IB1 Door Interlock Instructions

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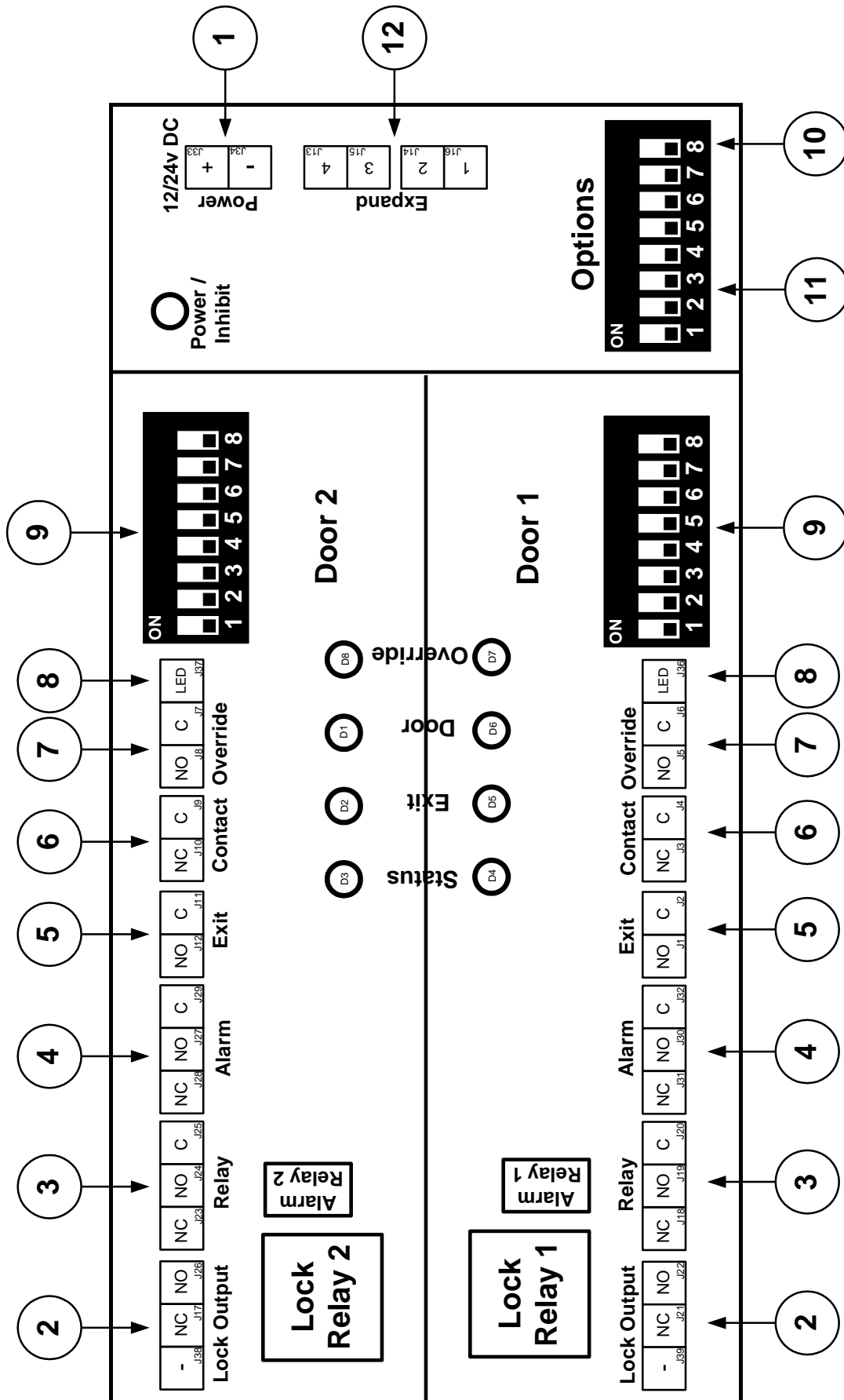
Introduction

The IB1 Interlock controller is a self-contained 2 door interlock. Additional boards can be linked together to configure a multi door interlock with no limit to the number of doors.

There are 2 operating modes, the original Secure Locked Mode where all doors start locked and a request to open the door is made via the 'Exit' Terminals. Version 2.0 boards also have the Unlocked Open Mode where all doors start unlocked and when you physically open any door the other doors lock. There is a label on the main processor chip that states the version number. You can also confirm the version by turning dip switch 8 on using the Options Switches in the corner of the board. If it has the Unlocked Open feature both Status lights will light when you power the board. We recommend the Secure option as this cannot be breached however depending on the locking device used it may be possible to open more than one door at the same time using the Unlocked mode.

Technical Specification

- 2 Modes – Locked or Unlocked Mode (V2.0 only)
- 2 Door True Interlock Controller
- Dual Voltage 12/24v DC
- 5 Amp Double Pole Relay (1 Pole Powered Output, 1 Pole Volt Free), NO, NC, C
- Firmware control of all logical function.
- True interlock via processor, impossible for 2 doors to open together.
- 9 on board Engineer LED's
- Pluggable terminal blocks, for ease of installation
- Dual Alarm output – 1 Amp, Door Forced or Door Left Open
- 0-62 Seconds adjustable Door Open time.
- Remaining lock open time cancelled once door has opened and closed
- 0-45 Seconds adjustable alarm delay
- Individual Door Override inputs, for each door.
- Door status LED output
- All settings adjusted with accurate dip switches
- Fully expandable to infinite numbers of doors, no additional control unit required, simply keep adding 2 door boards.
- Inhibit selection allowing doors to be unaffected by actions from other boards.

Installation Notes

- Read instructions fully before making any connections.
- PCB should be mounted in a dry, dust free environment, eg. Inside a power supply.
- Mount PCB on the nylon stick-on feet provided.
- NEVER make any connections or adjust dip switches with the PCB powered on.
- Always make sure the underneath of the PCB is not in contact with any metal or conductive materials.
- Do not apply excessive pressure on the PCB.
- Do not allow any bare connections to come into contact with any part of the PCB, making sure all connections are secured fully inside terminal block and no short circuits are present.
- When powering the board off, allow a few seconds before switching back on.
- When removing pluggable terminal blocks, lift straight up and don't force them.
- If you are using more than 1 controller but with an odd number of doors, eg. 2 boards to control 3 doors, you must link out the door contact ⑥ on the spare/unused door otherwise it will inhibit the board(s).

Quick Start Guide

1. Connect door position contact to 'Contact' ⑥ or link the terminals out for testing but remember to remove at the end. If the door contact terminals are open the controller will lock up
2. Connect a button/switch to the 'Exit' ⑤
3. Connect a lock to 'Lock Output' ②
4. Repeat steps 2 – 4 on door 2
5. Connect power to 'Power' ① but don't switch on until all connections have been made
6. Switch on, initially with both doors closed the only LED lit on the board should be the Power LED
7. You can now check that the exit button input unlocks the door and this will then inhibit the other door
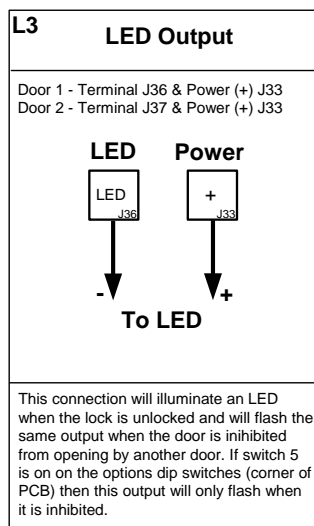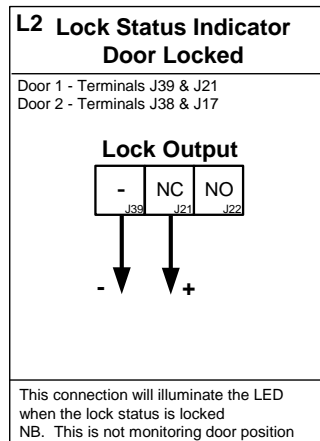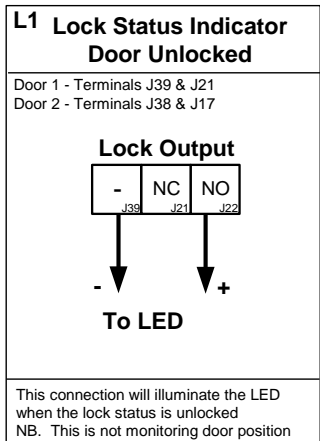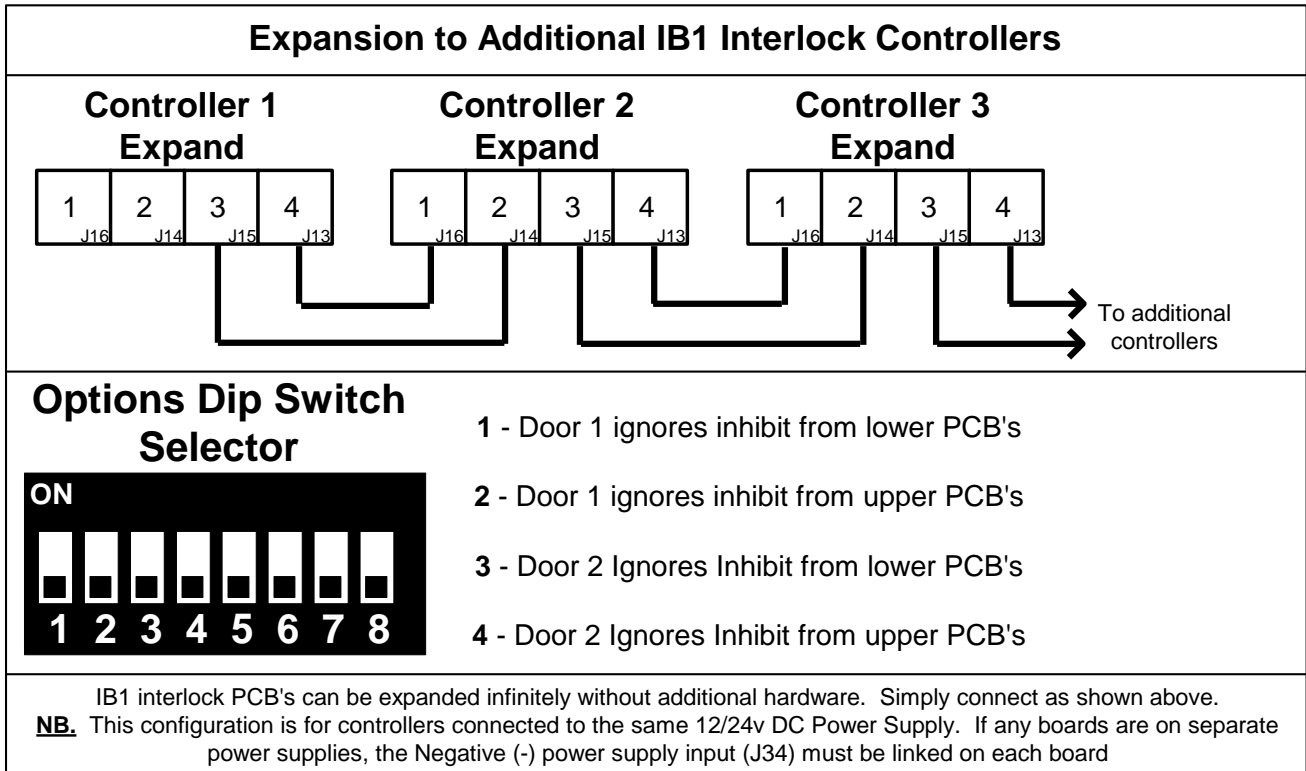
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Secure Locked Mode Version 1.4 & 2.0			Door 1 Lower Connections – Door 2 Upper Connections
①	**Power**	**12/24v DC**	Power supply input
②	**Lock O/P**	**-/NC/NO** **5 amp Max**	Powered Lock Output, eg. Fail Unlocked **-** & NC or Fail Locked **-** & NO
③	**Relay**	**NC/NO/C** **5 amp Max**	Volt Free Output – to control Auto Door, Barrier, Shutter, Turnstile etc
④	**Alarm**	**NC/NO/C** **1 amp Max**	Alarm Relay output (Door Left Open or Door Forced – see dip switches below to configure)
⑤	**Exit**	**NO/C**	Exit Button / Access Control System input (Volt Free Input). The Access Control system must send a <u>volt-free signal</u> to the IB1 controller to request the door to open.
⑥	**Contact**	**NC/C**	Door position monitoring – The IB1 must know if the door is open or closed. This can be done using a monitored lock or door contacts
⑦	**Override**	**NO/C**	Volt Free input from a switch, button etc will activate relay regardless of interlock state. This is also where a Volt Free input is required to reset a door forced alarm **NB: Do not connect the Break Glass or Fire Alarm at this point, they should be connected directly to the lock power cables**
⑧	**LED**	**Negative**	Negative driver to power an LED – see page 5 for further details

⑨	**Door Dip Switches**	**Door Open Time**						

Switch	1	2	3	4	5	You can combine switches to make a door open time, eg. 1+2 = 6 seconds, 2+4 = 20 seconds
Seconds	2	4	8	16	32	

NB: The Access Control System door open time must be shorter than the IB1 controller otherwise it will trigger more than once and increase the time. Eg. Set the access system to 5 seconds and the IB1 controller to 6 seconds

		Door Left Open/Forced Alarm	Switch Off	6	Door Left Open	Door left open is reset by closing the door. Door forced is reset by making a connection across the override terminals ⑦
			Switch On	6	Door Forced	

		Door Alarm Delay	**Switch**	7	8	The alarm output can be delayed by up to 45 seconds however it is not recommended with Door Forced
			Seconds	15	30	

⑩	**Options Dip Switches**	**Locked / Unlocked Mode**	Switch Off	8	Secure Mode	Select Secure or Unlocked operating mode
			Switch On	8	Unlocked Mode	

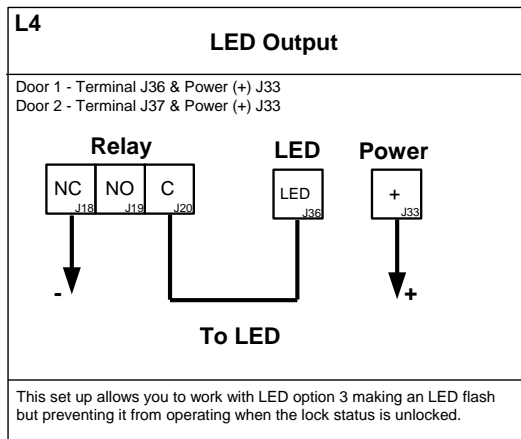| Status LED's	Cancel Remaining Lock Open Time

Power LED (near power input)
    Solid: Power present
    Flashing: Inhibit from another controller
Status: Door relay active
Exit: Exit button input active
Door: Door contact open
Override: Override input active
	When the door position contact monitors the door open and then close it will cancel any remaining lock open time. The use of electronic monitoring (such as hall –effect monitoring in magnetic locks) will not be able to use this feature and the door open time will run the full time that has been set.

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Unlocked Open Mode Version 2.0 only			Door 1 Lower Connections – Door 2 Upper Connections
①	Power	12/24v DC	Power supply input
②	Lock O/P	-/NC/NO 5 amp Max	Powered Lock Output, eg. Fail Unlocked **-** & NC or Fail Locked **-** & NO
③	Relay	NC/NO/C 5 amp Max	Volt Free Output – to control Auto Door, Barrier, Shutter, Turnstile etc
④	Alarm	NC/NO/C 1 amp Max	No function in Unlocked mode
⑤	Exit	NO/C	Will lock a door that is currently unlocked due to the door being in the closed standby position
⑥	Contact	NC/C	Door position monitoring – The IB1 must know if the door is open or closed. This can be done using a monitored lock or door contacts
⑦	Override	NO/C	Volt Free input from a switch, button etc will activate relay regardless of interlock state. **NB: Do not connect the Break Glass or Fire Alarm at this point, they should be connected directly to the lock power cables**
⑧	LED	Negative	Negative driver to power an LED – see page 5 for further details
⑨	Door Dip Switches	Door Release Time	(see table below)
⑩	Options Dip Switches	Locked / Unlocked Mode	(see table below)

Door Dip Switches – Door Release Time:

Switch	1	2	3	4	5	
Seconds	15	30	60	120	240	You can combine switches to make a door release time, eg. 1+2 = 45 seconds, 2+4 = 150 seconds

The principal is that if a door doesn't close properly instead of it inhibiting the other doors indefinitely it will release after the set time. If no time is set it will never release until the open door is closed
Dip Switches: 6, 7 & 8 are not used in the Unlocked mode.

Options Dip Switches – Locked / Unlocked Mode:

Switch Off	8	Secure Mode	Select Secure or Unlocked operating mode
Switch On	8	Unlocked Mode	

Status LED's	
Power LED (near power input) Solid: Power present Flashing: Inhibit from another controller **Status**: Door relay active **Exit**: Exit button input active **Door**: Door contact open **Override**: Override input active	

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Expansion to Additional IB1 Interlock Controllers

Controller 1 Expand				Controller 2 Expand				Controller 3 Expand			
1 J16	2 J14	3 J15	4 J13	1 J16	2 J14	3 J15	4 J13	1 J16	2 J14	3 J15	4 J13

To additional controllers

Options Dip Switch Selector

ON

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1 - Door 1 ignores inhibit from lower PCB's

2 - Door 1 ignores inhibit from upper PCB's

3 - Door 2 Ignores Inhibit from lower PCB's

4 - Door 2 Ignores Inhibit from upper PCB's

IB1 interlock PCB's can be expanded infinitely without additional hardware. Simply connect as shown above.
NB. This configuration is for controllers connected to the same 12/24v DC Power Supply. If any boards are on separate power supplies, the Negative (-) power supply input (J34) must be linked on each board

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LED Indicator Options

L1 Lock Status Indicator Door Unlocked

Door 1 - Terminals J39 & J21
Door 2 - Terminals J38 & J17

Lock Output

| - J39 | NC J21 | NO J22 |

- → +

To LED

This connection will illuminate the LED when the lock status is unlocked
NB. This is not monitoring door position

L2 Lock Status Indicator Door Locked

Door 1 - Terminals J39 & J21
Door 2 - Terminals J38 & J17

Lock Output

| - J39 | NC J21 | NO J22 |

- → +

To LED

This connection will illuminate the LED when the lock status is locked
NB. This is not monitoring door position

L3 LED Output

Door 1 - Terminal J36 & Power (+) J33
Door 2 - Terminal J37 & Power (+) J33

LED | **Power**

| LED J36 | | + J33 |

- → +

To LED

This connection will illuminate an LED when the lock is unlocked and will flash the same output when the door is inhibited from opening by another door. If switch 5 is on on the options dip switches (corner of PCB) then this output will only flash when it is inhibited.

L4 LED Output

Door 1 - Terminal J36 & Power (+) J33
Door 2 - Terminal J37 & Power (+) J33

Relay | **LED** | **Power**

| NC J18 | NO J19 | C J20 | LED J36 | + J33 |

- → +

To LED

This set up allows you to work with LED option 3 making an LED flash but preventing it from operating when the lock status is unlocked.

Notes on LED Options
The primary function of LED indicators on an Interlock system is to inform users of interlock status

Using 1 LED. This can be on constant when the lock status is unlocked. It will also flash when the door is inhibited by another. - *Refer to diagram 3 above*

Using 2 LED's at the door. 1 LED can be lock status unlocked, and the other can be door inhibited by another - *refer to diagrams 1 & 3 making sure Options Dip Switch 5 is on.* Diagram 4 alllows the LED to flash when inhibited.

More options are available, if you need any help please contact IEC for more information