

EOL & MEOL

End-of-Line & Monitoring-End-of-Line Modules

Summary

The iMAC EOL & MEOL Modules are Intrinsically Safe End-of-Line modules that allow the iMAC Controller to monitor the status of the iMAC L1 Fieldbus communication line. The modules are powered directly from the iMAC L1 Fieldbus communication line.

The core function of the iMAC Controller is to condition its Control Relay (CR) with 'Signal Line Healthy'. 'Signal Line Healthy' is generated if and only if the End of Line Module(s) are successfully communicating with iMAC Controller.

The iMAC EOL module is required for both 2-wire and 3-wire iMAC E/stop systems. The MEOL module is only required for 3-wire iMAC E/stop and remote isolation systems. Both modules have a unique serial number.



Data Register(s)

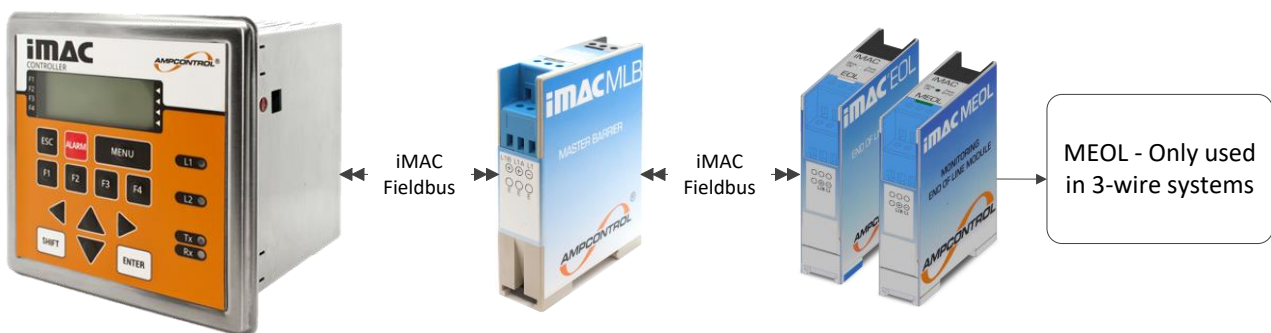
EOL 4 (Status, Resistance, Serial Number, Error Counter)

MEOL 4 (Status, Resistance, Serial Number, Error Counter)

Features

- Intrinsically Safe IECEx [Ex ia] Group I Ma
- Provides 'Signal Line Healthy' condition
- Down-line powered from the iMAC L1 Fieldbus
- Compact fully encapsulated design
- Multifunction diagnostic status LED
- Remotely monitored via the iMAC Controller
- Standard DIN rail 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).

The EOL and MEOL modules must be connected at the extreme end of the iMAC L1 Fieldbus communication line. If this is not observed, any control switches connected after the module/s will be inoperative.

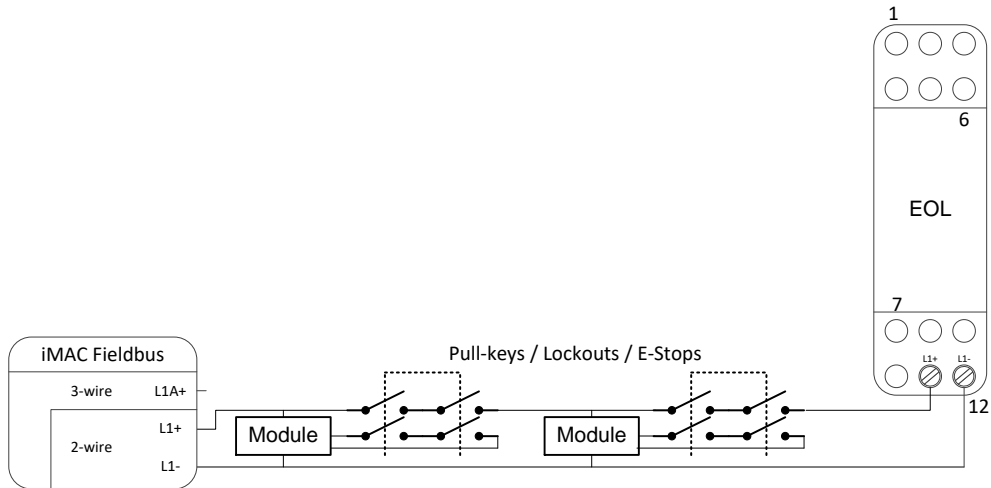
CAUTION!



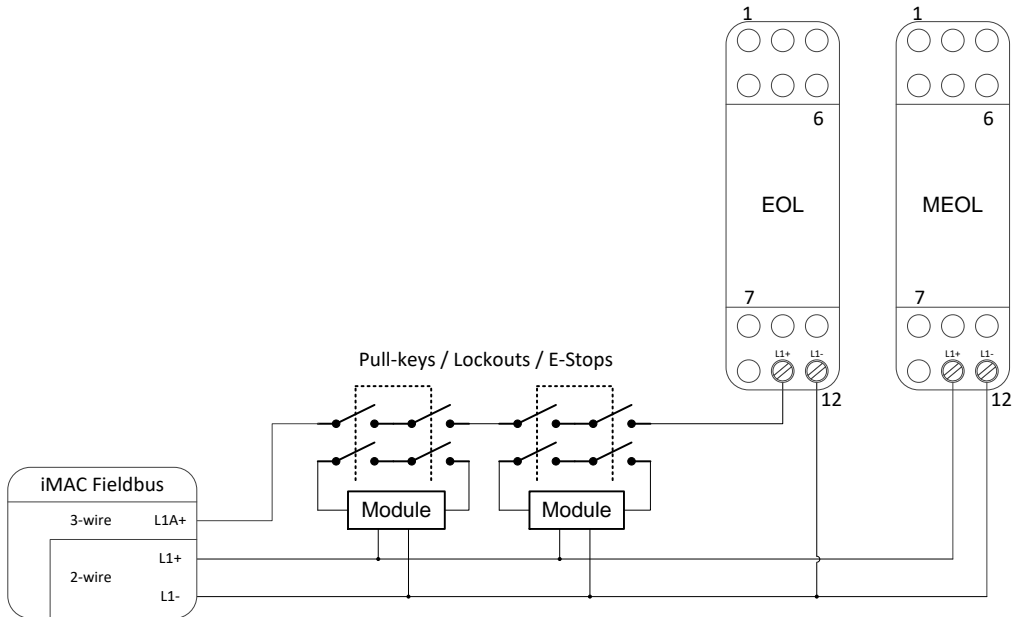
There should only be one EOL and one MEOL (if required) per iMAC L1 Fieldbus communication line. If two EOL modules are connected, the iMAC Controller will report an end of line clash condition and the iMAC Controller Control Relay (CR) will de-energise (fail safe). If two MEOL modules are connected, the iMAC Controller will report an address clash.

Electrical Connections

2-Wire System (EOL only)



3-wire System (EOL & MEOL)



Note: refer to iMACB094 – iMAC Installation Requirements

Terminal	Label	Type	Description
1 - 10	Not used	-	-
11	L1+	L1 comms	iMAC Fieldbus (2 wire)
12	L1-		

Data Register(s)

EOL Status Register (iMAC Controller, System Status Register, Modbus Address 256)			
Bit	Description	Bit Value	R / W
15	-	X	r
14	-	X	r
13	EOL Clash (more than one EOL detected on iMAC Fieldbus)	1 = Yes	r
12	EOL Short Circuit (short circuit detected on iMAC Fieldbus)	1 = Yes	r
11	EOL Open Circuit (EOL module not detected, offline)	1 = Yes	r
10	EOL Ok (EOL module detected, online)	1 = Yes	r
9	-	X	r
8	-	X	r
7	-	X	r
6	-	X	r
5	-	X	r
4	-	X	r
3	-	X	r
2	-	X	r
1	-	X	r
0	-	X	r
EOL S/N Register (iMAC Controller, Modbus Address 1028)			
EOL module 16-bit serial number (less serial number generation suffix: -G2, -G3, -G4), range: 0-65535			
EOL Series Resistance Register (iMAC Controller, Modbus Address 512)			
EOL module series resistance reading, range: 0-1000 ohms			
EOL Offline Error Counter Register (iMAC Controller, Modbus Address 1045)			
EOL module offline error counter, increments each time EOL module is scanned and detected as offline, range 0-65535, cleared on iMAC Controller power cycle.			
EOL Clash Error Counter Register (iMAC Controller, Modbus Address 1046)			
EOL module clash error counter, increments each time EOL module is scanned and detected as clashed with another EOL module, range 0-65535, cleared on iMAC Controller power cycle, rolls over from 65535 to 0 on next count after 65535.			

MEOL Status Register (iMAC Controller, A96 Status Register, Modbus Address 352)			
Bit	Description	Bit Value	R / W
15	-	X	r
14	-	X	r
13	-	X	r
12	-	X	r
11	-	X	r
10	-	X	r
9	-	X	r
8	-	X	r
7	-	X	r
6	-	X	r
5	-	X	r
4	-	X	r
3	MEOL Online/Offline (EOL module detected / not detected)	1 = Online 0 = Offline	r
2	-	X	r
1	MEOL Clash (more than one module detected at address 96)	1 = Yes	r
0	-	X	r
MEOL S/N Register (iMAC Controller, A96 Data Register, Modbus Address 96)			
MEOL module 16-bit serial number (less serial number generation suffix: -G2, -G3, -G4), range: 0-65535			
MEOL Series Resistance Register (iMAC Controller, A96 Resistance Register, Modbus Address 608)			
MEOL module series resistance reading, range: 0-1000 ohms			
MEOL Error Counter Register (iMAC Controller, A96 Error Register, Modbus Address 864)			
MEOL module error counters: high byte = 8-bit offline counter, low byte = 8-bit clash counter, range 0-255, cleared on iMAC Controller power cycle, rolls over from 255 to 0 on next count after 255.			

Configuration Parameters

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

EOL Parameters (roll-call name: EOL 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

MEOL Parameters (roll-call name: MEOL Module)					
No	Description	Range	Default	Units	R/W
1	MEOL address (Fixed at 96)	96	96	-	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

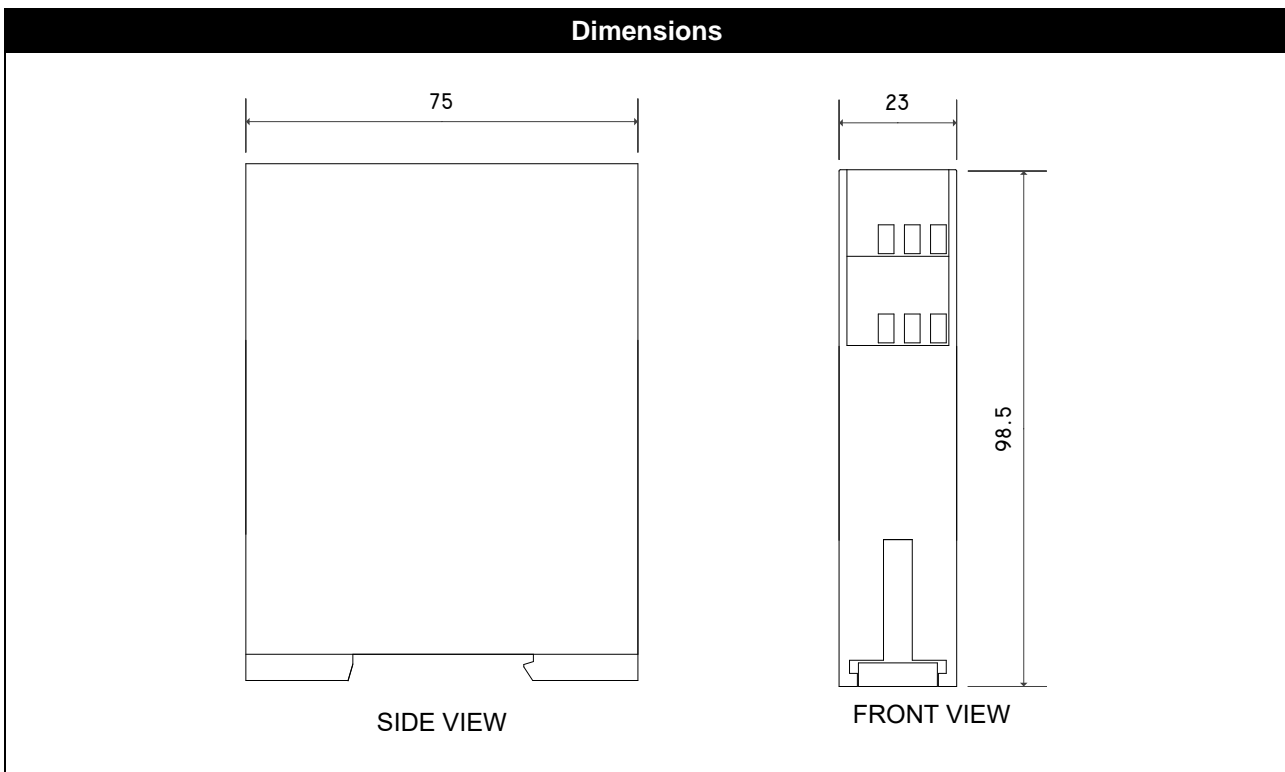
LED Indicators			
Status LED (RED)			
Flash Sequence	Module - iMAC Comms Status	Module - Function Status	
Off	Unknown (check connections)	Unknown (check connections)	
Slow Flash	Healthy	-	
2 Flashes	Healthy (has been roll-called)	-	
3 Flashes	Error (address clash)	-	
Fast Flash	Error (general)	-	

Certification / Approvals		
Intrinsic Safety		
Type	Ex ia I Ma (for use in zone 0, 1 or 2)	
Certificate number	IECEX ITA 07.0017X	
Module type	GM1-D	
IP rating	Must be installed in an enclosure not less than IP20 (IP54 recommended)	
Other	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	L1+, L1- (Terminals 11 - 12)	Ui = 21.5V (44.65R source resistor) Ci = Negligible Li = Negligible
Ambient temperature (Ta)	-20°C to +40°C (refer to operating environment specifications)	
<i>This table is provided for quick reference purposes only: refer to latest issue of the Certificate of Conformity for all system designs.</i>		
QPS		
File Number	LR1527	
Model	121905 MODULE IMAC EOL IECEX 121908 MODULE IMAC MEOL IECEX	
Environment	Indoor use (or must be installed in a suitable outdoor enclosure with minimum IP54 rating) Altitude up to 2000m Pollution Degree 2	
<i>The specified values approved by these standards may differ from the general specifications detailed elsewhere in this datasheet.</i>		

Specifications

Mechanical	
Dimensions	23mm x 75mm x 98.5mm (See diagram below)
Weight	195g
IP Rating	IP20
Mounting	Standard 35mm DIN rail (Top hat rail – EN 50022)
Electrical Connections	ERNI Screw terminals (Maximum wire size of 2.5mm ² , maximum tightening torque of 0.4Nm)
Environmental	
Operating Temperature	0°C to +50°C
Relative Humidity	<95% RH (non-condensing)
Communications (iMAC L1)	
Hardware interface	2 wire / 3 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	None
L1 Line Loading (baud)	0.60mA (300) / 0.74mA (500) / 1.66mA (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
121905	MODULE IMAC EOL IECEx
121908	MODULE IMAC MEOL IECEx

DISCLAIMER

While every effort has been made to ensure the accuracy of this document at the date of issue, Ampcontrol assumes no liability resulting from any omissions or errors in this document and reserves the right to revise content at any time.