

# EMM, CRM, ARM and GRM Single Relay Modules

IECEX ITA 07.0017X



## Description

The single relay modules are used to provide remote control or duplication of iMAC controller functions.

**When connected to an iMAC Intrinsically Safe Communication line all single relay modules must be installed in a safe area or a flameproof enclosure.**

The core function of the iMAC System is the End of Line Monitoring and the conditioning of the Control Relay (CR) with 'Signal Line Healthy'. This is the **key safety feature** of this relay that is located in the iMAC Controller. 'Signal Line Healthy' is generated if and only if the End of Line Module has successfully communicated with the Controller over eight (8) scans. The End of Line Module has a unique serial number that the Controller continually checks.

The end of line data is located in a separate part of the communication protocol to the 'user data' so that it cannot be corrupted by erroneous input addresses. The 'Signal Line Healthy' message is applied to the Control Relay unconditionally and cannot be corrupted or overridden by the user programmable sections.

### EMM

The non-programmable iMAC-EMM End of Line Monitoring Module that will monitor the unique 'Signal Line Healthy' signal from the End of Line Module to provide an alternative control relay (CR) for the iMAC System. The Module is approved to Intrinsically Safe Standards.

The iMAC-EMM Module will tolerate 1 bit of data corruption in 8 scans and the CR contacts will open immediately if there is no reply from the End of Line Module or there has been more than 1 bit of data corruption. The EMM is best suited for 2 wire control applications.

### CRM

The CRM operates in a similar way to the EMM with the exception that the CRM relay will not energise unless EOL data is present and iMAC signal line address 0, bit 0 is asserted from the iMAC controller. The CRM provides iMAC controller Control Relay (CR) functionality. The iMAC-CRM Module will tolerate 1 bit of data corruption in 8 scans of the EOL data and 1 corruption in 2 scans of the address 0 bit 0 data. The CR contacts will open immediately if these conditions are not maintained.

The CRM is best suited for 3 wire control applications.

### ARM

The ARM operates if address 0, bit 1 is asserted from the iMAC controller. The ARM will tolerate 1 corruption in 2 scans of address 0, bit 1. The ARM provides a redundant iMAC controller Auxiliary Relay (AR) functionality.

The ARM is suited to either 2 or 3 wire control or monitoring applications. The ARM does not require the EOL data to operate.

The iMAC-EMM, CRM and ARM Modules can be used with tripper drives and higher-level safety systems.

### GRM

The GRM provides a general purpose single relay output. The module can be installed along the length of a conveyor to provide a single relay output. The module reads address 0 in the iMAC controller and can be set to operate off any bit (0-7) via a rotary switch inside the module.

Specific user functionality can be programmed into the controller to operate a particular bit in address zero, this relay output can then be used to operate pre-start warnings along a conveyor as an example.

## Features

- Compact design
- Din Rail mounted.
- Robust, reliable electronics

## LED Indication

A red high intensity LED mounted on the front of the modules indicates the module's status.

**Slow flash** healthy

**Two flash** when module is roll called.

**Three flash** if there is an address clash

**Fast flash** checksum error

## Data Mapping

For the CRM and ARM to operate the iMAC controller user software must contain procedures to assert address 0, bit 0 and 1 respectively when the iMAC controllers CR and AR relay are energised.

The single relay modules operate when the following conditions are met.

EMM	EOL data detected
CRM	EOL data detected + 0:0
ARM	0:1
GRM	0: Bit 0 - 7

## Programming Procedures

The modules have fixed address which can't be changed. The GRM module has a rotary switch, used to select which bit it will operate from.

## Specifications

### Power Supply:

110VAC 50Hz  
240VAC 50Hz  
24VDC

### Mounting

Din Rail

### Dimensions:

55 W x 75 H x 110 D mm

### Relay Contact:

1 N/O 8A 240V

### Communication:

iMAC 2/3 wire Line  
300 to 1000 baud

### Operating Environment:

0 to 50°C

## Equipment List

115153	iMAC-EMM 110V IS
115154	iMAC-EMM 240V IS
115151	iMAC-CRM 24VDC IS
115152	iMAC-CRM 110V IS
115149	iMAC-ARM 24VDC IS
115150	iMAC-ARM 110V IS
115155	iMAC-GRM 24VDC IS
115156	iMAC-GRM 110V IS
115146	iMAC-GRM 240V IS

## Connection Diagram

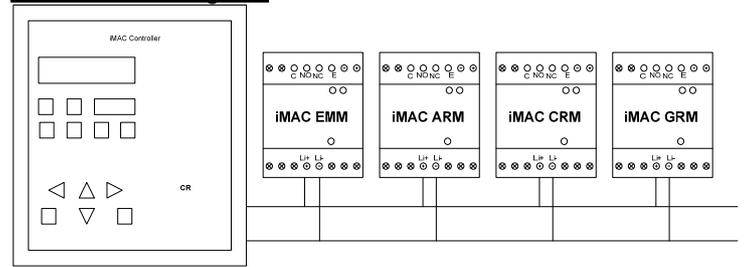


Figure 1: Connection diagram for EMM, ARM, CRM and GRM

## General Information

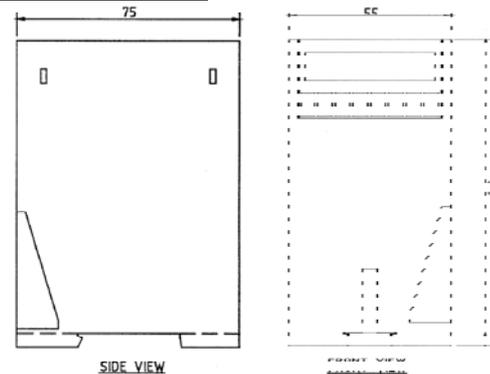


Figure 2: General Arrangement of EMM, ARM, CRM and GRM.

## Technical Support

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