TECHNICAL DATASHEET

EMM

End of Line Monitoring Module

Summary

The iMAC EMM Module is an Intrinsically Safe Relay output module for the iMAC System. The iMAC EMM monitors the unique 'Signal Line Healthy' signal from the iMAC EOL (End of Line) Module to provide an alternative control relay (CR) output for the iMAC System. There are three EMM variants to suit 24VDC, 110VAC, or 240VAC power supplies.

The EMM can be used with 2-wire and 3-wire iMAC fieldbus systems and requires EOL module data to operate.

Provides a fully independent verification of EOL module data and can be used to provide higher levels of safety.

The EMM monitors the iMAC fieldbus and energises its relay output whenever valid EOL data from the end of line module is detected. If invalid or no EOL data is detected, the relay output is de-energised.

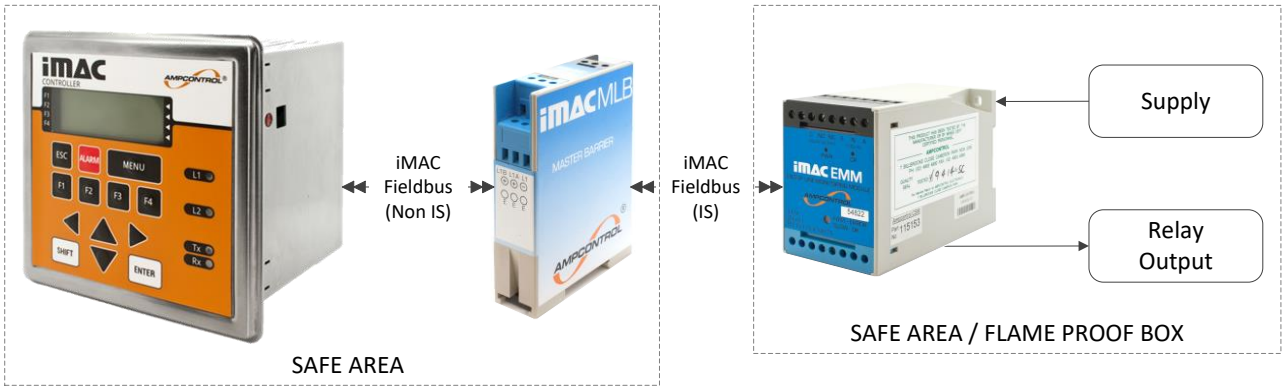
Data Register(s)

1 (Output)

Features

- Intrinsically Safe IECEx [Ex ia] Group I Ma
- Provides an alternative to iMAC Controllers Control Relay
- iMAC Fieldbus electrically isolated
- Variety of power supply options
- Power healthy LED
- CR indication LED
- Multifunction diagnostic status LED
- Remotely controlled via the iMAC Controller
- Standard DIN rail or foot mounting

Minimum System



CAUTION!

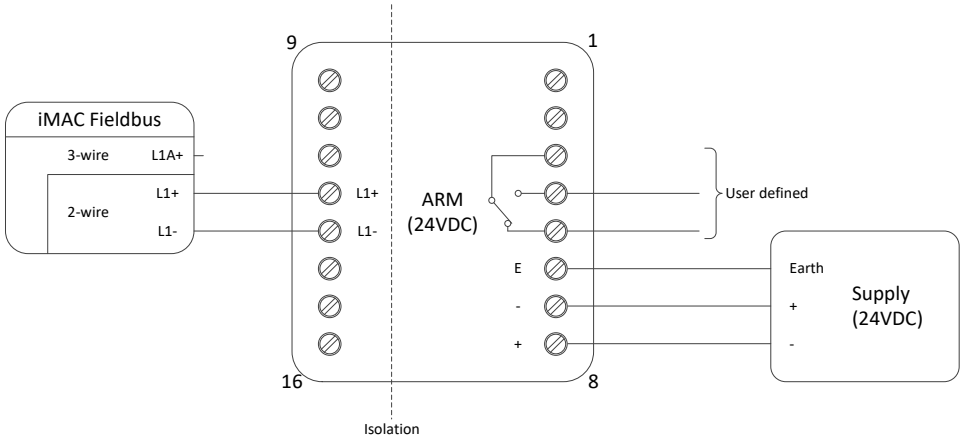
Modules used in non-I.S. systems shall not be re-used in I.S. systems (as the integrity of internal components upon which intrinsic safety depends may have been compromised).

Inductive loads must include transient suppression (snubber) to prevent output relay contact damage (refer to output relay ratings).

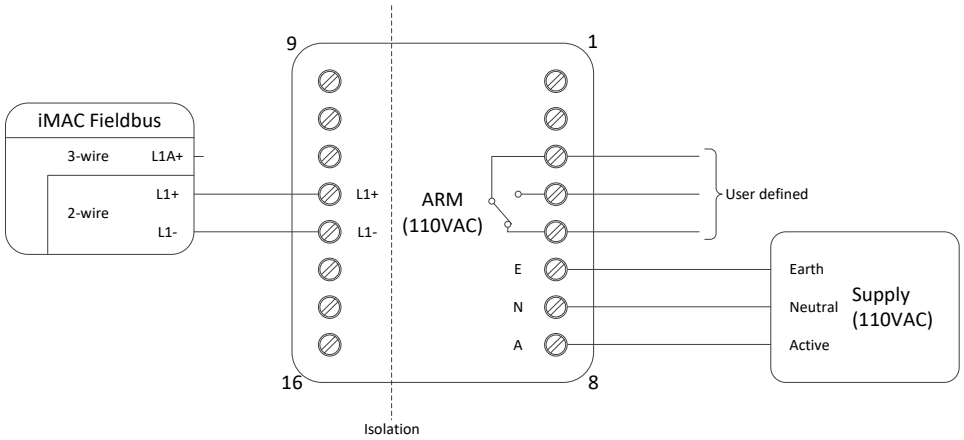
When connected to an iMAC intrinsically safe communication line, the iMAC EMM Relay must be installed in a safe area or a flameproof enclosure.

Electrical Connections

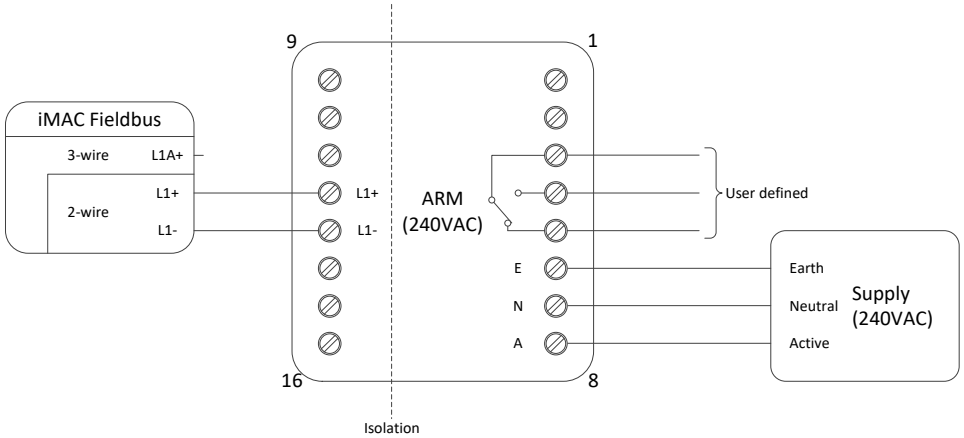
24VDC Model



110VAC Model



240VAC Model



Note: refer to iMACB094 – iMAC Installation Requirements

Terminal	Label	Type	Description
1, 2	-	-	-
3	C	Relay output	Signal line healthy (CR alternative)
4	NO		
5	NC		
6	E	Power supply input	AC / DC – model dependent
7	N / (-)		
8	A / (+)		
9, 10, 11	-	-	-
12	L1+	L1 Comms	iMAC Fieldbus (2 wire)
13	L1-		
14, 15, 16	-	-	-

Data Register(s)

Register
None

Configuration Parameters

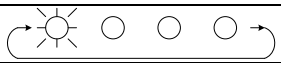
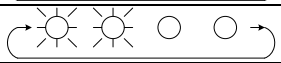
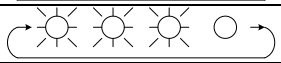
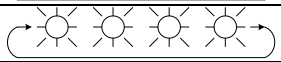
(Refer to document IMACB005 - iMAC module parameters programming procedure)

Register Parameters (roll-call name: EMM Module)					
No	**Description**	**Range**	**Default**	**Units**	**R/W**
1	Not used (Fixed at 0)	0	0	-	r
2	L1 comms – Invalid symbol counter	0 - 65535	0	-	r
3	L1 comms – Checksum error counter	0 - 65535	0	-	r
4	Not used (Factory use)	-	-	-	r

Functional Logic

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 EOL (End of Line) Module or there has been more than 1 bit of data corruption within last 8 scans of EOL module data.

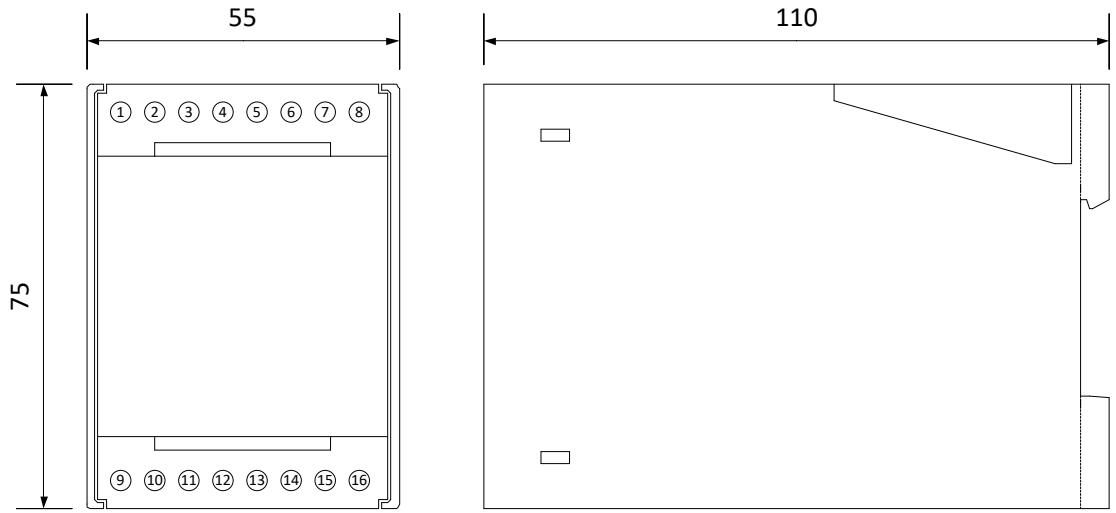
EMM Output Relay Status	
EOL Module	**EMM Output Relay**
Healthy	Energised
Failed	De-Energised

LED Indicators			
Status LED (RED)			
Flash Sequence		**Module - iMAC Comms Status**	**Module - Function Status**
Off		Unknown (check connections)	Unknown (check connections)
Slow Flash		Healthy	-
2 Flashes		Healthy (has been roll-called)	-
3 Flashes		Error (address clash)	-
Fast Flash		Warn (general)	-
Power LED (PWR)			
Off	The module is not powered		
On	The module is powered		
Control Relay LED (CR)			
Off	Relay is de-energized		
On	Relay is energized		

Certification / Approvals		
Type	[Ex ia] I Ma	
Certificate number	IECEx ITA 07.0017X	
Module type	SA16	
IP rating	Must be installed in an enclosure not less than IP20 (IP54 recommended)	
Other	Must be installed in safe area or flame proof box Must be connected in accordance with iMAC system drawing IMACZ032. L1+ L1- terminals must only connect to a single MLB (Master Line Barrier).	
I/O parameters	Terminals 1 - 8	Um = 250V
	Terminals 12 wrt 13 (L1+ wrt L1-)	Ui = 21.5V (44.65R source resistor) Ci = Negligible Li = Negligible Uo = 0V Io = 0A
Ambient temperature (Ta)	-20°C to +40°C (refer to operating environment specifications)	
This table is provided for quick reference purposes only: refer to latest issue of the Certificate of Conformity for all system designs.		

Specifications			
Mechanical			
Dimensions	110 mm (Height) x 55mm (Width) x 75mm (Depth)		
Weight	230g		
IP Rating	IP20		
Mounting	Standard 35mm DIN rail (Top Hat Rail – EN50022)		
Electrical Connections	ERNI screw terminals (maximum wire size of 4mm^2, maximum torque or 0.4 Nm)		
Environmental			
Operating Temperature	0°C to +50°C		
Power Supply (external)			
Voltage	24VDC (±15%)	110VAC (±15%)	240VAC (±15%)
Current (qty relays on)	7mA (0) / 26mA (1)	36.4mA (4W max)	16.7mA (4W max)
Relay Outputs (1 C/O)			
Limits	240VAC @ 8A (100VA max) or 30VDC @ 5A (resistive) (100VA max)		
Communications (iMAC L1)			
Hardware interface	2 wire (+/-18VDC I.S. via MLB barrier or +/-21VDC non I.S. iMAC Fieldbus)		
Line Speed	300 - 1000 baud		
Bit protocol	iMAC proprietary		
L1 Isolation	3.5kV AC		
L1 Line Loading (baud)	Relay energised: 0.80mA (300) / 1.32mA (500) / 3.56mA (1000)		
	Relay de-energised: 0.52mA (300) / 0.82mA (500) / 2.16mA (1000)		
Find Out More			
For more information on this product, contact Ampcontrol Customer Service on +61 1300 267 373 or *customerservice@ampcontrolgroup.com* or visit the Ampcontrol website: www.ampcontrolgroup.com			

Dimensions



Equipment List

Part Number	Description
144325	MODULE IMAC EMM 24VDC IECEx
115153	MODULE IMAC EMM 110V IECEx
115154	MODULE IMAC EMM 240V IECEx