

Through The Earth Wireless Communications

Mining communications are typically accomplished using portable radios which leverage a cabled system known as "leaky feeder." Or a wireless mesh system, which relies on line-of-sight, may be deployed.

The capital costs of these systems are high (over \$300 per foot, installed), and maintenance costs can also be prohibitive.

Vital Alert offers an effective, cost-effective back-up to both of these technologies. Because it is wireless, there are no expensive cables to install or maintain. Unlike wireless mesh systems, it does not rely on line-of-sight, reducing the costs of installing numerous wireless access points and repeaters. It works with and extends the reach of existing communications and warning systems. It can be deployed at the drill face and in other areas where leaky feeder systems do not exist.



ABOUT BECKER WHOLESALE MINE SUPPLY, LLC

For mines seeking the latest in underground communications and tracking, wireless communications, proximity detection and other mine safety products, look no further than Becker Wholesale Mine Supply.

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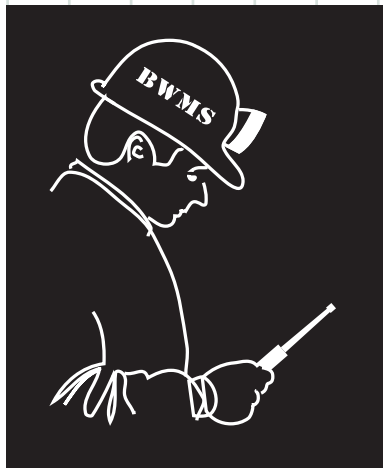
Our products are complete turnkey systems from design to test and termination. MSHA Part 23 approved, they are also easy to install and are backed by the best warranty in the business.

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358 Main Street, North Huntingdon, PA, 15642

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Through The Earth Communications



OVERVIEW

The Vital Alert C1000 Through-The-Earth Radio enables 2-way voice and data communication between the mine and the surface (and between mine sections) transmitting through rock, coal, and other media that traditional wireless cannot penetrate. The C1000 provides communication where it was not possible before and can be a wireless backup in the event of damage to cabled communication systems. This radio is equipped with standard audio and data interfaces, allowing it to connect to a wide variety of communications devices such as headsets, radios, keyboards, sensors, and RFID tag readers.

The C1000 mine and tunnel radios use magnetic induction, advanced digital techniques and ultra-low frequency transmission to wirelessly provide reliable 2-way voice, text, and low-speed data links through rock strata and other solid media. It is a versatile link that combines with established mine technologies to extend their reach to the surface and other areas out of the reach of leaky feeder systems for emergency communications and real-time data visibility. The C1000 has a range of up to 1000 feet, with additional range possible through the use of Repeaters.

FEATURES AND BENEFITS

- Range of up to 1000 ft - depends also on local environment noise and composition of strata.
- Supports a wide variety of mining communications headsets, speakers and radio interconnects for single-duplex (Push To Talk) or full-duplex voice.
- Interfaces include RS-285, RS-232, RS-422, Ethernet, Wifi, Bluetooth and USB
- Duplex data throughput up to 1kbps, with voice supported via SPR voice codec at 800bps+
- An on-board Linux platform and customer API enables the addition of application-specific features and programs such as text messaging or text to speech conversion.
- Integrates with many established mining communications technologies, such as Leaky Feeder, RFID, Wi-Fi mesh, etc.
- Operates from external AC or back up battery - up to 24 hours battery operation time.



HOW IT WORKS

The C1000 system comprises two TTE radios, each with a transmit and a receive antenna, and equipped with a wide variety of user data interfaces. The system leverages TTE patents held by Los Alamos National Security, LLC, for which Vital Alert holds the exclusive global license for mining and urban applications. (U.S. patent numbers 7,149,472, 7,043,204, and 6,263,189). Vital Alert has combined these patents with advanced signal processing techniques, a software based programmable radio and robust hardware design to create the C1000 system.

Vital Alert has also filed patents on a Portable TTE Radio backpack system, expected to launch late in 2011.



Robust Design for Coal Mining

- Operating temperature: -10 to +40 degrees C
- Humidity: 15-95% condensing
- Vibration 2-9Hz 3mm
- Shock 250 m/s/s, 6ms duration
- Explosion-proof housing
- Intrinsic safety: MSHA certification pending

APPLICATIONS

Emergency Shelter Communications – Always-on link for voice & data. Easy to relocate as the shelter moves. Two-way voice and text messaging enable immediate communications with the surface.

Sensor Data – Transmit gas and environmental levels in real time from the mine to the surface and within the mine to provide alerts when dangerous conditions arise using a wide range of I/O ports .

Personnel and Equipment Tracking – Share RFID tracking data with the surface in real time, ensuring management and rescue workers have up to the moment information.

Back Up & Extend Leaky Feeder – Wireless link survives when leaky feeder cable gets cut. More cost effective to extend into new or temporary work sites not equipped with leaky feeders. Voice and data can be transmitted between leaky feeder and TTE link for broader coverage and backup.

Remote Equipment Control – Reset or reconfigure mine equipment from the surface or another section using the TTE link to access relays and other controls.

Text Messaging – Enable text messaging and text-based alerts between mine and surface.

Text - Voice Messaging – Text messages can be converted to speech for use with speaker or paging systems.

