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 24 VDC, 110 VAC, or 240 VAC 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.
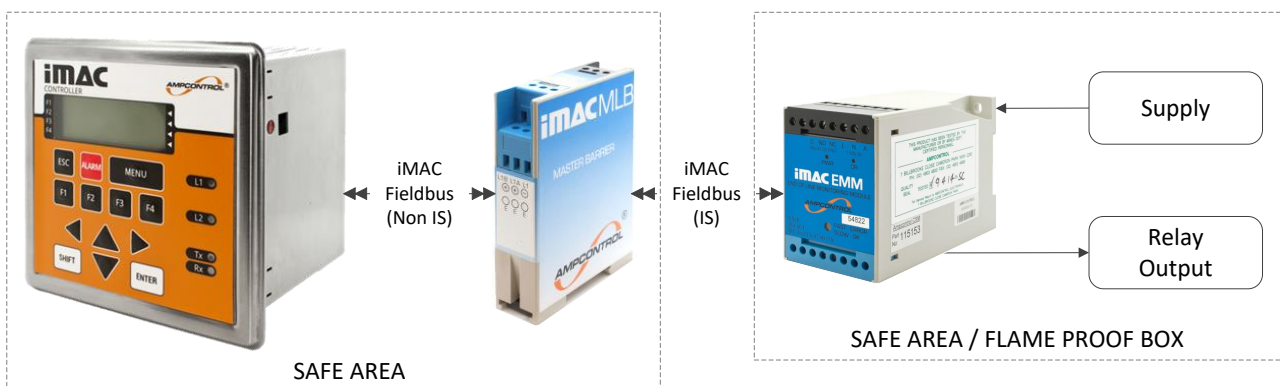
Data Register(s)

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

iMAC EMM Technical Datasheet
IMACB143 Version 2
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Page 1 of 5

ampcontrolgroup.com
customerservice@ampcontrolgroup.com
+61 1300 267 373

| **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

24 VDC Model
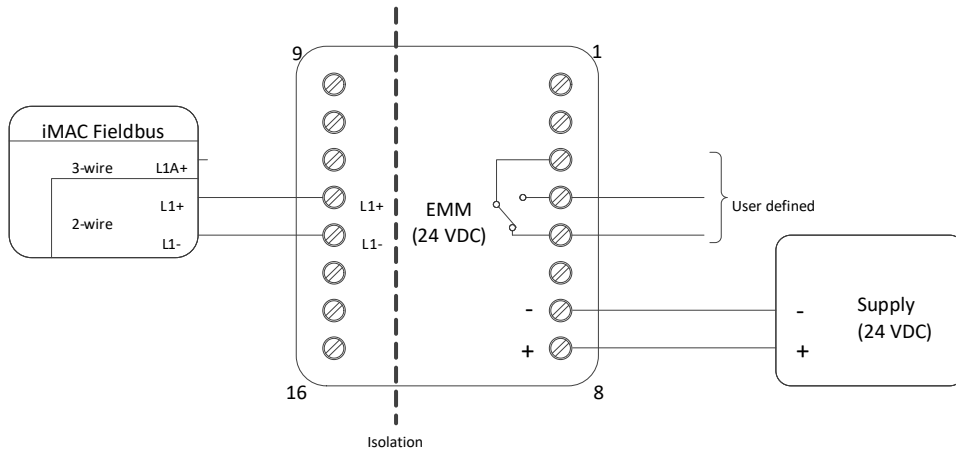
110 VAC Model
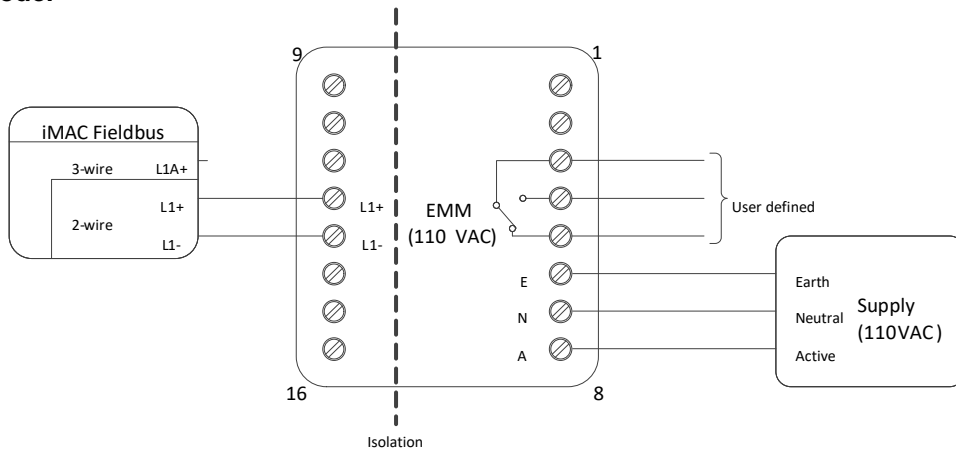
240 VAC Model
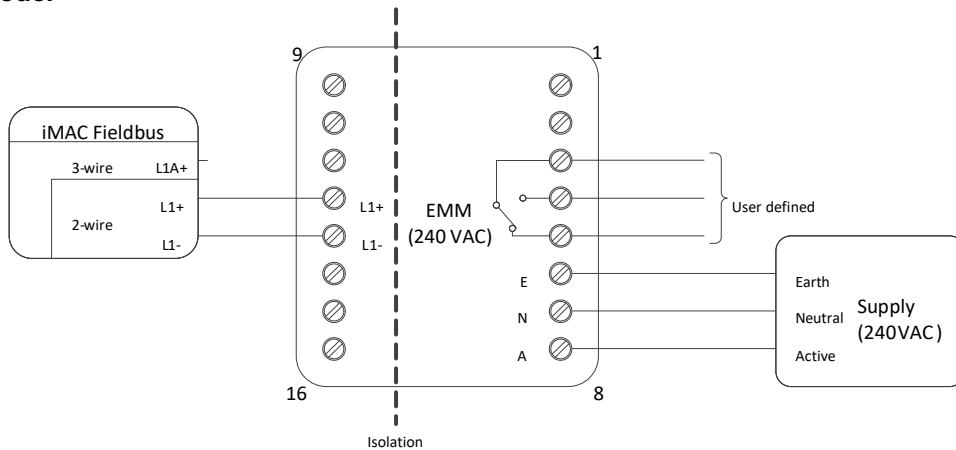
Note: refer to iMACB094 – iMAC Installation Requirements

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 (E connection required for AC models only)
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**

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 = 250 V
	Terminals 12 wrt 13 (L1+ wrt L1-)	U_i = 21.5 V (44.65 R source resistor) C_i = Negligible L_i = Negligible U_o = 0 V I_o = 0 A
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 (H x W x D)	75 x 55 x 110 mm	
Weight	230 g	
IP Rating	IP20	
Mounting	Standard 35 mm DIN rail (Top Hat Rail – EN50022)	
Electrical Connections	ERNI screw terminals (maximum wire size of 4 mm^2, maximum torque or 0.4 Nm)	
Environmental		
Operating Temperature	0 °C to +50 °C	
Power Supply (external)		
Voltage	24 VDC (±15 %)	110 VAC (±15 %)	240V AC (±15 %)
Current (qty relays on)	7 mA (0) / 26 mA (1)	36.4 mA (4 W max)	16.7 mA (4 W max)
Relay Outputs (1 C/O)		
Limits	240 VAC @ 8 A (100 VA max) or 30 VDC @ 5 A (resistive) (100 VA max)	
Communications (iMAC L1)		
Hardware interface	2 wire (+/-18 VDC I.S. via MLB barrier or +/-21 VDC non I.S. iMAC Fieldbus)	
Line Speed	300 - 1000 baud	
Bit protocol	iMAC proprietary	
L1 Isolation	3.5 kV AC	
L1 Line Loading (baud)	Relay energised: 0.80 mA (300) / 1.32 mA (500) / 3.56 mA (1000)	
	Relay de-energised: 0.52 mA (300) / 0.82 mA (500) / 2.16 mA (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

FRONT VIEW

SIDE VIEW
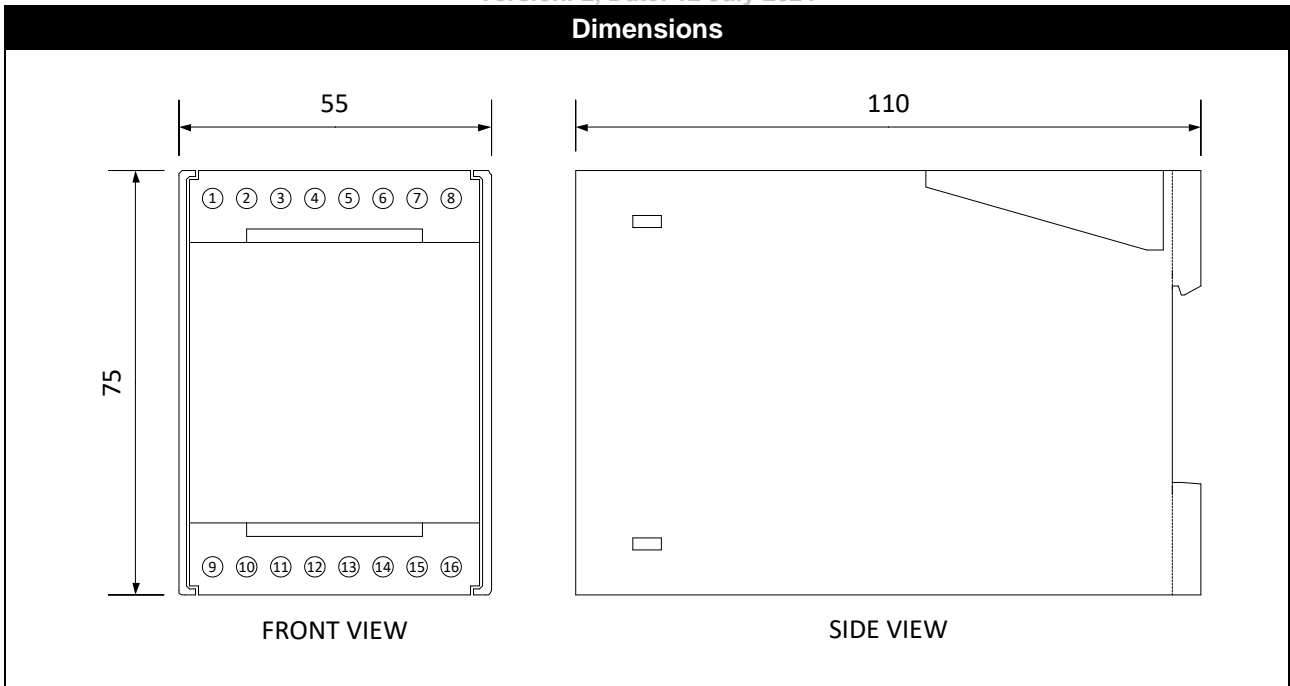
Equipment List	
Part Number	**Description**
144325	MODULE IMAC EMM 24VDC IECEx
115153	MODULE IMAC EMM 110V IECEx
115154	MODULE IMAC EMM 240V IECEx

DISCLAIMER

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