

Longwall Communication System

The Ampcontrol MSHA certified iMAC/Voicecom Longwall Communication System combines two of our leading electronics products to provide a single turn-key solution for all your longwall voice communications, pre-start warning, monitoring and control functions.

The system has been specifically designed to meet the challenge of maximizing production while maintaining safety and voice communications in harsh, hazardous industrial environments.

The iMAC/Voicecom system has been successfully deployed on a number of longwall systems in the USA where the unique system diagnostic functions are saving valuable downtime and maximizing production. When a trip occurs, the system practically instantaneously pinpoints the location and type of trip and can annunciate via customizable pre-recorded voice messages the type and location of the trip to all personnel working within the vicinity of the system. This allows workers to promptly react to announced situations without incurring the usual delays associated with determining the cause of the trip post event.

You can install an Ampcontrol longwall system knowing your personnel will be protected by a system that has been proven in use for over 10 years, the iMAC system has been assessed and qualifies for SIL2 and/or SIL3 emergency stop functions based on the proven in use route of IEC 61508.



Longwall Communication System

iMAC/VoiceCom Longwall Communication System

The Ampcontrol iMAC/Voicecom longwall system combines two of the company's leading electronics products to provide a single turn-key solution for all your longwall voice communications, pre-start warning, monitoring and control functions. The iMAC system facilitates emergency stop functions while the Voicecom system facilitates voice communications, message broadcasts and pre-start warning functions.

Both the iMAC and Voicecom systems consist of main controllers and associated equipment such as intrinsically safe barriers which are normally located in a longwall flameproof CME. Two field unit types are available for distribution across the longwall: a compact cost effective unit that provides an emergency stop function via a lockable mushroom push button and a larger unit that incorporates an Ampcontrol pullkey for installations requiring a pull-wire emergency stop system. Both field units incorporate a Voicecom Voice Amplifier (VAA) for voice communications and pre-start warning alarms. An end of line field unit (EOL) completes the system which as the name suggests must be connected at the end of the line to maintain system security and facilitate the emergency stop safety function.

All field units utilise Marco plug and sockets for quick reliable connection, pre-terminated interconnect cables may be ordered in customer specified lengths to accommodate systems of all sizes.

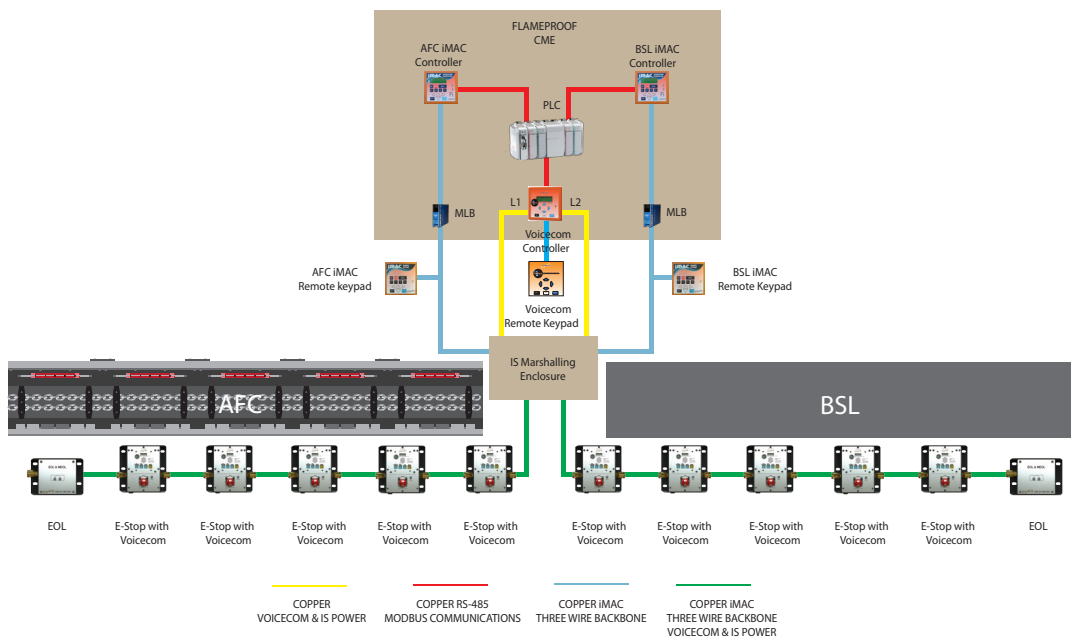
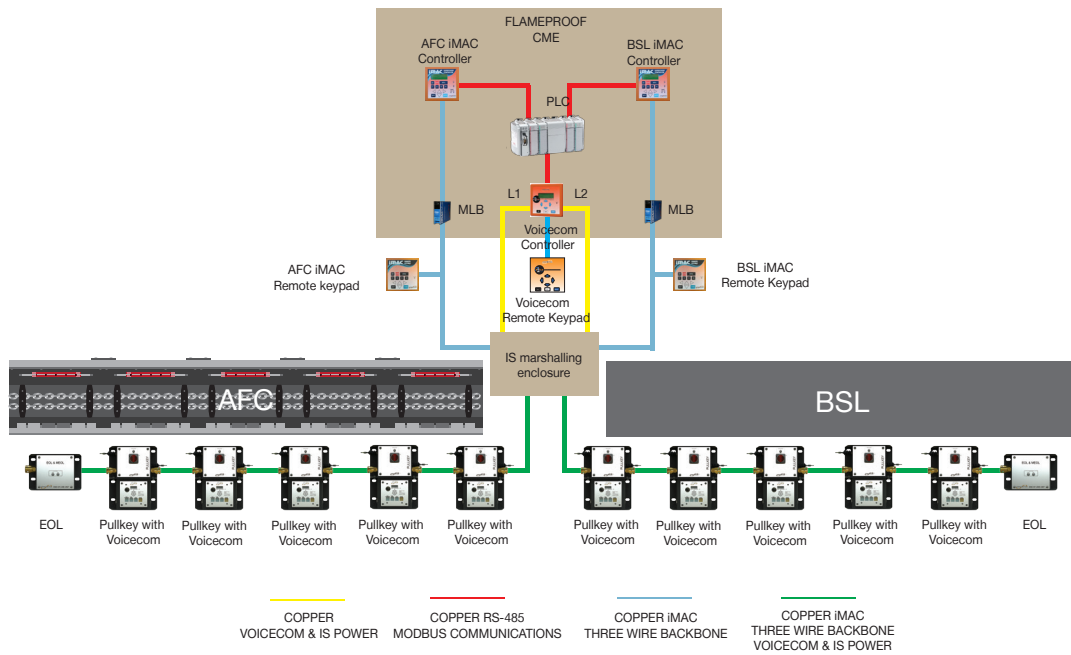
The system can accommodate up to 31 field units which can be doubled to 62 for larger systems by the addition of a second iMAC controller and utilising the second audio communications bus of the Voicecom controller. The field unit voice amplifiers are battery backed to allow safe and reliable voice communications even in the event of a mine power outage. Pre-recorded messages can be easily configured using a PC utility and may be used for announcing longwall status, for example "longwall stopped at support 10" could be announced following operation of an emergency stop located at roof support 10.

Features

- + MSHA certified Intrinsically Safe
- + Secure patented digital communications bus
- + SIL2 or SIL3 emergency stop functions (proven in use route IEC 61508)
- + Monitoring and control of longwalls up to 1.8 miles in length
- + Practically instantaneously pinpoints location and type of trips
- + Push to talk voice intercom
- + Up to 255 user customizable voice message broadcasts
- + Pre-start warning alarm annunciation complete with confirmation
- + User selectable pre-start warning tones
- + User selectable pre-start confirmation levels
- + User selectable VAA amplifier volumes
- + Battery backed VAA amplifiers
- + User selectable charge currents for easy power management
- + Local field unit line voltage, battery current and battery volts indication
- + Local field unit communications status
- + Advanced diagnostics and preventative maintenance metrics
- + Communications port for PLC/SCADA remote monitoring and triggering playback of custom voice messages
- + Auxiliary audio connection for integration with other audio/telephone systems

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The following figures show typical longwall system layouts incorporating both types of field devices.



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System Modules

iMac Controller

The iMAC Controller is the primary component of the iMAC system. It is responsible for generating the iMAC communications bus and transferring data between system components. It provides the system's human machine interface via its LCD display and push button keypad. It also provides a communications link to other devices such as PLC/SCADA systems.

The iMAC Controller can be thought of as a basic PLC, it collects data from field I/O modules which it can process via its application software to activate alarms and trip relays.

VCA Controller

The VCA Controller is the primary component of the Voicecom system. It is responsible for generating the Voicecom communications bus and transferring data between system components, playing pre-recorded voice messages and issuing and confirming pre-start warning alarms. It provides the system's human machine interface via its LCD display and push button keypad. It also provides a communications link to other devices such as PLC/SCADA systems.

Remote Keypads

Intrinsically Safe remote keypads for both the iMAC and Voicecom systems are available for mounting in the hazardous area to allow operation of the system components mounted in the flameproof MCE.

Field Unit - Amplifier with Mushroom Emergency Stop

Compact field unit incorporating Voicecom Voice Amplifier (VAA) and iMAC Emergency Stop function via mushroom push-button. The unit features two weatherproof loudspeakers, microphone, user operator buttons such as push to talk and LCD status display.

Field Unit - Amplifier with Pullkey Emergency Stop

Field unit incorporating Voicecom Voice Amplifier (VAA) and iMAC pullkey for Emergency Stop function. The VAA unit features two weatherproof loudspeakers, microphone, user operator buttons such as push to talk and LCD status display. The pullkey is manufactured from stainless steel and is IP rated for use in harsh industrial environments.

Field Unit - EOL

End of Line field device incorporates iMAC End of Line modules for maintaining system security and facilitating the emergency stop safety function.