



## Long Wall Control & Management System (LCMS)

The Bramco Longwall Control, Management System employs the power and versatility of our ICMS module to provide, in a fail-safe manner, the features to operate a longwall safely. In addition to the statutory regulations and the requirements of various standards we consider the Bramco Longwall Control and Management System (LCMS) to be the safest, most advanced, cost effective system currently available compared to other systems of comparable features and capacity.

As with all applications of the ICMS System, the longwall control is a system consisting of individual add on components which when combined together build up from a simple control to a fully integrated control and management system containing features some of which are listed below. Additionally, the hardware used on the Bramco Conveyor Control Systems with a change of software may be utilised across the face. This reduces the spares holding required as well as the cost of spares.

Our BK400 Pullkeys may be employed on the face with or without the pullwire option or you can use our Bramco Emergency Stop switches. Many functions on the face can be monitored and controlled by the LCMS including:

- Temperatures and pump pressures
- Environmental conditions on the face
- Tension on chains
- Fluid levels

### Features

- Unique 6 core single cable system.
- Signaling (stop/start) and time controlled sequencing or remote starting.
- Mains power isolation from any stop/start station or suitable location along the system. Remote isolation and re-close from any pullkey. Confirmation of isolation is available via System Status Broadcast message.
- 250 monitored locations/stations and up to 16 points of analogue or digital form per location/station.
- Multi-remote screens available along the system for interrogation, system status and control.
- Pre-Start Warning monitored on Amplifiers and Pre-Start Warning Modules with the option of trip or warn mode.
- Fully fail safe operation.
- Identification of any and all faults on the system at any one time.
- Approved/Certified for use in hazardous (gaseous) areas.
- RS232 serial port i.e PLC and monitoring system compatible.
- Gas warnings in both visible and audible forms along the system.
- Control and sequencing of other entities along the conveyor systems.
- Fully plugged system for ease of installation and repair.
- Broadcast Communication System with monitored Amplifier or Pre-Start Warning status or readiness.
- Remote indication of tripped switch or E-Stop.
- Environmental monitoring capability.
- Multi-point temperature monitoring and/or control.
- Remote power supplies for Flameproof Installation.
- Option of Pre-Start Warning modules as a cost saving measure where Amplifiers may not be required.
- Option of voice synthesiser for fault broadcast activated either automatically or from each Amplifier.
- Optional face to belt or surface communications and/or DTMF Telephone Interface Module.

Bramco Amplifiers plug into the system at any E Stop or Pullkey.

The Bramco LCMS may begin with a simple control relay and end as a system encompassing all of the features listed. Many of the LCMS features are exclusive to Bramco Electronics utilising one six core cable.



### Building Blocks

#### System 1

##### Basic stop, start and sequence

A separate signal line control (SLC) relay and End of Line Terminator with pullkeys or stop switches can be used to provide stop, start and sequence control along the lengths of the BSL and AFC as applicable.

#### System 2

##### Basic monitoring and control

By using a single LCMS Module for the BSL and AFC, 16 monitoring and control features are provided.

#### System 3

Comprehensive monitoring and control including redundancy feature

By combining the two SLC relays and the LCMS we provide by two independent means Stop, Start and Sequence Control of the BSL and AFC in the event of a fault on one or other circuits.

### LCMS Control Module

#### Contacts DR1 to DR3

DR1 is used to control the BSL - DR3 is used to control the AFC.

#### Contact DR2

Remote isolation and reclose may be initiated from any pullkey or suitable start/stop station along the system. It requires that the LCMS Control Module be line side powered.

Remote isolation does not require a PLC for operation. Isolation will only occur if DR1 and DR3 are open i.e. the BSL and AFC are not running and a stop switch/pullkey is tripped.

#### System 4

##### Communication and Pre-Start Warning

The addition of Amplifiers and/or Pre-Start Warning Sounders to system 2 and 3 provides communication and monitored Pre-Start Warning along the BSL and AFC.

#### System 5

##### Broadcast fault messages

With the addition of a Master Communications Amplifier at the BSL/AFC main panel and the inclusion of a Voice Synthesiser PCB in the LCMS - voice synthesis may be included allowing any and all conditions/faults relating to the conveyors to be broadcast along the system. Initialisation of the Synthesiser is from any Amplifier via the System Status Button. This also includes confirmation of system isolation.

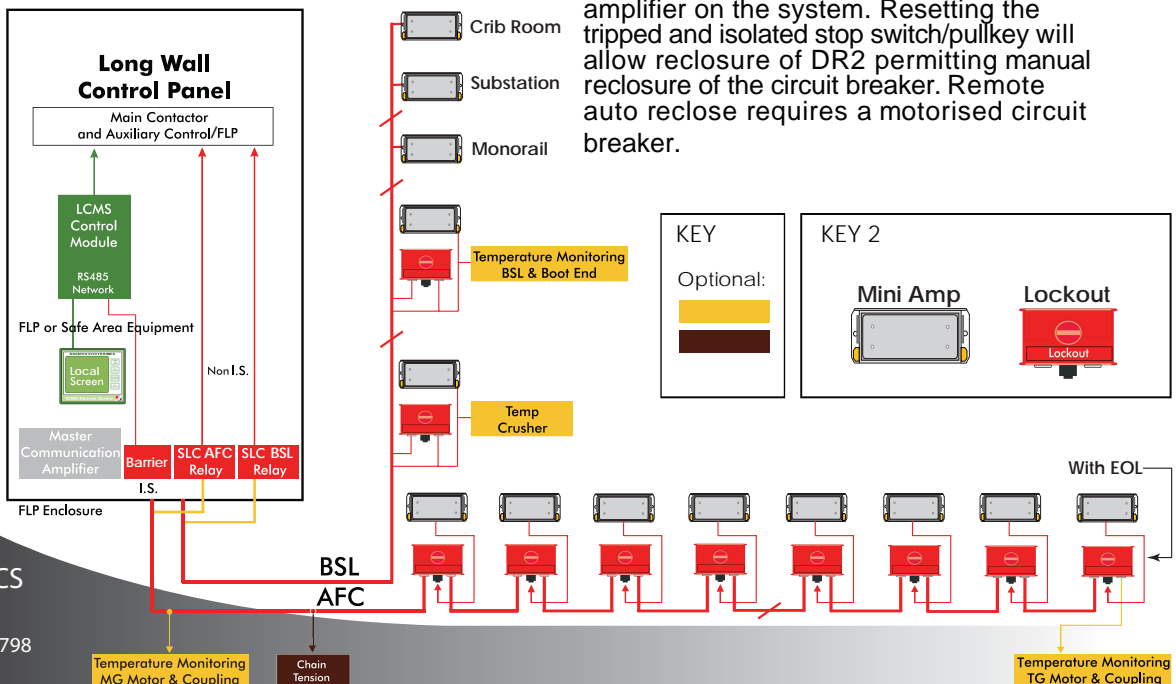
#### System 6

##### Voice and Telephone Interface

By adding the Bramco Telephone Interface Module (T.I.M) face to belt voice communication is possible and also DTFM dial telephone capability along the face from any 16 button Amplifier.

The LCMS Control Module opens a voltage free C/O contact set, DR2 (isolate). DR2 is wired into the circuit breaker with either a UV or Shunt Trip facility. An auxiliary contact i.e. CB tripped, contact open, is fed back into the LCMS Module.

Confirmation of successful isolation is available via the system status request broadcast message, initiated from any amplifier on the system. Resetting the tripped and isolated stop switch/pullkey will allow reclosure of DR2 permitting manual reclosure of the circuit breaker. Remote auto reclose requires a motorised circuit breaker.



BRAMCO ELECTRONICS

ABN 49 327 604 798  
PO Box 241  
Hunter Region MC  
www.bramco.com.au