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AB65-ZCONM-23-2

# JOY SMARTZONE PROXIMITY SYSTEM



The JOY SMARTZONE PROXIMITY SYSTEM is an integrated training device that helps teach personnel to operate a continuous miner from safe working zones, and to otherwise stay clear of danger zones. Its unique ability to track, recognize and log operator movement around the machine provides an additional layer of analysis for in depth training initiatives. The SMARTZONE PROXIMITY SYSTEM has been developed to work with all JOY continuous miner models and will be available for delivery late 2011.



## Operation

The operation of the SMARTZONE PROXIMITY SYSTEM is based on electromagnetic principles. The system has two basic components. The first is a group of six receivers that are strategically positioned on the continuous miner. Each receiver is embedded in a sturdy metal frame and then shielded with several inches of polycarbonate to help protect it from damage. The second component is a personal transmitter about the size of a typical cell phone that can be worn by personnel who work in close proximity to the continuous miner, such as the operator. This unit emits an electromagnetic pulse that is recorded by each of the six machine receivers. Signal strength allows each receiver to identify the transmitter wearer's location while working near the machine. Using multiple receivers, the SMARTZONE PROXIMITY SYSTEM can track the position of a person wearing a transmitter and record it for later use.

Two distinct operating zones are maintained by the receivers around the continuous miner. These zones are identical in shape and can be uniquely tailored to the equipment. Zone one acts as the initial warning zone and signals a person who is wearing a transmitter when the wearer is getting too close to the continuous miner. Zone two is smaller, and functions as the red zone or shutdown zone and disables various machine functions when it detects a person wearing a transmitter in that zone. The SMARTZONE PROXIMITY SYSTEM uses different zone shapes depending on the continuous miner operation. While trammimg, zones are expanded to include the conveyor boom and account for increased machine speeds. While cutting, the continuous miner speed is restricted and therefore the zone is decreased allowing operators more mobility to avoid haulage systems.

### Proximity Transmitter

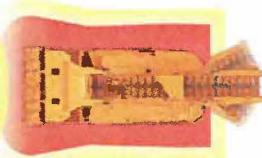
Cell phone-size device worn on the belt of personnel that work in close proximity to the continuous miner. It is MSHA approved, intrinsically safe and is self powered by a rechargeable internal battery.



Tramming



Cutting



## Features

### Personnel Tracking

The SMARTZONE PROXIMITY SYSTEM allows personnel traceability and data logging. It stores 80 hours minimum of machine operation.

### Machine Integrated Receivers

SMARTZONE PROXIMITY SYSTEM receivers are strategically incorporated into the machine to help protect them from damage. No equipment is mounted above machine covers which would be prone to damage. Extra thick polycarbonate covers are used as an added layer of protection.

### JOY Service & Support

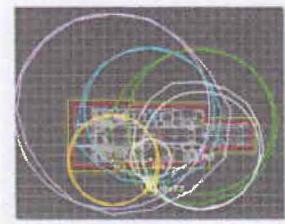
All SMARTZONE PROXIMITY SYSTEMS are backed by Joy's field service technicians and extensive distribution network.

### Compact Intrinsically Safe (IS) Components

SMARTZONE PROXIMITY SYSTEM transmitters and receivers are designed with functionality and usability in mind. Their compact size allows Joy to better protect the units reducing damage and increasing availability.

## Technology Description

SMARTZONE PROXIMITY SYSTEM receivers track transmitter position by measuring signal strength. Each circle shown below is the radius calculated from the signal strength with respect to each receiver. A transmitter is located where three or more of these circles intersect.



## Availability

The SMARTZONE PROXIMITY SYSTEM is available as an option on original equipment machines shipping late 2011. In addition, original equipment machines shipped in or after November 2011 will be capable of having the SMARTZONE PROXIMITY SYSTEM installed in the field once the system is available.



## Model Compatibility

From the smallest 14CM10 to the largest 12HM37, The JOY SMARTZONE PROXIMITY SYSTEM is compatible with the entire JOY continuous miner product line. Systems can be fitted during rebuild in an authorized Joy workshop or through a new machine purchase.



## Notice

The JOY SMARTZONE PROXIMITY SYSTEM is intended to help teach personnel to operate a continuous miner from safe working zones, and to otherwise stay clear of danger zones. It is not intended to replace training and safe operating practices; rather, it is a useful tool to assist in training personnel.