low Power UHF1 and VHF High Power UHF2 (450-512 MHz) High Power UHF2 (512-527 MHz) High Power UHF1 High Power VHF	1-25 W 1-40 W 1-25 W 25-40 W 25-45 W
Modulation Limiting	+/- 2.5 kHz @ 12.5 kHz +/- 4 kHz @ 20 kHz +/- 5.0 kHz @ 25 kHz
FM Hum and Noise	-40 dB @ 12.5 kHz -45 dB @ 20/25 kHz
Conducted / Radiated Emission	-36 dBm < 1 GHz -30 dBm > 1 GHz
Adjacent Channel Power	-60 dB @ 12.5 kHz -70 dB @ 20/25 kHz
Audio Response	+1, -3 dB
Audio Distortion	3%
Digital Vocoder Type	AMBE+2

MOTOTRBO™ SYSTEM COMPONENTS AND BENEFITS



MTR3000 UHF BASE STATION / REPEATER

- 1 100% continuous duty cycle (Integrated 100W Power Amp)
- 2 Supports two simultaneous voice or data paths in digital TDMA mode with 16 channels*
- 3 Integrated AC/DC power supply
- 4 Operates in analogue or digital mode
- 5 LEDs clearly indicate transmit and receive modes and overall station status
- 6 Rack-or-cabinet mountable
- 7 Front access speaker port for serviceability ease
- 8 Front access microphone port for routine service
- 9 Standard USB port for station configuration

BASE STATION / REPEATER STANDARD PACKAGE

- MTR3000 Base Station / Repeater
- AC Power Cord
- MOTOTRBO Repeater Installation Guide
- Two-year Standard Warranty

ADDITIONAL FEATURES

- Convenient access to station ports, shortening installation and maintenance time
- 12.5 or 25 kHz programmable channel spacing
- 6.25e Compliant
- Integrated 100W Power Amplifier and AC/DC Power Supply minimises cabling, rack space, expense, and overall complexity
- Software based design simplifies feature upgrades
- Power supply functions over a wide range of voltages
- Supports MOTOTRBO Capacity Plus single site trunking without a separate hardware controller*
- Expanded coverage across multiple sites with IP Site Connect*
- Repeater diagnostic and control software provides remote or local site monitoring
- Automated battery back up (charger sold separately)
- Restriction of Hazardous Substances (RoHS) compliant

*Digital mode only

MTR3000 BASE STATION / REPEATER SPECIFICATIONS

General Specifications

	MTR3000	Upgrade kit for MTR2000 stations
Number of Frequencies	Up to 16	
Modulation	FM & 4FSK	
Frequency Generation	Synthesized	
Channel Spacing	Analogue Digital 12.5 kHz, 25 kHz* 12.5 kHz (6.25e compliant)	
Mode of Operation	Semi-duplex / Duplex	
Temperature Range	-30°C to +60°C	
Antenna Connectors	Transmit and Receive, Type "N" Female	
AC Operation	85-264 VAC, 47-63 Hz	
DC Operation	28.6 VDC (25.7-30.7 VDC full rated output power)	
	Dimensions	Weight
Base Station Repeater	5.25 x 19 x 16.5 in. (133 x 483 x 419 mm)	40 lbs (19 kg)
Digital Protocol	ETSI 102 361-1, -2, -3	

Receiver

	MTR3000
Frequency	403-470, 450-524 MHz
Selectivity (TIA603)	25 kHz* 12.5 kHz 90 dB (86 dB typical) 75 dB (78 dB typical)
Selectivity (TIA603D)	25 kHz* 12.5 kHz 75 dB (85 dB typical) 45 dB (60 dB typical)
Analogue Sensitivity 12 dB SINAD	0.30 uV (0.22 uV typical)
Digital Sensitivity 5% BER	0.30 uV (0.20 uV typical)
Signal Displacement Bandwidth 12.5 / 25 kHz	1 kHz / 2 kHz
Intermodulation Rejection 12.5 and 25 kHz	85 dB
Spurious and Image Response Rejection	85 dB (typical 95 dB)
Audio Response	+1,-3 dB from 6 dB per octave de-emphasis; 300-3000 Hz referenced to 1000 Hz at line output
Audio Distortion	Less than 3% (1.5% typical) at 1000 Hz, 60% RSD
Line Output	330 mV (RMS) @ 60% RSD
FM Hum and Noise (750us de-emphasis)	25 kHz* 12.5 kHz 50 dB nominal 45 dB nominal
RF Input Impedance	50 Ohms

Transmitter

	MTR3000
Frequency	403-470, 470-524 MHz
Power Output (Continuous Duty)	8-100 watts
Electronic Bandwidth	Full Band
Output Impedance	50 Ohms
Intermodulation Attenuation	55 dB
Maximum Deviation (RSD)	25 kHz* 12.5 kHz ±5 kHz ±2.5 kHz
Audio Sensitivity	60% RSD @ 80 mV RMS
Spurious and Harmonic Emissions Attenuation	85 dB
FM Hum and Noise (750 us de-emphasis)	25 kHz* 12.5 kHz 50 dB nominal 45 dB nominal
Frequency Stability (for temperature and aging variation)	1.5 PPM/External Ref (optional)
Audio Response	+1,-3 dB from 6 dB per octave pre-emphasis; 300-3000 Hz referenced to 1000 Hz at line output
Audio Distortion	Less than 3% (1% typical) at 1000 Hz; 60% RSD
Emission Designators	FM Modulation: 12.5 kHz: 11K0F3E; 25 kHz*: 16K0F3E 4FSK Modulation: 12.5 kHz - Data Only: 7K60FXD; 12.5 kHz - Data & Voice: 7K60FXE
Digital Vocoder Type	AMBE +2™ Vocoder

UHF Input Power

	AC Line 117 Volts / 220 Volts	28 VDC D/C Battery Revert. Neg. Gnd.
100 W Standby	0.4A/0.2A	0.8A
100 W Transmit	3.3A/1.8A	11.5A

Specifications subject to change without notice. All specifications shown are typical. Repeater meets applicable regulatory requirements.



MOTOTRBO™ SERVICE OFFERINGS

SUBSCRIBER REPAIR

Managing the in-house repair and maintenance of your subscriber radios takes a dedicated staff of technicians, as well as an ongoing investment in diagnostic equipment, repair tools, and the technical training to keep up to speed on the latest technology. Motorola has made that investment and can help you easily and cost effectively keep your radios in top operating condition to ensure optimal efficiency and productivity.

Our subscriber repair service offering allows you to budget for your repairs, preventing unexpected service and maintenance costs. Extended Care Option repairs receive priority service and meet committed cycle times from our European Radio Service Centre.

• Extended Care Option (ECO):

Extended Care Option is a post-warranty service offering that extends the service coverage of Motorola portable or mobile subscriber radios. ECO can be purchased as an option to new radio purchases and is available to extend service coverage for up to five years.

• ECO Service Benefits:

With our proven repair capability, you can be sure your equipment is expertly repaired and back in your end users' hands quickly. Using the latest tools and with strict adherence to Motorola engineering procedures, our European Radio Support Center's expert technicians diagnose and repair units to original manufacturing specifications. With the Extended Care Option, you receive:

- Fast and committed turnaround times
- Predictable budgets
- Cost effective repairs
- Peace of mind



Stringent Motorola Accelerated Life Testing simulating five years of hard use in real life. EA RS-3188 in Shock, Vibration, Cycle Humidity, dPS4 for Sealing.



Compliance with ISO 9001 Standard on international quality system assurance on design, development, production, installation and servicing of a product.



Stamp of Approval from the U.S. Military for use in rough environments.



To ensure compliance with RF energy exposure standards and regulations, use only Motorola-approved batteries and accessories. Use of non-Motorola approved batteries and accessories may result in RF energy exposure standards being exceeded.

For more information please contact your local Motorola Authorised Dealer or Distributor



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www.motorola.com/mototrbo

Motorola, Ltd. Jays Close, Viabes Industrial Estate, Basingstoke, Hampshire, RG22 4PD, UK