



RINGWAY

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RINGLINE^{MI}

SAFETY FUNCTION/S, CONTROL & MONITORING

DESCRIPTION:

The Ringline system is a two-wire line powered control and monitoring system primarily designed for the failsafe distributed emergency stopping and lockout control of machinery. Ringline is especially suited to conveyors or processes that require a distributed lockout stop network and/or monitoring system.

A Ringline Safety System consists of three main components: a *Synchroniser*, that generates and powers a two-wire field bus, at least one *Safety Function Card* and *Field Transmitters*. The Safety Function Card interlocks a pair of 'run permissive' Safety Outputs to the status of up to 96 lanyard switches, stop switches, tracking switches, over temperature switches and chute full switches connected to the two-wire field bus. A two channel (A+B) field transmitter is connected to a normally closed interlock (channel A) and to a normally open interlock (channel B) in each safety lockout device being monitored to provide AS4024.1 Safety Cat 3 operation (independently verified). The system has also been designed to comply with Safety Cat 4 (AS4024.1) operation. For this level of safety, an alternate transmitter is used to monitor two normally closed interlocks in each safety device. Transmitters are numbered 1 through 96 to give each safety device an individual 'address' on the two-wire.

The advantage of the Ringline field configuration and operating philosophy lies in how simply it achieves failsafe operation. Transmitters are always connected across the Bus and the Bus remains unbroken for all operations. The configuration allows all transmitters to be positively monitored at all times and allows **any** open circuit to be immediately located. Each Ringline transmitter provides full system 'safety weight', which means no 'end of line module' is needed and any wiring configuration or combination of configurations (e.g. star, multi-drop, daisy-chain etc) can be used.

Any channels not assigned to a Safety Function can be used for analogue or digital condition monitoring.

THE FOLLOWING FEATURES DIFFERENTIATE RINGLINE FROM ITS COMPETITORS:

- Fail-safe and self fault-determining.
- Up to **12km** coverage.
- Only 2 wires used
- Earth faults cannot reduce safety.
- System channel no. is adjustable (response time can be minimised).
- Dedicated status display C/W stoppage history & diagnostics
- User messages in Display
- Trips on, and locates any system open circuit fault.
- No 'end of line' unit.

- Built-in sequence commands (3 of).
- Communicates to any PLC using a variety of serial protocols (Modbus standard).
- Unused channels can be remote PLC inputs (in combination with above).
- Multiple failsafe functions over the same two wires – e.g. Conveyor Remote Isolation as well as Emergency stopping – each with redundant uPs and outputs.
- No repeaters or boosters of any kind, for any configuration.

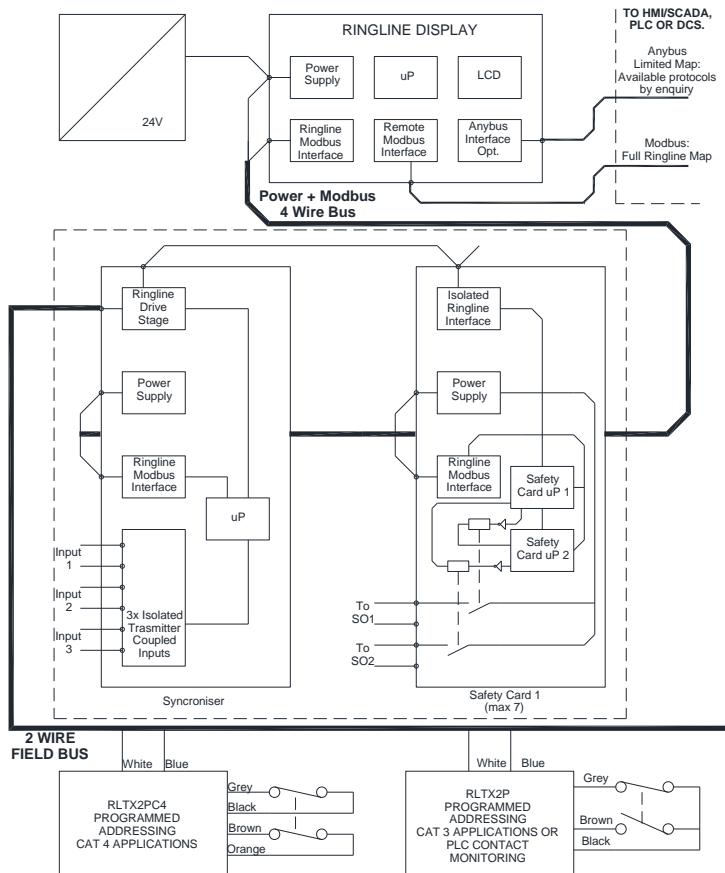
APPLICATIONS:

1: Conveyor / Machinery Distributed Emergency Stopping

Ringline can be used on any machine or conveyor that requires a distributed network of emergency stop switches or devices to be interlocked to a control system in a failsafe manner. Ringline has a history of reliable performance since 1996 as an emergency stop signal line and remote whole-current isolation controller for conveyors up to 7klms long in harsh environments (12klms possible). Any Ringline transmitters that are not allocated to the safety function can be used to provide blocked chute, belt tracking, bearing monitoring or any other remote PLC input requirements (analogue and digital).

2: Condition / Environmental Monitoring

Signals such as temperature, pressure, flow, gas levels etc can be gathered centrally from a wide area (12km radius) and/or can be shared with any number of PLCs over the same area. Available monitoring includes line powered temperature transmitters (8-bit and 10bit resolution) and 4 way 0-20mA (or 0-2V) signal transmitters (10 or 12 bit resolution). The 0-20mA transmitters can interface to other powered transducers. Each analog signal consumes only 1 Ringline channel out of 192.



BRIEF SPECIFICATIONS

No of Points: up to 96 Emergency Stop (2 channel) or 192 single channels or combinations of both

Supply: 24Vdc @ 300mA

Field Bus: 7.4V RMS

Display: Modbus Master - Comm's & power direct from Synchroniser or Safety Function Card.

Remote Comm's: Modbus RTU 19.2k/9600 no parity, 1 or 2 stop bits (standard). Optional 'Anybus' comm's.

Operating Temperature Range:
-20 → +75 °C

Dimensions:
125(w) x 125(h) x 175(d) mm