

## FIVE REASONS TO MIGRATE TO DIGITAL TWO-WAY RADIOS

### Find Out How to Get Better Performance and Audio Quality



Buy )))    Rent )))    Service )))

Dear Two-Way Radio User:

A “smart” revolution is transforming two-way radios. Digital technology is radically improving functionality and performance in the same way that advancing technology turned the smartphone from a luxury item into a device owned by more than half of American adults.

Digital technology is opening the door to a host of useful web-based applications for two-way radios, even as it enhances capacity, coverage, audio quality, and battery life. And like modern smartphones, digital two-way radios are more affordable than ever.

This guide describes the capabilities and benefits of the latest digital two-way radios. It explores the differences between analog and digital technology and the benefits of going digital. Plus, it offers advice on how to make the transition. The options have never been greater. And thanks to backward compatibility, the move to digital can be easily phased in over time.

There are many exciting new digital products available. BearCom is delighted to lead the way in assisting organizations around the country as they adopt this progressive technology. Please let us know how we can help you harness the power of digital performance to improve your wireless communications capabilities.

Sincerely,



Jerry Denham  
President & CEO, **BearCom**

## CONTENTS

Introduction . . . . .	2
The Story of Two Signals . . . . .	3
Along Comes Digital . . . . .	3
Five Reasons to Go Digital . . . . .	4
The Tale of the TRBO . . . . .	5
The MOTOTRBO Line . . . . .	6
Frequently Asked Questions . . . . .	7

## THE STORY OF TWO SIGNALS

In the beginning, there was analog technology, which uses frequency modulation (FM) to produce a continuous wave with the voice signal. An analog two-way radio works as both transmitter and receiver, with that continuous wave in between. Analog has been the primary technology platform since the initial development of wireless communications. Analog radios have been used for business applications as far back as 1933.

- *Analog Advantages:* The integration of such a simple system into a single computer chip has dramatically reduced the cost of analog radios.
- *Analog Disadvantages:* The analog radio system has many functional limitations, and the scope of possible innovations is virtually exhausted. In addition, many two-way radio manufacturers are reducing their analog product lines.

*“The advent of the digital two-way radio is having a dramatic impact on users of wireless technology. It has opened up a new world of possibilities for significant, innovative enhancements in communication.”*

~Mark Crosby, President & CEO  
Enterprise Wireless Alliance

## ALONG COMES DIGITAL

Digital two-way radios operate by encoding, transmitting, and decoding sound waves. The signal is represented by binary numbers—1s and 0s—that correspond with voltage values. Inside the radio, the vocoder—an analysis/synthesis system used to reproduce human speech—encodes the transmission. The radio sends the signal, and the vocoder on the receiving end decodes it.

In addition, the software in digital radios contains an algorithm that recognizes the difference between voice and background noise and cancels undesirable audio for clearer, cleaner sound quality.

Digital two-way radios can also include software applications that integrate into existing computer networks and phone systems. As a result, digital radios can enable a multitude of additional functions, including GPS, text messaging, and other information sharing and communications.

*“The end-to-end nature of digital technology enables adding applications such as text messaging, GPS, and telemetry onto radio devices and systems. The ability to add a wide range of data applications to your system results in the greatest possible ROI.”*

~The Digital Mobile Radio  
(DMR) Association

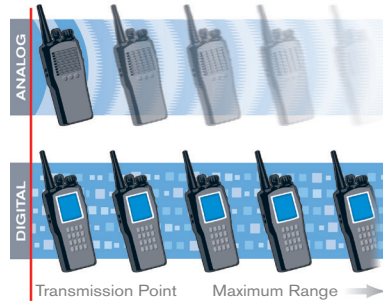
By proactively transitioning to digital radios now, your organization will enjoy greater benefits immediately, and your fleet is ready for the high-efficiency, app-driven innovations coming in the future.

## FIVE REASONS TO GO DIGITAL

- Improved Audio Quality
- Enhanced Clarity throughout the Coverage Range
- Greater Efficiency
- Extended Battery Life
- Applications that Add Functionality

1. *Improved Audio Quality:* Digital technology reduces external background noises during transmission, thereby making the digital technology platform ideal for situations such as noisy manufacturing and processing plants, or outside in windy conditions.

2. *Enhanced Clarity throughout the Coverage Range:* While an analog radio is capable of producing a clear signal within its peak performance range, once the signal moves too far from the transmit point, the analog audio will slowly fade out until it is unrecognizable. By contrast, a digital signal stays much stronger and clearer to the limits of the coverage range.



3. *Greater Efficiency:* Digital radios operate in Dual-Capacity Direct Mode (DCDM), which means that radios can share the same channel by alternating time slots. These time slots move incredibly fast, and since they alternate, more simultaneous talking paths are possible on each channel with no degradation. Plus, key information such as unit ID, status buttons, and enhanced text messages can be embedded into a single digital radio channel. In many cases, migrating from analog to digital allows users to increase talk paths without a repeater.

4. *Extended Battery Life:* Since digital radio transmitters are not constantly “on,” digital radios generally have a significantly longer battery life than analog models. For longer work shifts, or when events run all day, that can mean the difference between efficient communications for the full cycle or a number of dead batteries that need swapping out and recharging.

5. *Applications that Add Functionality:* Software applications are available to optimize digital platforms using integrated Internet Protocol (IP) networks.

**Motorola offers the WAVE Work Group Communications solution that helps mobile and office based teams communicate with each other.** WAVE delivers interoperability between smartphones, laptops, landlines, tablets, handhelds and two-way radios.

**In addition, other third-party software applications optimize MOTOTRBO digital two-way radio performance** by adding functionality for dispatch, work order management, location tracking, worker safety, and more.

## THE TALE OF THE TRBO

MOTOTRBO is Motorola’s next-generation system of digital portable and mobile radios, repeaters, and accessories. Thanks to the advantages of digital technology, this professional line delivers advanced performance to increase capacity and productivity while integrating voice and data communications.

Versatile and powerful, MOTOTRBO combines the best of two-way radio functionality with the latest digital features that deliver ease of use and added performance to meet your communication needs from the field to the factory floor. With exceptional voice quality and long battery life, MOTOTRBO keeps your work teams connected when communication is a must.

**Increase your mobile work team’s connectivity and efficiency with Motorola MOTOTRBO technology:**



**The MOTOTRBO line delivers greater performance, productivity and safety.**

Motorola Solutions is leading the industry in developing digital two-way radios that offer improved audio quality, better efficiency and extended battery life.

**CP200d Portable**

Motorola's CP200 analog was one of the most popular two-way radios ever produced! The replacement CP200d digital version retains the same simple operation, durable design and form factor.

- 16 channels, 1-5W (VHF), 1-4W (UHF)
- Can be programmed in analog or digital for a phased migration
- Uses the same chargers, batteries, and speaker-microphones as the CP200



**XPR3500 Portable**

Delivers the latest digital technologies with analog interoperability.

- 128 channels, 5W (VHF), 4W (UHF)
- Twice the calling capacity of analog radios with clearer audio quality
- Two-line display and navigation menu

**XPR7550 Portable**

Digitally enhanced to integrate voice and data with expanded network capacity.

- 1000 channels, 5W (VHF), 4W (UHF)
- Bluetooth, intelligent audio, integrated GPS
- Five-line color display



**Mobiles**

Digital MOTOTRBO mobile radios set the standard for advanced technology communications that enhance productivity and effective response by one worker or the whole team.



**FREQUENTLY ASKED QUESTIONS**

**Pricing Points**

*Q: Isn't digital more expensive?*

A: While digital radios use components that are generally more expensive than analog models, the price difference has narrowed dramatically recently. In fact, now basic digital systems are often comparably priced to analog.

*Q: Is it worth paying a bit more for digital?*

A: It's a good idea to evaluate for yourself if the added features that digital delivers are worth the moderate price difference. Aside from adding functionality, many radio users conclude that improving sound quality by itself is enough to justify upgrading to digital. To ease transition, some radio models offer dual mode, so they can be programmed to operate in analog or digital.

**Features and Functionality**

*Q: Why should we go digital?*

A: The two-way radio market is clearly moving toward digital platforms. In fact, it is worth noting that many two-way radio manufacturers are phasing out many of their analog-only models. Improved audio quality, enhanced coverage, greater efficiency, improved battery life, and the availability of a variety of applications are a few reasons why going digital is well worth exploring.

*Q: How are apps useful in digital two-way radios?*

A: Applications are a proven way to improve radio features without expensive hardware upgrades. Many two-way radio applications are already available, and by transitioning your fleet, you'll be in the best possible position to take advantage of added feature sets as they become available in the future.

**The Future of Analog**

*Q: Will analog radios become extinct?*

A: Analog radios are still a popular choice when users don't want or need feature-rich or software-enhanced equipment. Analog technologies may remain in use among lower-grade consumer models for many years to come.

*Q: Are my analog two-way radio accessories compatible with digital models?*

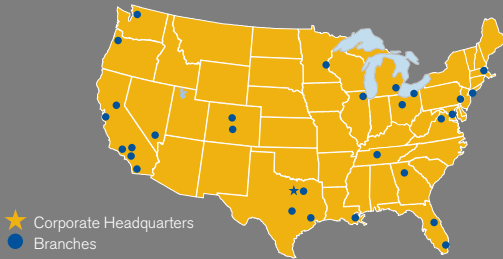
A: It depends. The new Motorola CP200d uses the same batteries as the tried-and-true CP200. However, certain earpieces, headsets, and speaker-mics are optimized for digital models. You should always check the product and packaging for compatibility.

**Next Steps**

*Q: How can I get the best value when selecting digital two-way radios?*

A: To save money and get the right two-way radios for your environment, find a provider you can trust. In addition, work with a company that carries high-quality products and has plenty of wireless expertise. To help with your digital migration, you can rely on BearCom.

# BearCom: America's Only Nationwide Wireless Dealer and Integrator!



Call us today at one of our 29 branches for immediate sales, rental, service, and digital migration assistance:

**ATLANTA, GA**  
800.417.6272

**AUSTIN, TX**  
877.213.4797

**BOSTON, MA**  
877.301.2327

**CHANTILLY, VA**  
800.955.0003

**CHICAGO, IL**  
800.900.2327

**CLEVELAND, OH**  
216.642.1670

**COLORADO SPRINGS, CO**  
719.528.8648

**COLUMBUS, OH**  
800.782.5458

**COSTA MESA, CA**  
800.513.2660

**DALLAS, TX**  
800.449.6171

**DENVER, CO**  
877.312.2327

**DETROIT, MI**  
877.475.2327

**FT. LAUDERDALE, FL**  
800.731.2327

**HOUSTON, TX**  
800.856.2022

**LAS VEGAS, NV**  
800.535.2489

**LOS ANGELES, CA**  
800.546.2327

**NASHVILLE, TN**  
877.454.2327

**NEW ORLEANS, LA**  
504.259.3041

**NEW YORK, NY & NJ**  
888.841.3600

**ORLANDO, FL**  
877.640.2327

**PHILADELPHIA, PA**  
877.319.2327

**PORTLAND, OR**  
888.371.2327

**RIVERSIDE, CA**  
800.314.2327

**SACRAMENTO, CA**  
866.612.2330

**SAN DIEGO, CA**  
877.706.2327

**SAN FRANCISCO, CA**  
800.953.2327

**SEATTLE, WA**  
800.313.2327

**ST. PAUL, MN**  
877.650.2327

**WASHINGTON, DC**  
877.895.2327



**BEARCOM**<sup>®</sup>  
*Wireless Worldwide*

- For sales outside the above areas, call **800.527.1670**.
- For rentals outside the above areas, call **800.541.9333**.
- For service or repairs outside the above areas, call **800.449.5695**.

BearCom Headquarters  
P.O. Box 559001  
Dallas, TX 75355

MOTOROLA, MOTO, MOTOROLA SOLUTIONS, and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners. ©2015 Motorola Solutions, Inc. All rights reserved.