

## TECHNICAL SPECIFICATIONS

### WHAT IS ICCL?

A new generation of cap lamp that also offers you a choice of communications and Personal Protective Equipment (PPE) options. Hence the name, ICCL – Integrated Communications Cap Lamp. ICCL uses the latest Lithium-Ion battery technology to provide long duration battery life for a fraction of the weight of older lead acid or NiMH powered cap lamps.

### WHY IS IT BETTER?

Not only is the ICCL smaller and lighter than other cap lamps, but within its sealed casing various smart electronic options are available. Such as the RFID electronic Tag and/or PED\* personal pager and/or radio, plus the soon to be released VoIP Phone Module. Having these communication devices contributes to personal safety and productivity. Having them integrated into a sealed housing ensures their protection and long term reliability.

Duration:	Suitable for 12 hour shifts
Weight:	750g (1.6lb) Lamp only 950g (2lb) with PED* & Tag
Size:	140mm (5 1/2") wide x 120mm (4 1/2") high
Ergonomics:	Hip hugging curved design User selectable lamp cord exit point Use on left or right hip
Options:	With any combination of PED*, Tag & Radio
PTO:	7.4v/0.9A
Temp Range:	-20°C to +60°C (LCD -5°C to +60°C)
Watertight:	IP67
Soft Start:	Increases bulb life
Diagnostics:	Full battery management system interfaced to LCD display. Battery fuel gauge with battery low warning and indication.
Battery Cells:	Advanced Lithium-Ion
Compatibility:	With most existing cap lamp systems (minor modifications may be necessary)
Approvals:	Coal mine approved.

Integrated Communications

# ICCL

Miners Safety Cap Lamp  
Integrated Radio Receivers

### EASY TO INSTALL - EASIER TO WEAR

ICCL is easy to implement, simply fit to your existing charging racks with minor electrical modifications. In many cases it even uses your existing headpieces to minimize the cost to change over to ICCL.

Miners will notice the difference in weight and bulk of the battery pack. With more and more PPE (such as large SCSR's) to carry, reducing the weight and bulk of a miner's cap lamp and communication equipment offers significant OH&S advantages.



### 1/3 THE WEIGHT & SIZE OF EXISTING UNITS

ICCL is a breakthrough in cap lamp technology. ICCL provides the solution on how to ensure an underground miner can carry all the necessary personal equipment without being weighed down.



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Integrated Communications

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## LIGHTWEIGHT WITH HEAVYWEIGHT TECHNOLOGY



The lightweight cap lamp with all your  
communications requirements

- RFID Tag
- VHF or UHF Radio
- PED Text Pager
- Safety
- Productivity



Dual Radio Receiver  
Integrated Miners Safety Cap  
Lamp Charger



#### PED® SYSTEM BENEFITS

- MINE WIDE PAGING
- EMERGENCY EVACUATION WARNING
- OVERALL COMMUNICATIONS
- NO COMMUNICATION INFRASTRUCTURE IN THE UNDERGROUND
- SIGNALS PASS THROUGH THE EARTH OR ROCK STRATA
- NOT SUSCEPTIBLE TO DAMAGE DUE TO UNDERGROUND FLOODING, EXPLOSION, FIRE OR CAVE-INS.



## WHAT PED® ULF PLCC DOES

### PROVIDE MINE WIDE COVERAGE WITH NO INFRASTRUCTURE IN THE UNDERGROUND!

The PED® Communication System is based on ultra-low frequency through Power Line Carrier transmission that propagates through rock strata. 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 have 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.



## flexible solutions for underground mines

### EMERGENCY SYSTEM

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® PERSONAL RADIO RECEIVERS

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).

### CONTACT KEY PEOPLE WHEREVER THEY ARE

### CONTACT EVERYONE IN AN EMERGENCY

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.

## 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 ULF transmission system transmits to a number of receiver types to allow a range of applications. The receivers are:

- Personal Radio Receiver is integrated with a miner’s safety 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.