



# Lester Control Systems Ltd

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## SERIAL IO SYSTEM: QUICK SETUP GUIDE

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1. Pre-Check Information:
  - a. Check Materials (e.g. for a typical 8 floor job)
    - i. 1 - Shaft Loom (with floor connection boards for each floor)
    - ii. 1 - Machine Room to Shaft Loom
    - iii. 8 - 2IO Boards (Landing Nodes)
    - iv. 8 - Landing Connect Cables
    - v. 2 - 8IO Boards (Car Nodes).
      1. Node 1- General IO (DOP, SE, DCP etc)
      2. Node 2- Car Calls 1-8
    - vi. 2 – Car Connect Cables
    - vii. *Note: CAN Isolation boards fitted in the controller as required for the number of risers, and to isolate the car CAN from the landing CAN.*
  - b. Check Parameters.
    - i. Parameters are factory set, however a double check to make sure all IO is correctly configured / enabled could save time. See Section “**Serial IO Keypad Menu**”.
2. Connecting the Landing Devices (see Fig’s 2/4):
  - a. Wire each landing push button in turn to the **landing node** board in preparation for switch on.
  - b. Drop **Shaft loom** (with floor connection boards) down the shaft, and **FIX AT SUITABLE POINTS** (at least every 10M) **TO RELIEVE THE STRESS ON THE NODE CABLE CLAMPS**.
  - c. Plug in **Landing Connect Cables** at each point suitable for each landing push and feed through to push box.
  - d. Install the **Machine room to Shaft loom** by 1<sup>st</sup> plugging into the start of the loom in the shaft. Then connect the other end into the controller.
  - e. With the controller switched on, plug in each **landing node** in turn (starting at landing node 1). Listen out for the number of buzzer beeps, this indicates the Node ID. i.e. **1 for floor/node1, 8 for floor/node8** etc. *Please also note; 1 node ID for each entrance when selective doors*
  - f. Check the Blue Loop led “**L**” flashes once a second and also the Red comms led “**C**” flashes at least once a second. Ensure the Fault led “**F**” is extinguished. At this stage communications from node to node may be ok, but communication to the lift controller may not. An event “**LAN NODE COMMS REST**” for each landing node will be present in the logger if the comms is ok. If the lift is ready to run on normal, pressing the landing button will register the call.
3. Connecting the Car Device(s) (see Fig’s 3/4):
  - a. Identify a suitable place and fix **car node** board(s) into back of car push station using the PCB fixings as provided.
  - b. Wire each car push button / function in turn to the **car node** board(s) in preparation for switch on. .
  - c. Route **Car Connect Cable(s)** from the car junction box to the car push station.
  - d. With the controller switched on, plug in each **car node** in turn (starting with node 1). Listen out for the number of buzzer beeps, this indicates the Node ID. i.e. **1 for car node1, 2 for car node2** etc.
  - e. Check the Blue Loop led “**L**” flashes once a second and also the Red comms led “**C**” flashes at least once a second. Ensure the Fault led “**F**” is extinguished. At this stage communications from node to node may be ok, but communication to the lift controller may not. An event “**CAR NODE COMMS REST**” for each landing node will be present in the logger if the comms is ok. If the lift is ready to run on normal, pressing the car button will register the call.
4. Serial IO Event Logging (within the Almega fault logger)

The events **CAR/LAN NODE COMMS REST** will be generated when a **CAR/LAN** node comms is restored, and the events **CAR/LAN NODE COMMS LOST** will be generated when a **CAR/LAN** node comms is lost (typically after 5 seconds). The **position** field represents the **Node ID** and the **Occur** field represents the **Sub Node ID** (0-4).

5. Changing the Buzzer Volume

This applies to 2IO and 8IO boards. Using a small potentiometer adjustment tool or a small screwdriver, turn the potentiometer (as shown on the 2IO/8IO boards, Fig's 11/12) to adjust the volume.

6. Changing the Node ID (see Fig's. 11/12/16)

To change the Node ID, the position DIL switches may be altered. The switches are set in the Binary format where "1", is the **least significant bit** and "6" is the **most significant bit**. When the switches are changed, the board recognises this and sounds the buzzer x times (as a series of short bursts) according to the setting of the DIL switches. Generally the setting of the switches will be in accordance with the lift position **for landing IO** i.e. 1 for floor 1, 2 for floor 2, and 24 for floor 24 etc. When there are selective doors fitted, each entrance will have its own Node ID, although they may physically be at the same floor. Tweezers or a small screwdriver, are the most suitable tools to operate the switches.

7. Changing the Sub Node ID (see Fig's. 11/12/17)

This applies to 2IO boards fitted on a landing riser. There can be up to 8 IO per landing position which can comprise of 1-8IO board, or 4-2IO boards. When more than one 2IO is fitted at a landing position, a setting for the sub node ID has to be considered, i.e. as below:

2IO Sub Node 0		2IO Sub Node 1		2IO Sub Node 2		2IO Sub Node 3	
IO-1	IO-2	IO-3	IO-4	IO-5	IO-6	IO-7	IO-8

Setting the sub node ID is achieved using the "Type" DIL switches. The switches are set in the Binary format where "1", is the **least significant bit** and "4" is the **most significant bit**. When the switches are changed, the board recognises this and sounds the buzzer x times (as a series of short bursts) according to the setting of the DIL switches. Tweezers or a small screwdriver, are the most suitable tools to operate the switches.

8. Test Mode 2IO and 8IO (see Fig's. 11/12/16)

Test Mode is mainly used for testing the board within the factory; however it may be used on site to determine whether or not the board is working properly. With the power OFF, the position DIL switch "7" needs to be switched ON. When power is restored the board will be in Test Mode, and will function as below:

- a. RAM Test: Test of on board RAM.
- b. Watchdog Test: Initially the buzzer will sound 3 times whilst the board is re-starting.
- c. LED Test: The LED's will illuminate one at a time starting with LOOP and finishing with buzzer LED / buzzer. The process is repeated 5 times, and then the LED's will operate as normal. If there is a fault with the RAM/Watchdog the fault LED will flash every 100mS. If there is a CAN bus error the fault LED will stay illuminated.
- d. Inputs Test: Testing of the Boards inputs and buzzer can now be carried out. Pressing a call button to an input (under constant pressure) will operate the input. The input LED will illuminate and the Buzzer will sound.
- e. DIL Switch Test: A change in the state of a DIL switch will sound the buzzer for 100mS (buzzer blip). This applies to both Position and Type DIL switches.
- f. To Finish: Reset the DIL switches (Position and Type), turn off the position DIL switch "7". Re-cycle power from OFF to ON to restore normal mode.

9. Test Mode CAN Isolation Board

This is similar to the 2IO/8IO boards test except without the Inputs Test and DIL Switch test. To Test the Isolation board requires the linking of CH/CL between CAN1 and CAN2.

- a. Data will be exchanged and checked between CAN ports automatically.
- b. Whilst the data is transferred the CAN LED's will flash every 100mS.
- c. The loop light will flash every 250mS.
- d. Fault LED's should remain extinguished if ok, flash for a warning, or stay on for an error.

10. Almega Serial IO Setup / Viewer

The parameters for each node / sub node are stored within the Almega µProcessor. From the keypad menu users are able to view the IO status, view or change the parameters.

- 1. Press MENU, scroll down to SERIAL IO SETUP, press ENTER the screen will be displayed as aside. See Section "**Serial IO Keypad Menu**" for further information.

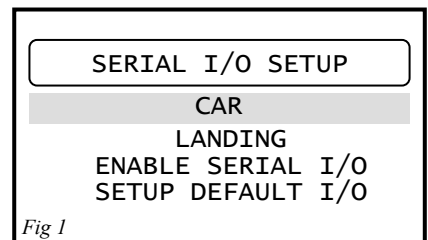
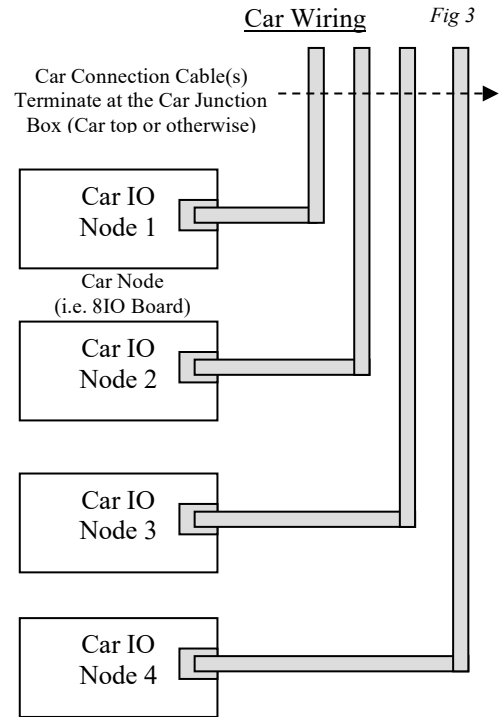
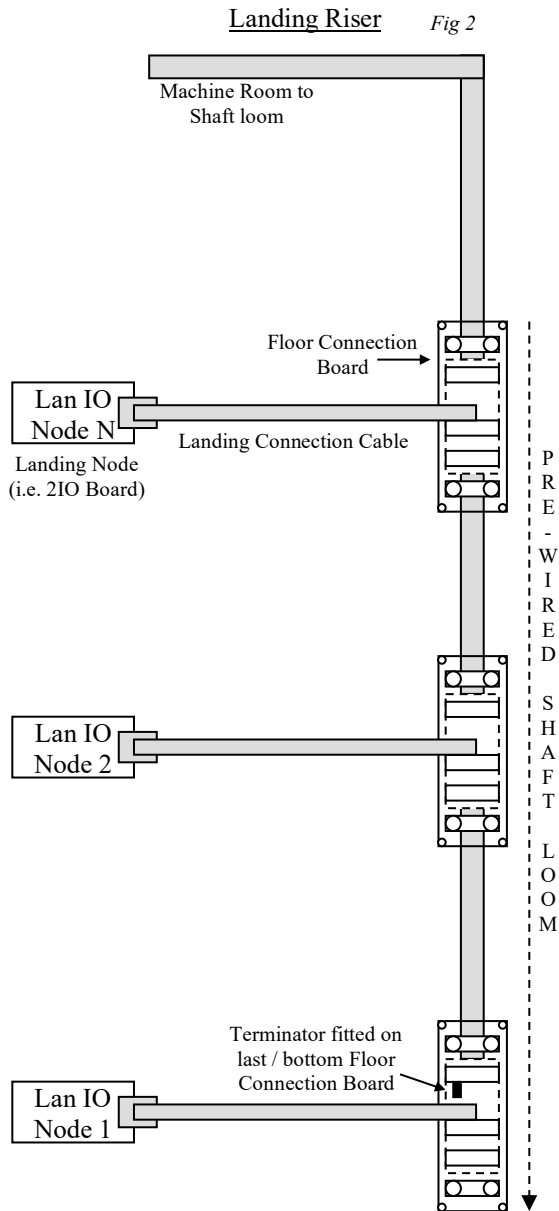


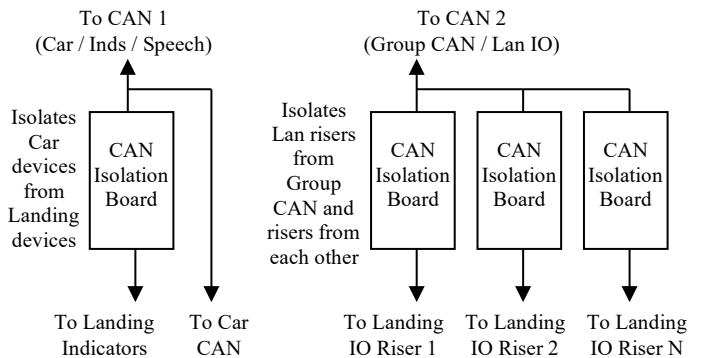
Fig 1

# 11. Serial IO Wiring

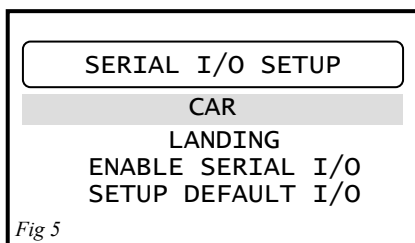


## CAN Bus Assignments

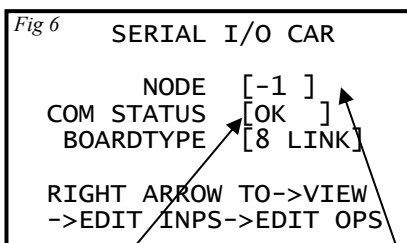
Fig 4



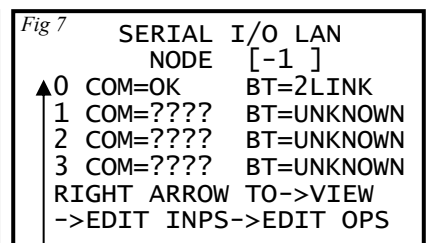
# 12. Serial IO Keypad Menu



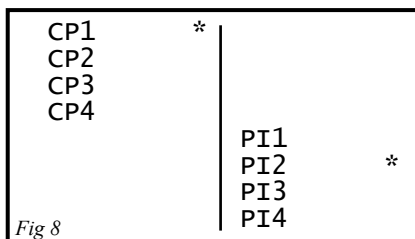
Press ENTER over Car IO, or Lan IO to see next screens (as aside)



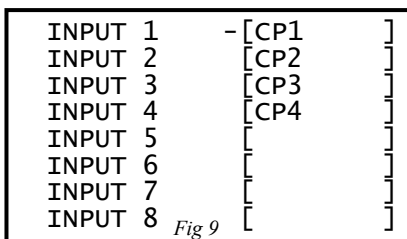
Communication Status: OK, LOST, or ??? = Not Established  
Press UP / DN arrows to change Node ID



Landing Sub Node(s) (if fitted)

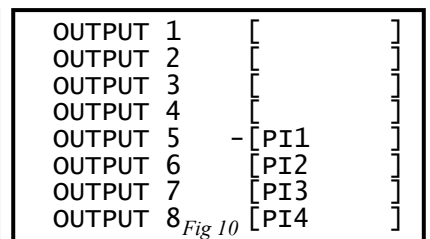


IO Viewer, **Inputs** on the left hand side, **Outputs** on the right hand side, \* = ON.



Input Setup (Edit Inputs)

Hold MODE, and press UP to move cursor.



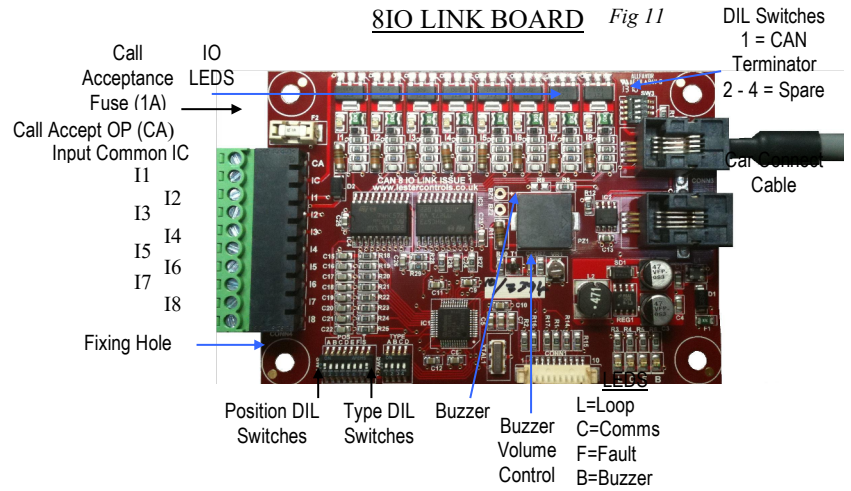
Press UP / DN arrows to scroll through IO functions

Output Setup (Edit Outputs)

### 13. Hardware Description

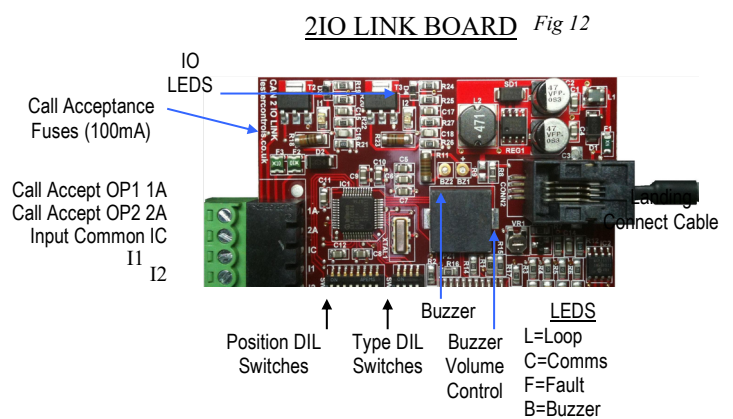
#### a. 8IO Link Board

The 8IO Link Board has 8 inputs and 8 outputs that are internally linked. They are linked mainly for use with call inputs to provide a 3-wire system. Inputs / Outputs can also be assigned separately to give either an input, or an output.



#### b. 2IO Link Board

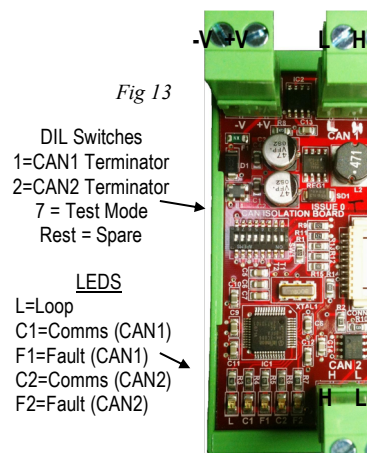
The 2IO Link Board has 2 inputs and 2 outputs that are internally linked. They are linked mainly for use with call inputs to provide a 3-wire system. Inputs / Outputs can also be assigned separately to give either an input, or an output. When fitted on a landing riser, up to 4 boards can be configured to provide 8IO. Each board will be configured using a “sub node” identification, set by the TYPE DIL switches.



- c. CAN Isolation Board
- d. Floor Connect Board

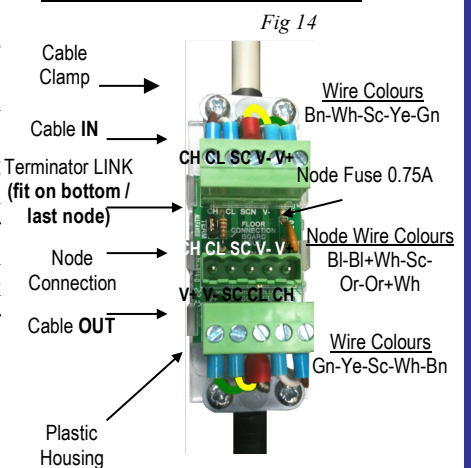
#### CAN ISLOATION BOARD

The CAN isolation board is used to isolate landing risers from each other, also the Car CAN from the Landing CAN.



#### FLOOR CONNECT BOARD

The Floor Connect Board is used to distribute power and communications to the landing nodes. Each node is fused for protection. A termination link is provided for the last node only.



#### Technical Specification (All Boards)

<b>Voltage</b>	DC:12-24V typ. (9-28V max)
<b>I (Board)</b>	65mA max@24V
<b>I (CA)8IO</b>	1A max
<b>I (CA)2IO</b>	100mA max
<b>Buzzer</b>	4KHz, 75dB.
<b>Buzzer Duration</b>	250mS per push when call accepted.

#### Position DIL switch Assignments (2IO / 8IO)

- 1-6 = Binary Node ID
- 7 = Test Mode
- 8 = Car Device

#### Type DIL switch Assignments (2IO)

- 1-4 = Binary Sub Node ID
- 1234
- 0000 = 2IO Sub Node 0
- 1000 = 2IO Sub Node 1
- 0100 = 2IO Sub Node 2
- 1100 = 2IO Sub Node 3