pempek
made for mining

L0X2 Wireless Remote Control Stove Top

The L0X2 is an intrinsically safe (Ex ia) radio control handset that provides soft toggle switches for controlling a mobile mining machine.

A built-in 2.4-inch color graphics display reports real-time status feedback from the machine while it is being controlled.

The internal re-chargeable battery provides up to 16 hours of continuous use between re-charge cycles.

An internal motion sensor provides customisable safety shutdown options - such as console drop, console tilt or sudden impact shock.

Pempek's two-way radio control technology also offers options for collecting and storing machine data while the machine is being controlled.

The data is collected at the end of each shift by the charging station. Data is then available for machine reporting and performance analytics.

The L0X2 model has been customized specifically for controlling continuous miners.

Compliance
IECEx TSA
Ex I M1 Ex ia I Ma IP66/IP67

- Radio Remote Control Console is an intrinsically-safe, hand-held radio remote control handset; designed for remote control and monitoring of mobile mining equipment

- The console features a bi-directional radio data link supporting 2-way communication with the control system fitted to the mining machine. The communication link allows operator key press commands to be sent to the machine for control. The communication link also provides a pathway for machine data to be sent back to the remote console in real time

- A color graphics display on the top panel allows the machine to inform the operator of fault conditions and real-time operational status

- A built-in data logging facility supports recording of machine data and console diagnostics during the operating shift. This logged data can be later extracted at the surface and used to develop reports on mining production and machine maintenance

- The top panel of the console features a number of joysticks that can be configured as either single-axis or dual-axis control. The encoding of the radio data can also be configured to be proportional or ON/OFF for each joystick control

- Each L0X2 model features a unique combination of function labeling and joystick configuration (number of axes, proportional or ON/OFF control)

Typical Application

- Road Headers
- Continuous Miners
- Bolter Miners
- Scoops
- LHDs

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L0X2 Remote Console Features

Joystick Controls

Colour Grahic Display

Antenna
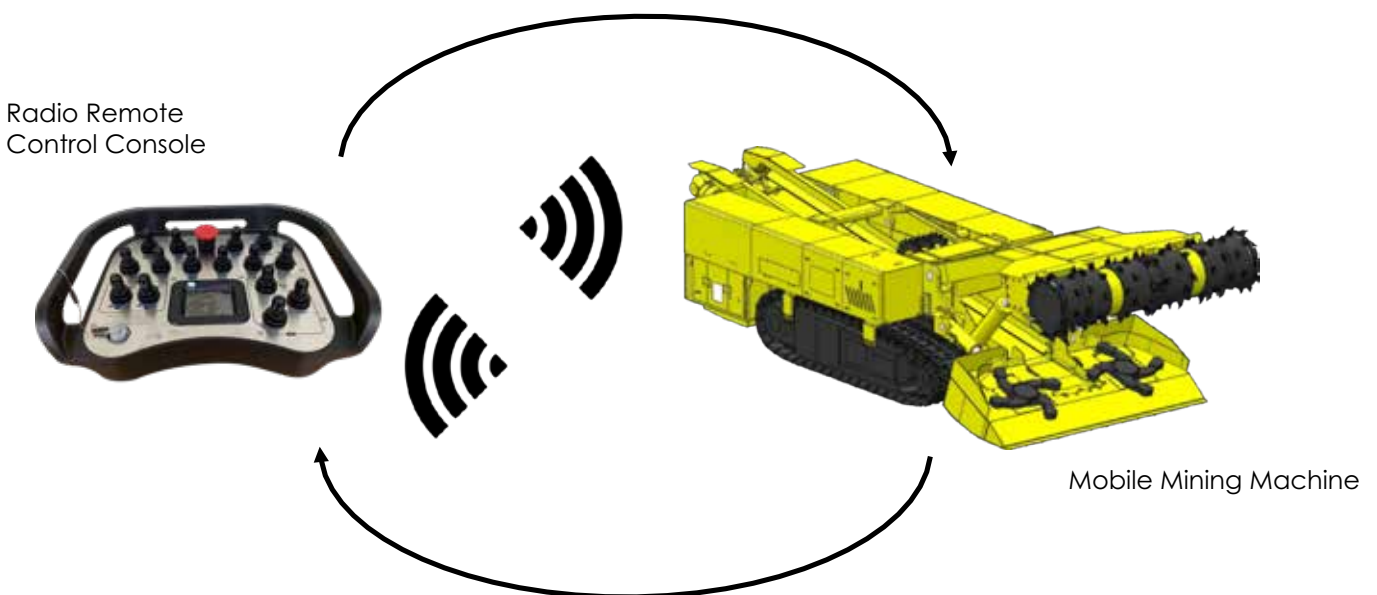
Charging Connector

Engraving above is an example only

Pempek Remote Control – Principle of operation

The remote console establishes and maintains a 2-way radio data link with the control system on-board the mobile mining machine. By way of this link, any keypress commands made by the operator are sent to the machine for control purposes.

The link also allows the machine to send data back to the remote console. The remote console features an internal "Flash" memory for storing the received machine data. This allows a data logging history to be compiled of the machine performance. Mine management can later retrieve the data logging information from the remote console and use it to generate mining machine performance and reliability reports.

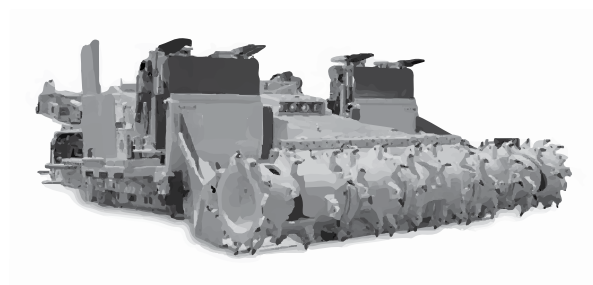**Remote console sends switch information to control machine**

Radio Remote
Control Console

Mobile Mining Machine

L0X2 Wireless Remote Control Stove Top

We offer various configuration options to suit, Bolters Miners and Continuous Miners.

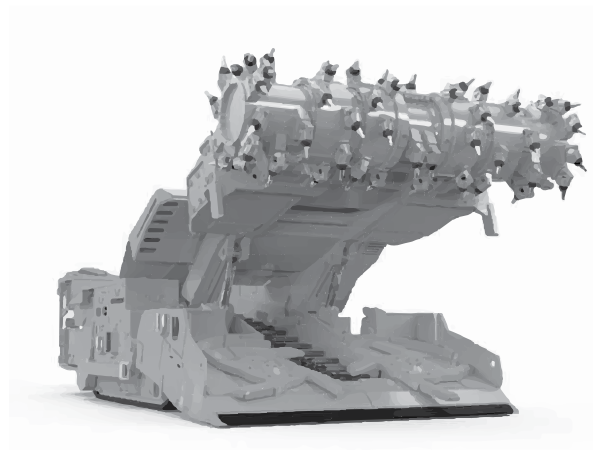**L0X2****
Wireless Remote Control Stove Top - Push Button Soft Toggle Handset For Mobile Bolter

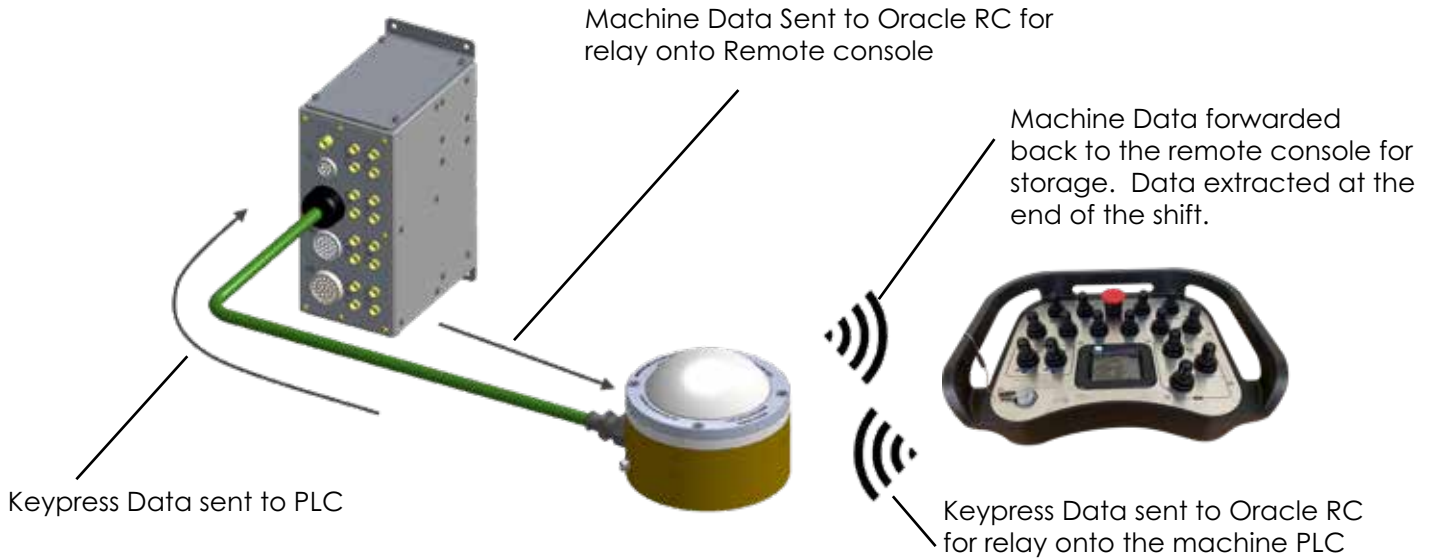**L0X2****
Wireless Remote Control Stove Top - Push Button Soft Toggle Handset For Continuous Miner

L0X2 Wireless Remote Control Stove Top

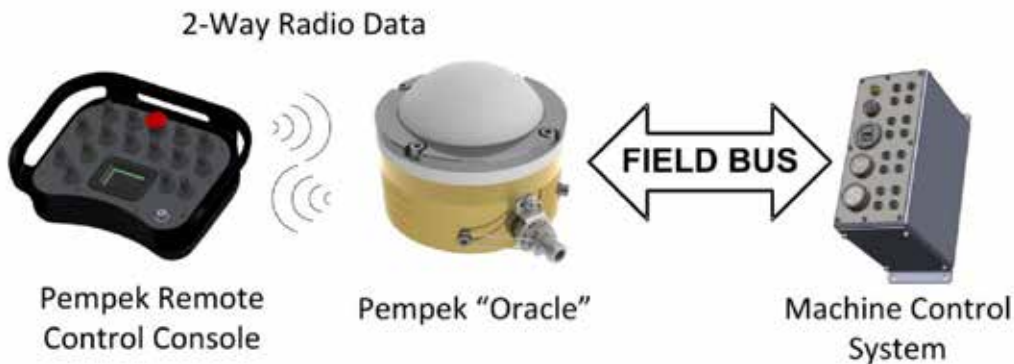**Machine sends data logging and display information to remote console**

Machine Data Sent to Oracle RC for relay onto Remote console

Machine Data forwarded back to the remote console for storage. Data extracted at the end of the shift.

Keypress Data sent to PLC

Keypress Data sent to Oracle RC for relay onto the machine PLC

System Integration Options

The L0X2 Remote Console can be adapted to a wide range of machine control applications. For each new application it is necessary for Pempek to configure the functional allocation of each control switch. The engraved top plate of the keyboard features the function nomenclature allocated to each switch.

In order for a machine control system to communicate with the remote console, a Pempek "Oracle" Radio Data Transceiver Base Station is required. The Oracle features a self-contained radio data transceiver that maintains constant communication with the remote console. The Oracle can then be controlled and monitored by the machine control system over an industry-standard fieldbus. Oracle models are available to support the following fieldbuses: RS-422, CANopen, Ethernet/IP, Ethernet Powerlink and OpenSAFETY (Ethernet Powerlink)

2-Way Radio Data

FIELD BUS

Pempek Remote Control Console

Pempek "Oracle"

Machine Control System

L0X2 Wireless Remote Control Stove Top

Specifications

General	
Parameter	**Value**
Type	Intrinsically-safe, battery-powered, joystick radio remote control handset
Keypad	Proportional Joystick (contact-less hall-effect sensor)
Control Switches	1 x latching machine stop button 15 x Control Joysticks (Single-axis or Dual-Axis) - Configuration of keypad can be customised to suit application - Up to 6 axes can be proportional (up to 4 joysticks can be dual-axis)
Display	2.4" Viewable Color OLED Graphics (240 x 320)

Radio Data Link	
Parameter	**Value**
Protocol	Pempek K27
Type	Connection-oriented, half-duplex radio data link
Frequency Band	900 MHz Band (800 MHz Band also available)
Operating Range	100 metres (typical)

Battery	
Parameter	**Value**
Type	Internal, lithium-ion pack
Capacity	7.5 Ampere-hours
Charge Endurance	16 Hours (continuous operation)
Lifespan	600 charge/discharge cycles (approximately 2 years normal operation profile)

Environmental	
Parameter	**Value**
Operating Temperature	-10$^{\circ C}$ to +50$^{\circ C}$
Environmental Protection	IP66/67
Mass	2.8 kilograms

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L0SS0101 Charging Station

The L0XN Remote Console may be charged using an L0SS Remote Console Charging station(in the non-hazardous zone only). Connection in hazardous zones using the umbilical cord is only permitted using a Pempek supplied charger which is still under development.

Connect the L0XN Remote Console to the L0SS Remote Console Charger via the cable provided with the charger. Charger and remote must be in the non-hazardous zone.

Connect via L0SS Charging Cable

L0MT Oracle RC Flameproof Ex d Radio Control Transceiver

The L0MT Oracle RC is a self-contained, flameproof (Ex d) radio control data transceiver supporting radio remote control of mobile mining machinery.
The module communicates with a variety of Pempek-manufactured handheld remote control consoles via a 2-way radio data stream (based on the 915 MHz band).

A single cable entry to the product supplies power and data communications. A range of field bus options are support - including RS-422, Ethernet and Ethernet/IP.

A host PLC communicates with the Oracle via field bus to receive key-press commands from the remote handset, and send machine status and data logging information back to the handset .

The PLC can also configure the operating channel.