

Sonetics[®]



THE TOP 10 MUST-HAVES WHEN CHOOSING A WIRELESS TEAM COMMUNICATION SYSTEM

A SONETICS CORPORATION E-BOOK

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INTRODUCTION

Does noise in your work zone make hearing and understanding your coworkers difficult or impossible? You might be unable to see your coworkers, making hand signals unreliable. Perhaps the sheer distance between you can't be bridged by yelling. Often it's a combination of these factors.

Whatever the challenges you face, you're sure there must be a better way than shouting and waving your arms.

Unsurprisingly, I'm here to tell you that there is a better way. And it doesn't involve yelling, or inventing new hand gestures to suit the situation at hand.

Cell phones, radios and headsets have been around for a while, but for many of you this may be your first experience with industrial team communication products. It's our goal with this eBook to give you an overview of what you need to consider when choosing wireless communication headsets, and what to avoid as you compare solutions.

1. CONNECTIVITY

There are several technologies used to connect wireless communication headsets together. You're already familiar with at least one: Bluetooth®. There are others you may have heard of but haven't used, such as two-way radios. Still others may be new to you, like DECT.

Some products rely on just one of these technologies to handle all communications. Others combine two or more to provide you with additional options and configurability.

Here's what you need to know.



THERE IS A BETTER WAY
TO COMMUNICATE
THAT DOESN'T INVOLVE
YELLING OR INVENTING
NEW HAND GESTURES.



TWO-WAY RADIO USERS TAKE TURNS TALKING AT DISTANCES UNMATCHED BY OTHER WIRELESS DEVICES.

TWO-WAY RADIOS use open frequencies to communicate, usually through a hand-held device.

Used by: Widespread adoption across major industries.

How it works: Users take turns talking. To talk, press and hold the push-to-talk button (PTT) to broadcast to others on the same frequency. To listen, release the PTT button. Others must wait until the person talking releases the button before they can be heard.

Pros:

- Reliable
- Simple to operate
- More expensive models can be very durable
- Easy to add additional radios in the future
- Longer range: up to 2+ miles

Cons:

- **Push-(and-hold)-to-talk** – To transmit, you’ll need to take your hands off your work to press and hold the PTT button.
- **One-way communication** – When you’re talking (holding down the PTT button), you won’t be able to hear anyone else until you let go of the button. Portable radios are actually one-way, even though we call them “two-way;” only one person can talk at a time.
- **Poor audio quality**
- **Noise vulnerability** – Voices blend with environment and equipment noise, resulting in missed or misunderstood messages.
- **Potential interference** – If like-frequencies are in use by others in the same area, you may hear voices of radio users who aren’t part of your team.
- **High set-up costs** – Annual and/or per-state radio frequency licensing and fees are required to begin using two-way radios.

Must-Have Features:

- **Noise cancellation** – The headset’s mic boom should offer noise cancellation to prevent background noise from coming through with your voice.
- **Hands-free operation** – When conversation involves push buttons and waiting, things slow down.
- **Natural conversation** – If you were face to face with your team, you’d just talk about the job and work together to

complete a task. But people interrupt each other. We talk over each other. Sometimes we need to shout a warning. That's not possible when you're holding down buttons and waiting your turn to talk.

BLUETOOTH was designed as a short-range wireless standard as the need for data transfer evolved with technology.

Used by: Darn near everyone with a cell phone, baby monitor, garage door opener, wireless speakers, gaming headsets, printers...you get the idea. Billions of devices are sold each year.

How it works – Short-range, UHF (ultra-high frequency) radio waves in the 2.4GHz band. Bluetooth began as a data transmission protocol and only later migrated to voice communication.

Pros

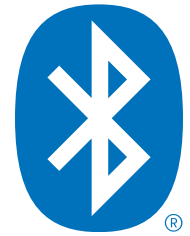
- Quick connections
- Low power consumption
- Relatively inexpensive

Cons

- Limited range – 10 to 100 meters
- Dropped connections – Transmitting voice over a short-range, lower-power, data-centric technology can cause connection problems.
- Interference in a crowded frequency band
- Lower voice quality – Slower transmission speeds affect complex voice signals more than the data transfers Bluetooth was designed to handle.

Must-Have Features

- **Ruggedness and durability** – Can it handle accidental drops and daily abuse? Bluetooth devices often sacrifice build quality and durability to keep prices down.
- **Adequate range** – Bluetooth is a short-range protocol. Does the device provide usable range for your needs?
- **Coexistence** – How does the device perform around cell phones, laptops, Wi-Fi routers and other equipment using the same frequencies?
- **Integrated hearing protection** – Do the headsets you're considering provide adequate (or any) hearing protection? Or will you need to double up with ear plugs to stay safe?



THE INSTALLED BASE OF
BLUETOOTH-ENABLED
DEVICES HAS GROWN
TO NEARLY 10 BILLION
WORLDWIDE.



DECT IS THE BUSINESS
VOICE COMMUNICATION
STANDARD.

DECT (Digital Enhanced Cordless Technology) has been in use in voice communication for several decades. Remember cordless home phones? DECT's dedicated and encrypted radio frequencies provide high quality sound with no interference.

Used by – The voice communication standard protocol for more than 30 years.

How it works – DECT operates in the exclusive 1.9GHz frequency range in North America. No other communication devices can access those frequencies.

Pros

- **Natural conversation** – DECT communication is “full-duplex,” so you can hear and talk at the same time, like a phone conversation. This is a good one for work applications like training or close coordination tasks where instant, real-time interactions are key.
- **Audio quality** – DECT wireless technology is designed for voice transmission.
- **Range** – Up to a quarter mile
- **Security** – Digital encryption ensures private conversations, even in areas with other DECT users.
- **Low set up costs**– Easy to deploy without the need for a dedicated communication professional resource. In many cases, FCC license is valid for lifetime use.

Cons

- May require some training and practice for longtime radio users using PTT.
- Expanding your user network may be limited in some cases.

Must-Have Features

- Longer maximum range (over 300 yards)
- Secure and encrypted communications
- Rugged and durable design

2. HEARING PROTECTION

Working around loud noise calls for some kind of ear protection or we'd go nuts. And even limited exposure to high decibels (dB) risks hearing damage. We can plug or cover our ears to block the noise, but that makes it near-impossible to hear a workmate when there's something important to say.

A communication headset with hearing protection is simply this; a set of domes that cover the ears with speakers installed in each and a microphone boom for talking. Look for the posted Noise Reduction Rating (NRR) as an indicator of how many decibels the headsets are designed to reduce. The higher the NRR number, the greater the protection from noise. Manufacturers use combinations of design and sound-deadening materials to produce a comfortable and adjustable fit.

Related Content:

[How It Works: Hearing Protection](#)

[How It Works: Noise Reduction Ratings](#)

3. NOISE CANCELLATION

The need for responsive, real-time communication increases with the level of risk and urgency of the situation you may find yourself in. Heavy equipment operators interacting with ground crew expect to be heard when they have something to say without the noise of the diesel engine. And when a spotter recognizes a hazard, "Hey, watch out!" must be heard loud and clear.

Noise cancelling microphones filter out the constant background noise, letting you and your crew relax and focus. They're like sunglasses for your ears. You're left with understandable conversation without the audio squint. A pair of microphones on the mic boom and an algorithm work together to tell the difference between your team's voices and background noise in order to transmit one and not the other.



COMMUNICATION
HEADSETS COMBINED
WITH HEARING
PROTECTION ENABLE
NATURAL CONVERSATION
IN HIGH- NOISE
ENVIRONMENTS.



ADJUSTABLE MICROPHONE SENSITIVITY GIVES YOU MORE CUSTOMIZATION OPTIONS FOR THE NOISE PROFILE OF YOUR JOB SITE.



LOOK FOR ELECTRONIC FEATURES THAT ARE ABLE TO MIX OUTSIDE SOUNDS WITH REGULAR VOICE COMMUNICATION.

4. MICROPHONE SENSITIVITY

Another feature that prevents unwanted noise from overwhelming your conversation is a “noise gate.” These adjustments to your microphone’s sensitivity stop sounds at or below a set level from reaching your ears. In a loud environment, a high noise gate prevents diesel engine noise from being heard. In a less-intense setting, a lower gate lets the quieter sounds of normal conversation be heard.

The higher the noise gate setting, the louder you’ll need to speak in order to be heard by your crew.

Automatic and manual adjustments to microphone sensitivity give you more options to customize these filters for the noise profile of your job site.

5. SITUATIONAL AWARENESS

Your ears are covered and you want to have a sense of your surroundings. How do you get both? Old timers would tell you to pull a dome off and ‘keep an ear out’. There’s a better way.

Look for the electronic features that are able to mix outside sounds with regular voice communication. Sometimes called ‘listen through’, the internal electronics and external mics work together to sample and optimize sounds. Loud, sudden noises are blocked, like shooter’s muffs worn at a gun range.

Some systems offer adjustability, to dial up or down the sense of what’s happening around you. You’ll get a balance of noise protection AND external cues from oncoming traffic, equipment alarms and other inputs to keep you in control.

Related content:

[Improve Your Situational Awareness With Listen-Through Technology](#)

[How It Works: Listen-Through Technology](#)

6. RANGE

Have an idea of your work zone's distance requirements so a crew member won't drop out of a conversation while you're in the middle of a critical maneuver.

Ask for the real-world range as well as looking at the published specification. Operating range will vary based on obstructions like buildings and land contours like hills and valleys.

Is your system mobile? Can you move freely around the jobsite, or from work zone to work zone, with a minimum of set-up time?

Related content:

[How It Works: Maximizing Range](#)

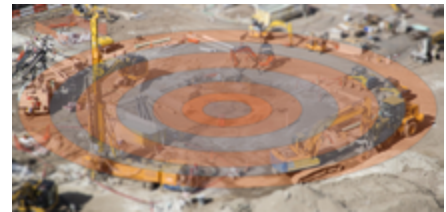
7. MOBILITY

Mobility is the freedom to move about the jobsite without getting tangled or losing connection with your gang. Best-case scenario is you're able to carry on a normal conversation while you're coordinating your work from any piece of equipment or location in the work zone.

If your headset is direct-wired to a belt pack, the connecting cord may pose a potential hazard. Can it be kept free from obstructions? Are there other wires or antennas coming off the headsets that can get tangled or caught on tools or machinery? Murphy's Law says if there's a chance you're going to get caught on something, you will.

Related content:

[Long Hair, Loose Clothing, and Hazardous Equipment: A Deadly Combination](#)



DOES THE SYSTEM'S RANGE PROVIDE ENOUGH COVERAGE FOR YOUR AVERAGE WORK ZONE?



LOOK FOR TRULY WIRELESS MOBILITY: NO EXTERNAL ANTENNAS OR DANGLING CABLES.



COMMUNICATION
HEADSETS NEED TO KEEP
YOUR TEAM CONNECTED
AND PROTECTED IN
TYPICAL JOB SITE
CONDITIONS.

8. RUGGEDNESS & DURABILITY

Is the gear you're considering designed to withstand the activity you need to carry out? If you're in tight spaces or up a tree, be on the lookout for a more robust design that can withstand hard knocks. Check for third-party certifications and endorsements like the International Protection Marking (IP) code. This standard is universal and non-biased, measuring attributes like water and dust permeability under varying conditions.

9. POWER AND CHARGING

You want your tools and equipment to be ready in the morning and low-maintenance at the end of the day. Rechargeable Lithium-ion's are the standard, allowing longer up-time per a reasonable charge time. Check the specs for a set that can handle a full work day and preferably two, in case the next shift needs to snag one or it wasn't put on the charger by the last guy.

A convenient charging system makes it easy to plug or nest equipment and batteries. Blinking-LED indicators or voice prompts can quickly alert you to your charge level. If you're a road warrior, ask about 12-volt charging options.

What's the cost of a replacement battery? How long do they last, and can they be changed out in the field? Or, do you need to send it in for a fee, to have it swapped out?

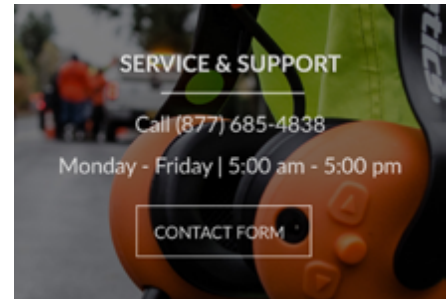
10. SERVICE AND SUPPORT

Gear breaks. It happens. How much effort will it take to get a phone assist, or get it back after sending it in? Are techs available during your work hours? What's the average cost and turnaround for a repair? Call and ask. If this were a real issue, what's your confidence level that it would be addressed to your satisfaction?

Check out the vendor's website and their customer support pages. This day and age we're all used to going online for product how-to blogs and videos. Does it look and feel up to date, covering current products? Are there FAQs to help you with the basics? How many clicks to find a phone number or email? We all appreciate being able to get in touch with a live body when we've come up with questions we can't answer on our own.

YOU'RE READY!

There it is. The basics of wireless team communication. The system that gets good marks in your book will score high with the crew. And who's going to push back on tools that'll make the job easier and safer?



**FIND OUT IF YOUR
VENDOR OF CHOICE
WILL SUPPORT YOU
AFTER THE SALE.**

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ABOUT SONETICS: Sonetics Corporation creates wireless communication solutions that enable natural conversation in challenging environments. Building on a platform of collaboration and rugged performance, our team communication systems deliver a work experience that is more productive, safer and more enjoyable. With 35 years of experience, Sonetics Corporation and its Sonetics[®], Flightcom[®] and Firecom[®] product brands deliver innovative solutions to our customers, transforming the way they work.

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