



Saves Lives

PED

Saves Costs



Reliable Mine Wide Communication

- Emergency Evacuation Warning
- Personal Paging
- Remote Blast Initiation
- Remote Equipment Control

Saves Lives

PED

Saves Costs

The PED® Communication System is based on ultra-low frequency transmission that propagates through rock strata (see operation schematic below). The PED® System has been in use at mines for over fifteen years and remains the only proven through-the-earth (TTE) communication system in use at mines. Refinements to the system over this time has further improved its reliability and functionality. It has been installed in over one hundred & fifty coal and metalliferous mines in Australia, USA, Canada, China and Sweden.

Investment in a PED® System is justified on significant cost savings, and safety benefits.

- **Paging**, PED® can send a 32 character text message to an individual wherever they are underground.
- **Emergency Evacuation Warning**, in an emergency an evacuation instruction can be sent simultaneously to all personnel in only 15 seconds. PED® has been installed in many mines as their primary evacuation system, and has been proven reliable and effective in emergency situations.
- **Overall Communications**, PED® complements your existing phone and radio systems to maximize benefits to the mine operator.
- **Safer Blasting**, the BlastPED System uses the proven PED® Transmission system to provide a safe and reliable remote blast initiation system.
- **Remote Control**, ventilation fans, etc can be remotely switched to reduce energy usage and manage pre & post-blast fan use.

WHAT PED® DOES

PROVIDES MINE WIDE SIGNAL COVERAGE

The ability of PED® to transmit through rock strata means it can truly deliver complete signal coverage to an underground mine. This is achieved without the need of installing antenna cable in every part of the mine (something more traditional 'line-of-sight' radio systems would require). A relatively small antenna on the surface, or underground, provides complete signal coverage – refer to the operation schematic below. This signal coverage is achieved at a fraction of the cost than any other type of radio system.

Where other systems are vulnerable to rockfall, fire and general wear and tear, PED® greatly reduces these typical problems of unreliability and maintenance.

CONTACT KEY PEOPLE, WHEREVER THEY ARE



PED® can send a private text message to any individual, wherever they are underground. This simple, one-way text message can save time and money, for example:

- Groups of miners can receive information, such as the reason for a power failure or that the conveyor system is going to be stopped outbye, etc.
- A beltman can be quickly advised of a problem that requires investigation (e.g. belt slip re-set).
- A transport driver can be advised of an urgently needed part.

CONTACT EVERYONE IN AN EMERGENCY



PED® is installed in many mines as the main emergency warning system.

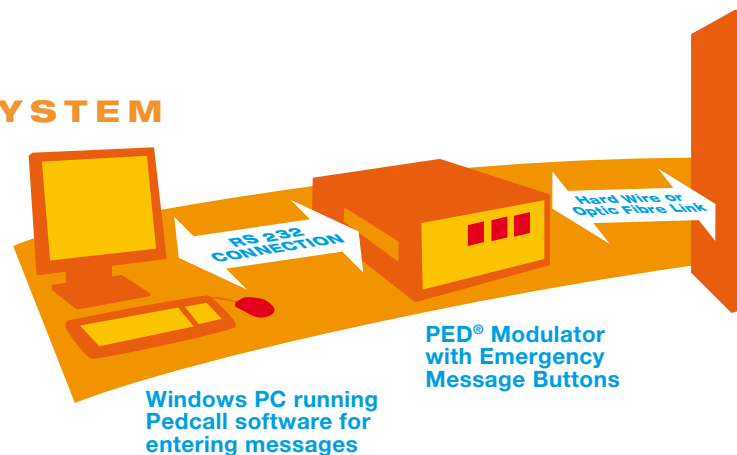
- In an emergency, messages can be sent to all personnel simultaneously.
- Importantly not only does PED® provide rapid warning, it also provides specific instructions via text messaging – such as the nature of the emergency or evacuation routes to use.

PED® COMMUNICATION SYSTEM OPERATION SCHEMATIC

The PED® System is an **emergency warning system**.

PED® stands for Personal Emergency Device. The use of ultra low frequency (ULF) signals enables PED® to transmit directly through rock strata, so wherever you are in a mine a message can be sent to you.

The mine wide signal coverage of PED® also means it is very useful **day to day communication system**. Hence PED also stands for Productivity Enhancement Device. By using it every day, should it be required in an emergency, you know it is in working order.



HOW PED® OPERATES

PED® uses ultra low frequency (ULF) signals to send signals directly through rock, so called “through-the-earth” transmissions. The main difference between PED® and other so called through-the-earth systems is that PED® is proven and is operating in many mines, 24 hours a day, 7 days a week. PED® has been installed in over 150 mines since 1990.

The system has been refined and enhanced over this time, but the basic working principles remain the same. The basic operation schematic is shown in the Figure below. The ULF transmission system transmits to a number of receiver types to allow a range of applications. The receivers are:

- **Personal Receiver** is integrated with a miner’s cap lamp. This can be the ultra light weight lithium ion battery pack, known as the Integrated Communications Cap Lamp (ICCL), or receiver versions are available to retrofit to some existing cap lamp batteries (such as Koehler-Wheat, Oldham, Northern Lights and MSA). On receipt of a message, the cap lamp flashes, a buzzer sounds, and the 32 character text message is illuminated on a liquid crystal display. The PED® receivers always indicate that they and the transmission system are operating.
- **BlastPED**, is a receiver/exploder unit that allows for the remote initiation or firing of blasts. Specially coded signals are sent through via the PED® system that ensure the BlastPED receivers only operate when required. This coding, and several other levels of physical and software security, ensure the total safety of the system. BlastPED is approved for use in a number of countries including Australia, USA and Canada and is the only “radio” remote blasting system in general use in underground mines.
- **ControlPED**, is a receiver that allows the remote switching of equipment, such as fans, pumps, etc. The ControlPED receiver is typically interfaced to the Stop-Start contacts in a device’s control panel.
- **AutoPED**, is a vehicle mounted receiver to ensure people travelling in a vehicle receive messages. The large display on the AutoPED is clearly visible to all occupants.

The PED® System has been proven to give significant productivity and safety benefits to a mining operation, large or small.



Personal Receiver



BlastPED



ControlPED



AutoPED



Personal Receiver:

- Beeps and flashes light on receipt of a message.
- Message can be read from the 32 character display on the top of the unit.
- Messages can be sent to individual receivers or to All Receivers at once.
- Stores last two messages in memory.
- Displays time and signal strength.

Other types of receivers are also available that operate off the PED® transmission system. AutoPEDs (in vehicles), ControlPEDs (for equipment switching), and BlastPEDs (for remote blast initiation).

TECHNICAL SPECIFICATIONS

Saves Lives

PED

Saves Costs

TRANSMISSION SYSTEM

Transmission Headend

Frequency	ULF
Output Power	1.2kVA
Operating temp range	10°C - 40°C (50° F - 104°F)
Power requirements	110/240V AC
Includes	Earth leakage/ground fault detection and lockout
Dimensions	Housed in 19 inch rack cabinet (H=1200mm/48in; W=600mm/24in; D=600mm/24in)

Software

PEDCALL®	Windows based main system software Individual, groups & general broadcast Name search Custom text messages Priority Access Message log 15 second Emergency Message Facility Preprogrammed messages generated at specific times can be networked on mine's LAN
----------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

MINE MONITORING	Custom Interface to monitoring system for Automatic message generation, Monitors an unlimited number of inputs, Programmable messages to predefined personnel and devices
-----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Smart External Modulator

Power	110/240 VAC
Input	RS-232 9 Pin to 9 Pin from PC
Output	0-20mA to PED Headend
Features	Emergency message buttons (3)



PED® is a well proven technology with over 15 years of refinement

RECEIVING DEVICES

Personal Receiver

Alert	Cap lamp 10 second flash, buzzer
Display	32 character liquid crystal dot matrix LED back light, Time display
	Message Storage (2), scroll facility
Voltage	Cap lamp battery nominal 4 or 7.5 volts
Power	40 mA
Weight	200 to 450 grams (1lb) depending on version.
Operating temperature	-20°C - 50°C (-4°F - 120°F)
Rating	IP67, Intrinsically Safe

AutoPED® Vehicle Mounted Receiver

Alert	Flashing light – 10 seconds Horn optional
Display	32 character liquid crystal dot matrix LED back light
Message storage	2 messages Scroll and delete functions
Power	10/28 VDC vehicle supply Automatic power shut down facility
Rating	IP65
Display dimensions	H=70mm W=220mm D=80mm H=3in W=9in H=3in
Antenna dimensions	L=170mm W=30mm D=30mm L=6.5in W=1.2in D=1.2in

ControlPED® For Fixed Equipment

Power	110V AC 50 / 60Hz 24V AC 50 / 60Hz
Indicator LEDs	Power ON / OFF Transmission Status
Switching relays	110V AC / 5amp
Receiver dimensions	H=70mm W=220mm D=80mm H=3in W=9in D=3in
Antenna dimensions	L=170mm W=30mm D=30mm L=6.5in W=1.2in D=1.2in

BlastPED® Remote Blasting System

Capacity	Capable of firing 160 ohm series circuit
Security	Individually coded receivers System access only via floppy drive disk Key/Switch to Receiver Independent supervisory circuit Sequenced command string
Indicator LEDs	Battery Status, Receiver ready, Arm, Blasted
Rating	IP66
Dimensions	H=480mm Diam=140mm H=19in Diam=5.5in

MINE SITE TECHNOLOGIES PTY LIMITED

ABN 93 002 961 953

SYDNEY

25-27 Whiting Street
Artarmon NSW 2064 Australia
PO Box 156, Artarmon 1570
Tel: +61 2 9437 4399
Fax: +61 2 9437 5688
mst@minesite.com.au

KALGOORLIE

17 Darcy Lane
West Kalgoorlie WA 6430 Australia
PO Box 4200, Kalgoorlie 6430
Tel: +61 8 9022 2300
Fax: +61 8 9022 2311
mstw@minesite.com.au

MOUNT ISA

15 Duke Street
Mt Isa QLD 4825 Australia
PO Box 2436, Mt Isa 4825
Tel: +61 7 4749 4922
Fax: +61 7 4749 4933
mstisa@minesite.com.au

MACKAY

Tel: +61 408 656 860
Fax: +61 7 4954 3999
mst@minesite.com.au

MST Offices also located in Sudbury, Canada and St Louis, USA.

WWW.MINESITE.COM.AU

Mine Site Technologies Pty Limited reserves the right to make changes to the specifications and information contained in this brochure at any time and without notice. RR3933MS

