

LED4

LED Output Module

Summary

The iMAC LED4 Module is an Intrinsically Safe LED Output Module that provides four (4) general purpose LED outputs. The module is powered directly from the iMAC L1 Fieldbus communication line.

When enabled, the output LEDs flash at 1.2Hz with sufficient intensity to be visible in bright ambient conditions.

The LED4 module is an output device and as such, its address can be set to the same address as an input device, such as a DI4, to indicate input states. Multiple LED4 modules may be programmed to the same address, allowing distributed simultaneous LED indication in multiple locations.

Typical applications include remote isolation indication, indication of conveyor signal line status and remote indication in hazardous locations.



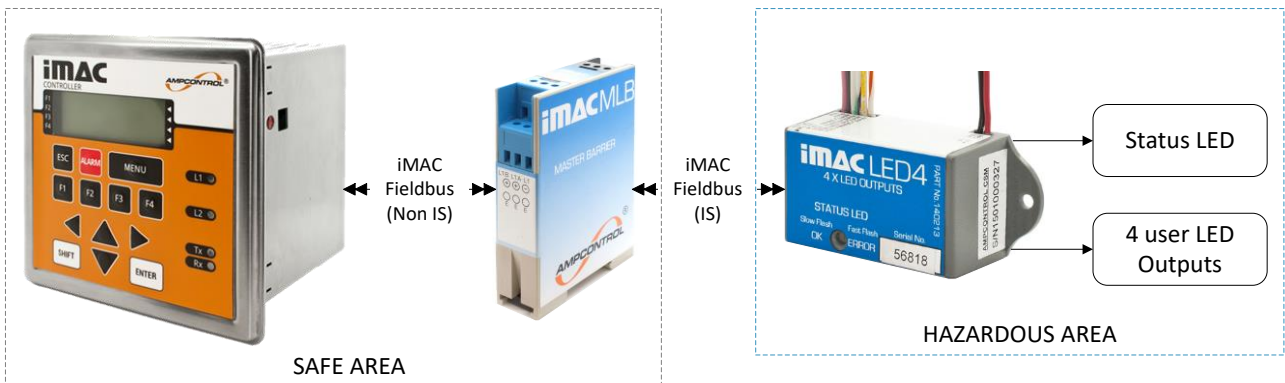
Data Register(s)

1 (Output)

Features

- Intrinsically Safe IECEx Ex ia Group I Ma
- 4 user definable LED outputs
- Compact, encapsulated design
- Down-line powered from the iMAC L1 interface
- Multifunction diagnostic status LED
- Remotely controlled and configured via the iMAC Controller
- Optional DIN rail mounting kits are available

Minimum System

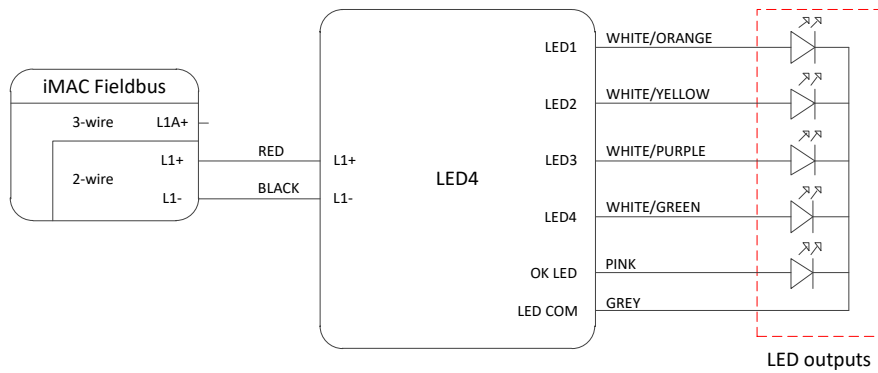


CAUTION!



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).

Electrical Connections



Note: refer to iMACB094 – iMAC Installation Requirements

Label	Wire colour	Type	Description
L1+	Red	L1 Comms	iMAC Fieldbus (2 wire)
L1-	Black		
LED1	White/Orange	LED outputs	User (4)
LED2	White/Yellow		
LED3	White/Purple		
LED4	White/Green		
OK LED	Pink		Status / Ok
LED COM	Grey		Common (cathodes)

Data Register(s)

Output Register				
Bit	Description	Bit Value	R / W	Invert Bit
15	-	X	w	-
14	-	X	w	-
13	-	X	w	-
12	-	X	w	-
11	-	X	w	-
10	-	X	w	-
9	-	X	w	-
8	-	X	w	-
7	-	X	w	-
6	-	X	w	-
5	-	X	w	-
4	-	X	w	-
3	LED4	1 = On (flash)	w	3 (0008h)
2	LED3	1 = On (flash)	w	2 (0004h)
1	LED2	1 = On (flash)	w	1 (0002h)
0	LED1	1 = On (flash)	w	0 (0001h)

Configuration Parameters



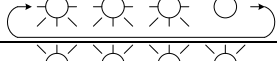

(Refer to document IMACB005 - iMAC module parameters programming procedure)

Output Register Parameters (roll-call name: LED4 Module)					
No	Description	Range	Default	Units	R/W
1	Output register address	1 - 255	255	-	r / w
2	Output register LEDx bits invert	0000h – 000Fh	0000h	-	r / w
3	Not used	-	-	-	r
4	Not used (Factory use)	-	-	-	r

Parameter Details...

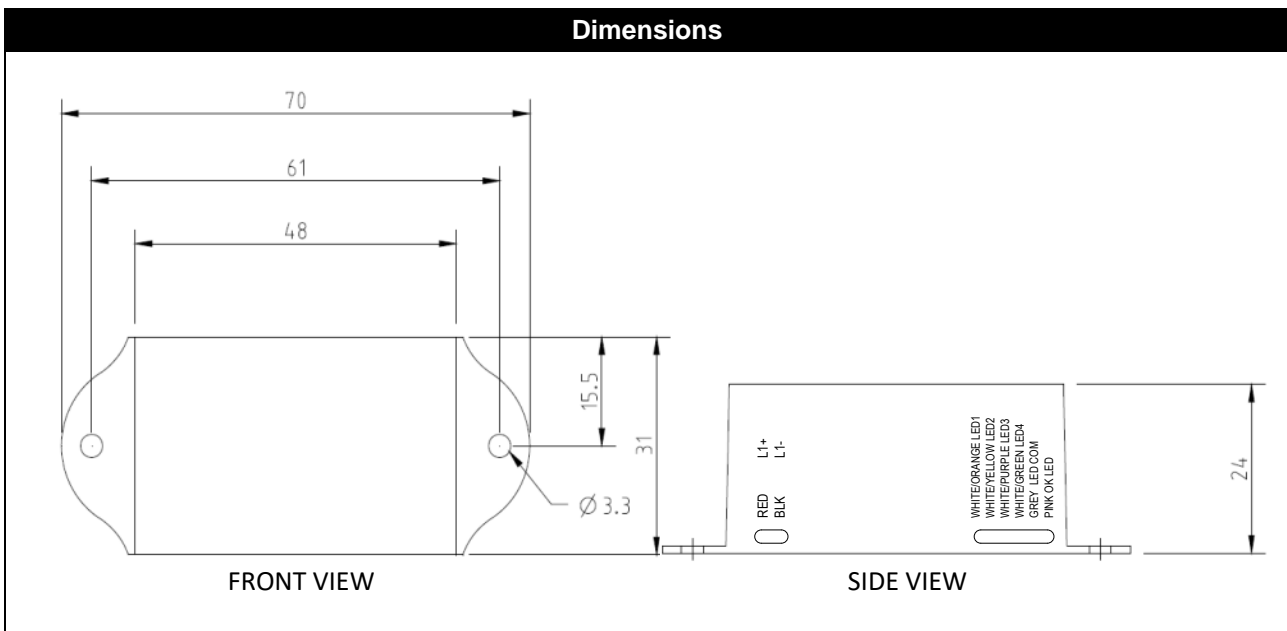
Parameter 2: Invert bits - specify whether received output data bits set the LED/s to ON or OFF. If invert bit is 0, then corresponding LED Output is ON when received data bit is a 1 and OFF when a 0. Alternatively, if invert bit is 1, then corresponding LED Output is ON when received data bit is 0 and OFF when a 1.

Input Register Status		
Output register – LEDx bit value	Output register parameter – invert bit value	LED output
0	0	OFF
1	0	ON
0	1	ON
1	1	OFF

LED Indicators			
Status LED			
Sequence		Module – iMAC Comms Status	Module – Function Status
Off	-	Unknown (check connections)	Unknown (check connections)
Slow Flash		Healthy	All output register LEDx bits = 0
2 Flashes		Healthy (has been roll-called)	-
3 Flashes		Error (address clash)	-
Fast Flash		Warn (general)	Any output register LEDx bit = 1
Output LED1 to LED4			
Off	Output register LEDx bit = 0 (with Invert bit =0)		
Flash (1.2Hz)	Output register LEDx bit = 1 (with Invert bit =0)		

Certification / Approvals		
Type	Ex ia I Ma (for use in zone 0, 1 or 2)	
Certificate number	IECEX ITA 07.0017X	
Module type	GM1	
IP rating	Must be installed in an enclosure not less than IP20 (IP54 recommended)	
Other	Must be mounted in such a manner that the encapsulation is not exposed 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+ (red), L1- (black)	U _i = 21.5V (44.65R source resistor) C _i = Negligible L _i = Negligible
	LED1(white/orange), LED2 (white/yellow), LED3 (white/purple), LED4 (white/green), OK LED (pink), LED COM (grey)	U _o = 21.5V I _o = 0.202A P _o = 1.09W C _o = 0.27uF L _o = 11.4mH C _i = 5.83uF L _i = negligible
Ambient temperature (T _a)	-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>		

Specifications	
Mechanical	
<i>Dimensions</i>	31mm x 70mm x 24mm (See diagram below)
<i>Weight</i>	60g
<i>IP Rating</i>	Module is fully encapsulated
<i>Mounting</i>	Enclosure includes 2 mounting tabs, each with a 3mm hole (screws not supplied)
<i>Electrical Connections</i>	Individual 450mm flying leads (0.4mm ² PVC insulated multi-strand flexible wire with an overall outside diameter of 1.5mm)
Environmental	
<i>Operating Temperature</i>	-10°C to +60°C
Outputs	
<i>Status LED</i>	Internally current limited 3VDC source – via 330R limiting resistor
<i>Limits</i>	< 2mA (external resistor may be required)
<i>All other LEDs</i>	4 (Internally current limited 3VDC source – via 100R limiting resistor)
<i>Limits</i>	< 2mA (external resistor may be required)
Communications (iMAC L1)	
<i>Hardware interface</i>	2 wire (+/-18VDC I.S. via MLB barrier or +/-21VDC non-I.S. iMAC Fieldbus)
<i>Line Speed</i>	300 - 1000 baud
<i>Bit protocol</i>	iMAC proprietary
<i>L1 Isolation</i>	5.3kV RMS
<i>L1 Line Loading (baud)</i>	0.66mA (300) / 0.78mA (500) / 1.56mA (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	



Equipment List	
Part Number	Description
140213	MODULE IMAC LED4 IECEx
142323	KIT IMAC DIN RAIL MOUNT

DISCLAIMER

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