Zone Controller

Designed in Australia to
meet Australian Standards
and installation conditions

1. Product Item

This guide provides user operation and product specification information for the Zone Controller, item number **DGOZ-ZONEC-4DA**.

2. Product package contents

The Zone Controller package includes the following.

- 1 x Zone Controller
- 1 x 12Vdc SELV Power Supply (Diginet Item number DGLMPS12DC/1-0)
- 1 x Ethernet patch lead.

3. Important notes and safety information

> **WARNING** – Electric shock may result in serious injury or death. Follow all warnings in this guide and on the product while working in accordance with the latest electrical safety practices.

- The Zone Controller does not have a mains supply connection. DALI lines operate on an ELV dc supply between 9.5V and 22.5V but must be considered at **mains** potential due to basic equipment isolation and cable segregation between mains and DALI. DALI is functional Extra Low Voltage (FELV) as defined by standard IEC61140.
- The installer must be suitably qualified and should work in accordance with standard safety procedures for mains-powered electrical equipment.
- Appropriate segregation is to be maintained between the SELV cabling and mains/DALI line cabling in accordance with local regulations.
- There are no user serviceable parts inside the Zone Controller. Do not attempt to disassemble or operate the device with any covers removed.
- The Zone Controller is intended for indoor use.
- Outdoor installations will require the device to be housed in a suitable IP rated enclosure.
- Consult the manufacturer's instructions for Lighting Control Gear and other DALI units that may be connected to the DALI lines.

If you require information or assistance regarding the installation, configuration, or operation of the Zone Controller, contact Technical Services at Diginet Control Systems. Contact details are provided on the back cover of this guide and also at www.diginet.net.au

4. Product summary and capabilities

The Zone Controller is an embedded Ethernet/DALI controller for the Diginet RAPIX Lighting Control System that supports seamless joining of individual DALI lines in a building.

Each Zone Controller can connect up to four physical DALI Lines and communicate over an Ethernet network to DALI Lines on other Zone Controllers.

The RAPIX Integrator software allows DALI Devices and DALI Groups across any DALI Line to be linked together to form Extended Intelligence Xi 'Zones' and 'Scenes' to suit the application.

The rules engine in the controller can run user-configurable scripts to track and control DALI devices based upon events in the system.

5. Product Features

- 12M wide DIN rail mounted embedded controller for the RAPIX Lighting Control System.
- Physical connection to four DALI lines
- Two Ethernet ports with in-built switch for daisy chain connections
- LCD screen and control buttons with menu driven control interface for easy programming and commissioning
- Powered via external 5-12Vdc SELV supply
- Configured using RAPIX Integrator software tool
- Line joining between DALI lines; on a single controller and / or across controllers
- Zone creation – Zones being collections of DALI lines and / or DALI Groups and / or DALI Short Addresses
- Zone joining – link Zones to form larger zones
- Zone rules – configurable logic based on states of Zones, DALI Groups and DALI Short Addresses
- Scene control across all connected Zone Controllers and DALI lines.

6. Connections and Interface
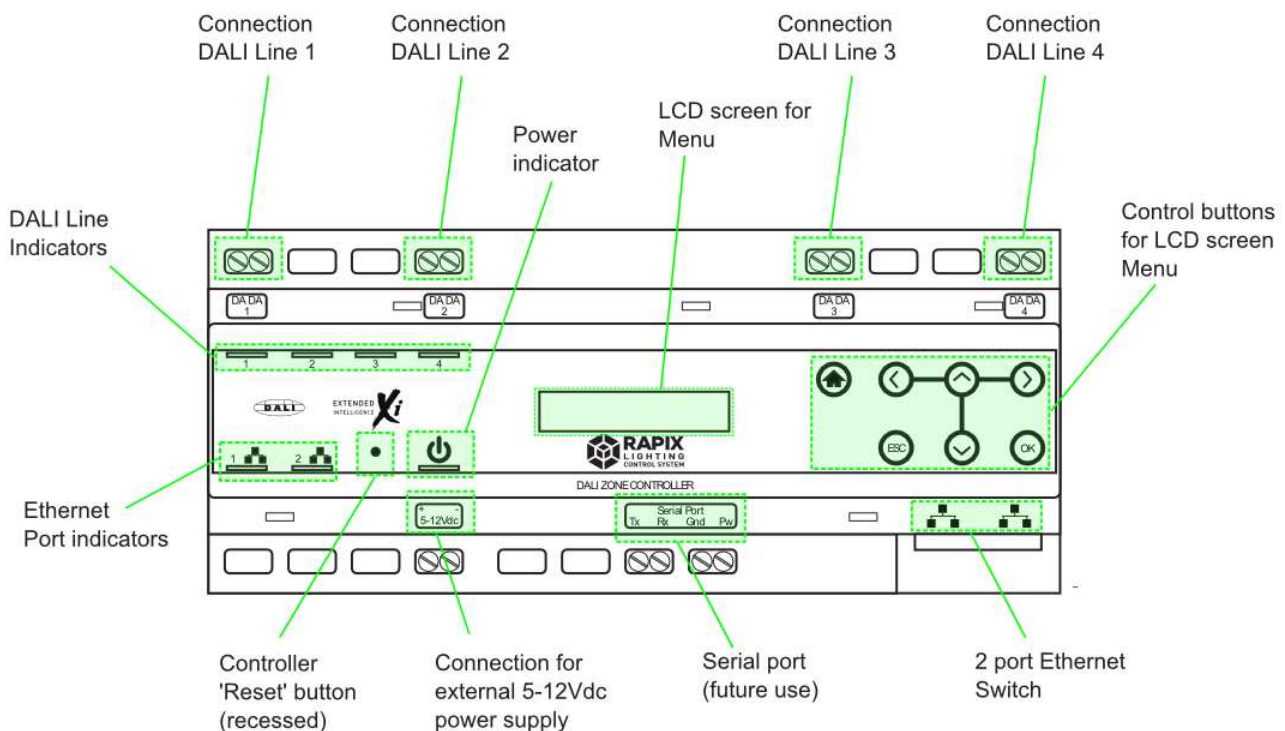
7. Mounting the Zone Controller

- The Zone Controller should be mounted onto standard 35mm DIN Rail
- DALI lines must be considered at 240Vac electrical mains potential due to basic equipment isolation and cable segregation between mains and DALI
- The Zone Controller must be mounted in an electrically safe enclosure such as an electrical switchboard.
- The installer must ensure that suitable segregation is maintained between DALI, Ethernet and SELV connections, in accordance with AS/NZS 3000 Australian Wiring Rules
- The installer must be suitably qualified and should work in accordance with standard safety procedures for mains-powered electrical equipment.

8. Connections

The Zone Controller connects to the following

- Up to four, separate DALI Lines, with up to 64 DALI devices (each with a DALI Short Address) connected to each line
- An external 12Vdc SELV power supply to power the zone controller
- An Ethernet connection to allow communication to and from other Zone Controllers, PC's running RAPIX Integrator software (for commissioning), or other RAPIX compatible devices
- RS-232 connection (future use)
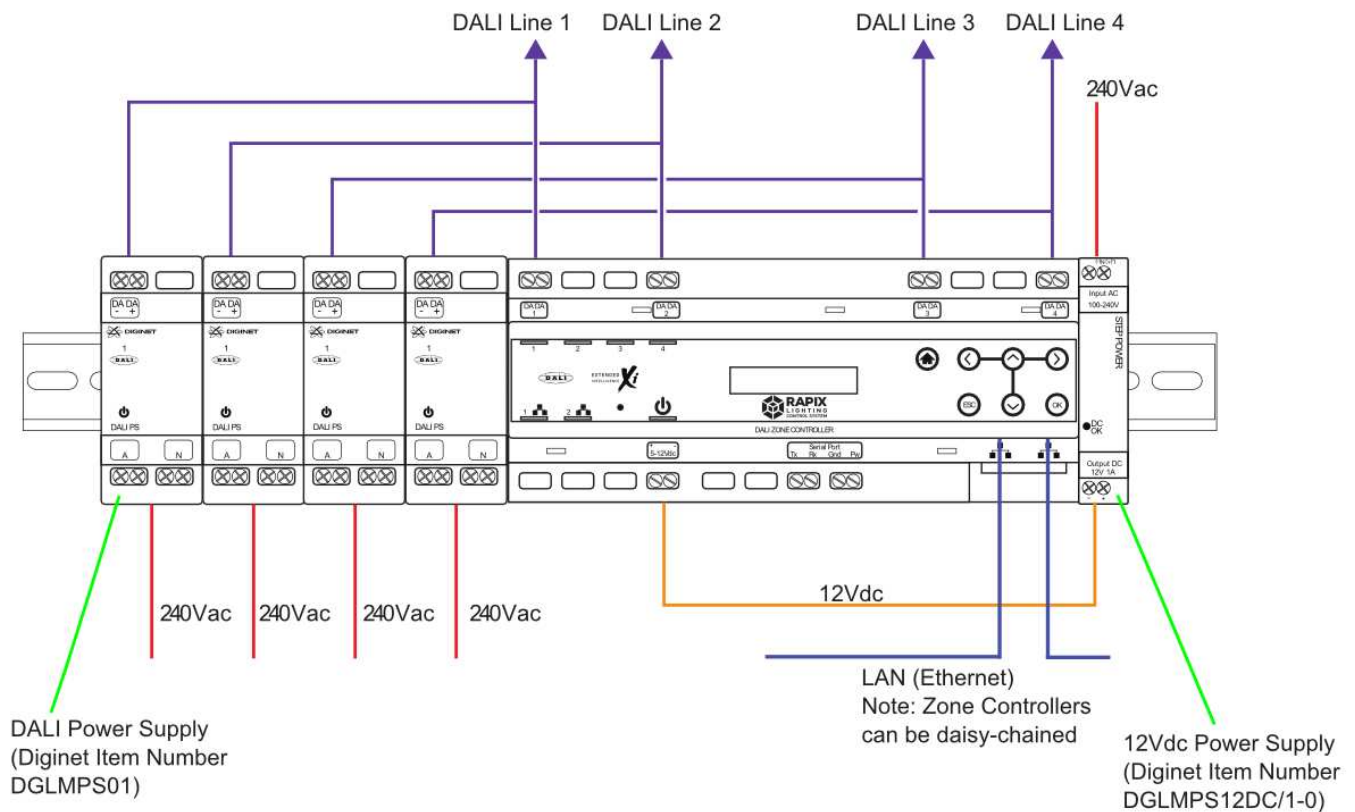

9. Connecting 12Vdc power
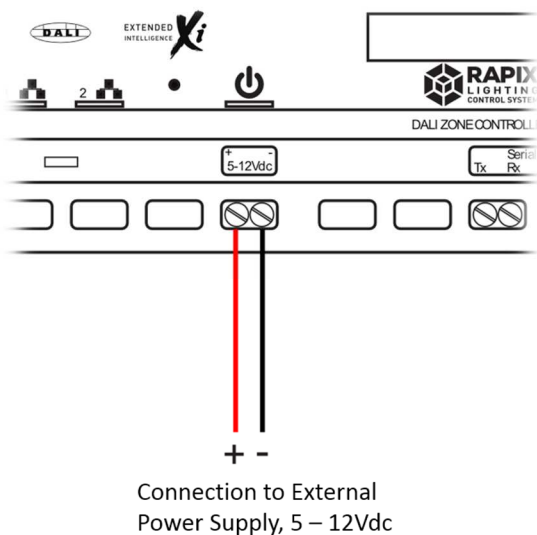
The Zone Controller requires to be externally powered via a 5-12Vdc SELV power supply capable of supplying a minimum of 200mA @ 12V dc (500mA @ 5V dc).

The positive and negative of the dc power supply should be connected to the Zone Controller as shown in the diagram.

10. Connecting DALI

Connection to external
DALI power supply and
DALI Line #1

DA DA
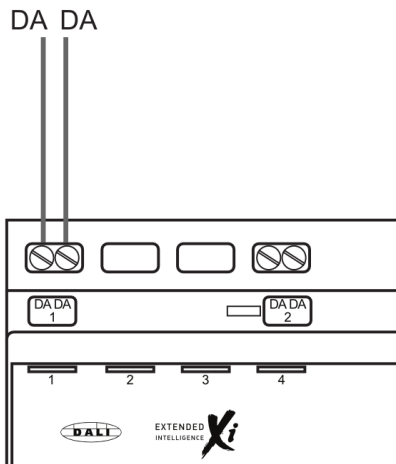
Up to four DALI Lines can be connected to a Zone Controller. Each DALI line has two conductors and these are not polarity sensitive. DALI Line cabling must be double insulated and mains rated.

Note: Each DALI Line requires an external DALI compliant power supply to be connected before it will operate. Diginet DALI Power Supply, item number **DGLMPS01** (purchased separately), can be connected to each DALI Line to meet this requirement (see diagram on Page 4.

Warning: DALI lines must be considered at 240Vac electrical mains potential due to basic equipment isolation and cable segregation between mains and DALI.

11. Connecting Ethernet
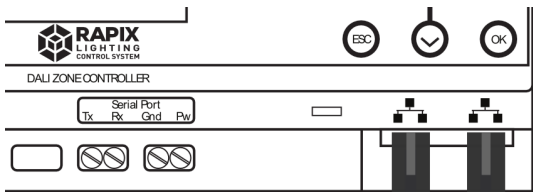
From an Etherent Switch or
to another Zone Controller

From an Etherent Switch or
to another Zone Controller

Ethernet is connected to the Zone Controller via standard Cat5e/Cat5/Cat6 cable, terminated with RJ-45 connectors. The two RJ-45 connectors on the Zone Controller function as a two port Ethernet switch.
Zone Controllers can be 'daisy chained' together using this two port Ethernet switch.

12. Indicators

DALI Line
Indicators

Ethernet
Port indicators

Power
indicator
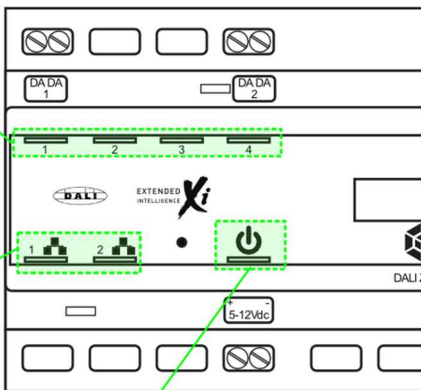
Power Indicator

Indicator Operation	Outcome
Green	The Zone Controller is powered ON
Off	The Zone Controller is powered OFF

DALI Line Indicators

Indicator Operation	Outcome
Green	DALI Line connected
Green/Off flashing	DALI communications
Off	DALI not connected

Ethernet Indicators

Indicator Operation	Outcome
Green	Ethernet connected
Green/Off flashing	Ethernet communications
Off	No Ethernet connection

13.LCD and control buttons

The Zone Controller includes an LCD interface and seven control buttons. The LCD and buttons allow basic configuration setting, DALI testing and diagnostic information to be viewed without a PC.
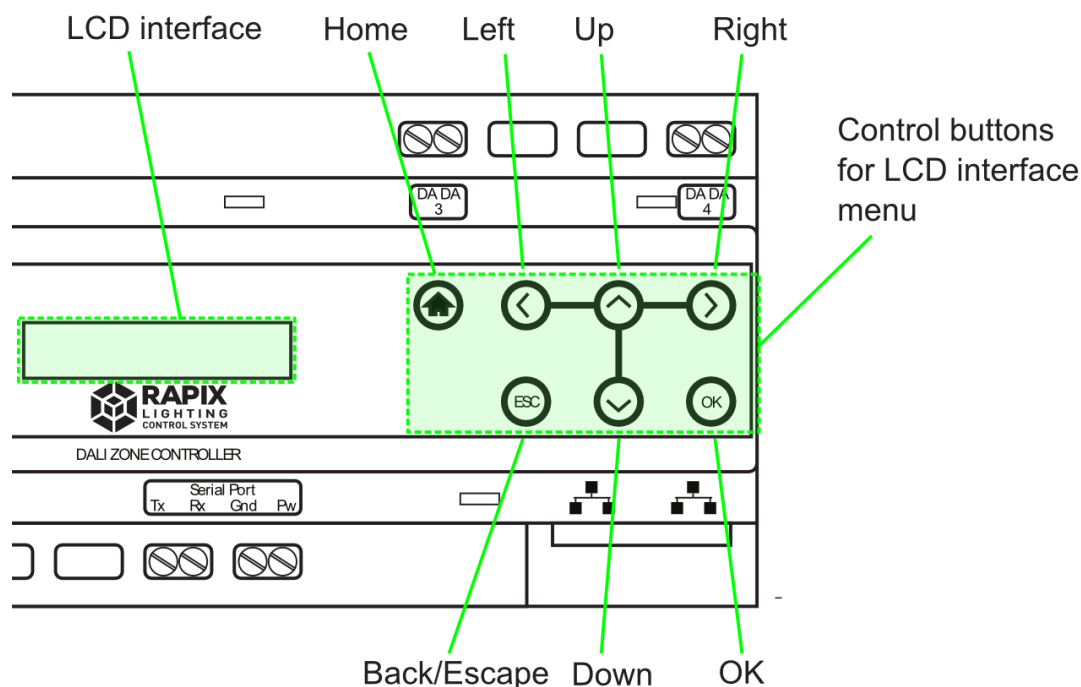

Figure 4 – Connecting a Zone Controller to a PC

The buttons allow the installer to navigate through the menu options.

Button	Usage
Home Button	Navigate directly from the current menu to the Home screen
Escape/Back Button	Navigate back up a level in the menu structure
OK Button	Select parameter or confirm parameter change
Left/Right Buttons	Navigate through the options at the current menu level
Up/Down Buttons	Change the currently displayed value (if applicable)

14.Powering and commissioning the Zone Controller

The Zone controller has no power on/off switch, therefore when the controller is connected to a suitable 5-12Vdc power supply, it will power up. If the relevant DALI Lines and the Ethernet network are also connected, the controller can be commissioned.

Configuring basic functions and basic DALI testing

Basic configuration of the Zone Controller can be carried via the front panel LCD screen and associated menu navigation menus. For further information on what can be configured and tested via the device itself, see pages 7 and 8.

Comprehensive commissioning and testing

Full commissioning of Zone Controllers which form part of a complete RAPIX Lighting Control System should be carried out using 'RAPIX Integrator' PC software, which can be downloaded from the Diginet web site at www.diginet.net.au

15. LCD menu options

The LCD and buttons provide a menu based interface for installers to

- View Zone Controller status and parameters
- Edit parameters
- Test DALI Line connections
- View controller diagnostic information

Home Screen

The menu home screen is the top level of the menu, which the LCD reverts to after no buttons have been pressed for 10 seconds.

The Zone Controller **Device Name** (as set in RAPIX Integrator software) is displayed here

If there is no project file loaded into the device, '**No Project**' is displayed

If a project is loaded, but the device IP address isn't in the project, '**Not Running**' is displayed
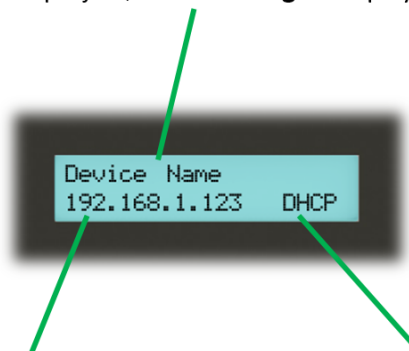
The Zone Controller IP Address is displayed here

DHCP displayed if it is being used to set the IP Address.
If a static IP Address is being used, nothing is displayed here

Set IP Address Screen (Static IP Address only)

If the device is set to accept a Static IP address, pressing the right arrow button when in the Home screen, will display the screen shown below. A static IP address can be entered here, along with the Subnet address, Gateway address and DNS address.

Edit IP Address
Edit Subnet
Edit Gateway
Edit DNS

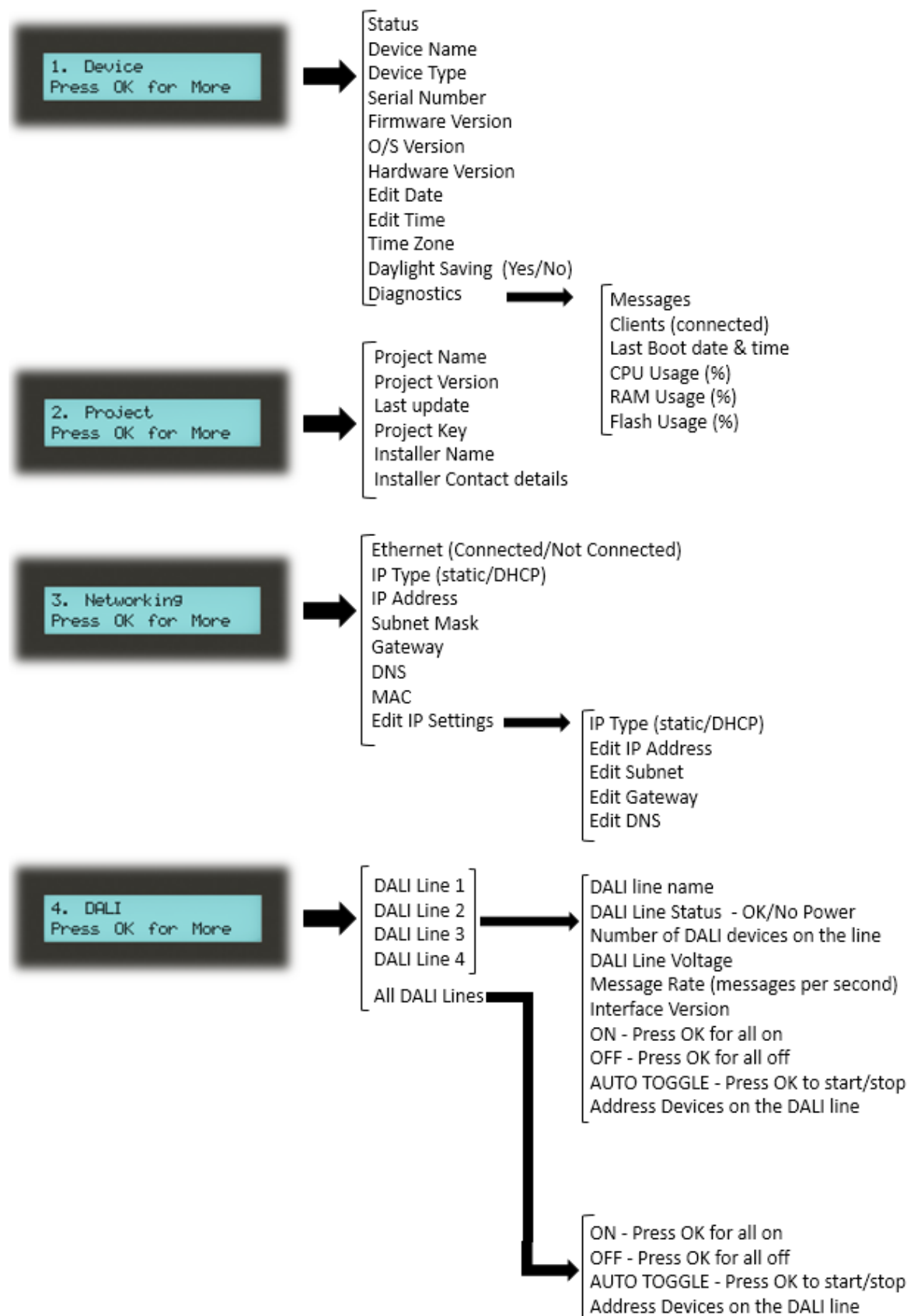Note: The Zone Controller is set to DHCP mode by default. The unit can be changed from DHPC to Static IP Address mode via the 'Networking' menu (see next page).

Zone Controllers support automatic IP addressing using DHCP to assist with the initial configuration phase of a RAPIX project. However, each Zone Controller should be **assigned a Static IP Addresses** during the commissioning process to ensure system reliability.

Menu structure

Using the right arrow button, the LCD menu options can be accessed. The LCD menu is divided into four main sections, as shown below. Pressing OK when one of these main sections is displayed will take the installer to the available options. An overview of the available options and their location in the menu structure is shown below.


```
1. Device                    Status
Press OK for More            Device Name
                             Device Type
                             Serial Number
                             Firmware Version
                             O/S Version
                             Hardware Version
                             Edit Date
                             Edit Time
                             Time Zone
                             Daylight Saving (Yes/No)
                             Diagnostics        →    Messages
                                                     Clients (connected)
                                                     Last Boot date & time
                                                     CPU Usage (%)
                             Project Name            RAM Usage (%)
                             Project Version         Flash Usage (%)
2. Project                   Last update
Press OK for More            Project Key
                             Installer Name
                             Installer Contact details


                             Ethernet (Connected/Not Connected)
                             IP Type (static/DHCP)
3. Networking                IP Address
Press OK for More            Subnet Mask
                             Gateway
                             DNS
                             MAC
                             Edit IP Settings   →    IP Type (static/DHCP)
                                                     Edit IP Address
                                                     Edit Subnet
                                                     Edit Gateway
                                                     Edit DNS

                             DALI Line 1             DALI line name
                             DALI Line 2             DALI Line Status - OK/No Power
4. DALI                      DALI Line 3             Number of DALI devices on the line
Press OK for More            DALI Line 4             DALI Line Voltage
                                                     Message Rate (messages per second)
                             All DALI Lines          Interface Version
                                                     ON - Press OK for all on
                                                     OFF - Press OK for all off
                                                     AUTO TOGGLE - Press OK to start/stop
                                                     Address Devices on the DALI line


                                                     ON - Press OK for all on
                                                     OFF - Press OK for all off
                                                     AUTO TOGGLE - Press OK to start/stop
                                                     Address Devices on the DALI line
```

16. Power surges

The Zone Controller has no mains connection. However induced voltages or surges may occur on electrical circuits and communication cabling in an installation as a result of excessive voltages from external influences which can damage electronic equipment. It is strongly recommended that the electrical and data installation be fitted with suitable over-voltage protection at the electrical switchboard and IT cabinets to avoid these situations.

17. Insulation resistance testing

It is generally not a requirement to perform an IR test on DALI lines. In the event it is required, the DALI line cables must be disconnected from the Zone Controller to conduct the test and then reconnected.

18. Product specifications

Parameter	Specification
DALI line capacity	Up to 4 separate DALI lines can be connected, with up to 64 devices on each line
DALI line operating voltage	18V dc (nominal), supplied by external DALI power supply
DALI line current draw	2mA (nominal) per DALI line
Power source	External power supply 5-12V dc, 200mA @ 12V dc, 500mA @ 5V dc *Note: a Diginet 12Vdc power supply, item number DGLMPS12DC/1-0, is included with the product*
Ethernet	10/100 Base-T On-board 2 port Ethernet switch Auto MDI-X
Mounting	DIN rail (35mm) mounted
IP Addressing	Zone Controller **must be assigned a Static IP Addresses** during the commissioning process to ensure system reliability. *Note: Zone Controllers support DHCP to assist with the initial configuration phase of a RAPIX project, but Static IP addresses should be assigned to all controllers during commissioning*
Ethernet connectors	2 x RJ45 sockets
DALI connectors (per DALI line)	2 x screw down terminal block, suitable for 2 x 2.5sqmm
LED Indicators	Power – Green ON Ethernet – Green ON when connected, FLASHES with traffic DALI – Green ON when connected, FLASHES with traffic
LCD Display	Backlit, monochrome, 2 rows x 20 character
Serial Port connection	4-wire, Tx, Rx, Ground and Power
Operating System	Windows Embedded Compact 7
Ambient operating temperature	0 to 50° C
Ambient storage temperature	-10 to 70° C
Humidity	0% to 95% RH non condensing
Ingress protection	IP40
Materials	Enclosure – Flame retardant ABS
Weight	400g (excluding power supply)
Device Dimensions	See separate diagram
Approvals	

19.Reset Button

The Zone Controller includes a reset button on the front interface panel (see diagram on page 3 for location details). To ensure the reset button is not used inadvertently, it is recessed behind the front interface panel and can be pressed by using a paperclip or similar.

Clicking the reset button causes the Zone Controller to carry out a soft reset. No programmed configuration information will be removed or changed when a soft reset is carried out.

Pressing and holding the reset button for 15-20 seconds causes the Zone Controller to reset all parameters back to factory defaults. All programmed configuration information will be lost when this is carried out.

20. Product dimensions
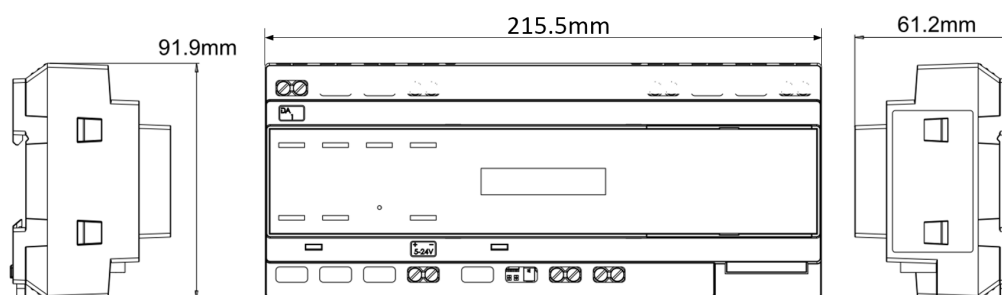
Figure 6 – Zone Controller dimensions

21. Standards and compliance

The Zone Controller is designed to meet/exceed requirements of the following Australian and International standards.

Australian/New Zealand EMC and Electrical Safety Frameworks and Standards

Regulation	Standard	Title
EMC	AS/NZS CISPR 22:2009	Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement
	AS/NZS CISPR 22-A:2010	
Electrical Safety	AS/NZS 60950-1:2011	Information Technology Equipment – Safety

The product is in conformity with the essential requirements of the following EC Directives and accordingly carries the CE marking.

EC Council Directive	Title
2006/95/EC	Low Voltage
2004/108/EC	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment

Other International Directives and Standards

Regulation	Standard	Title
Digital Addressable Lighting Interface (DALI)	IEC 62386-101	Digital Addressable Lighting Interface – Part 101: General Requirements – System
	IEC 62386-102	Digital Addressable Lighting Interface – Part 102: General Requirements – Control Gear

22.Product warranty

The Zone Controller has a two-year warranty against manufacturing defects in accordance with the following terms:

1. Nothing in this Warranty affects any person's rights under the Australian Consumer Law. The benefits to any person under the Gerard Lighting Warranty are in addition to the rights and remedies available under any Consumer Guarantees.
2. Subject to the other clauses of this Warranty, Gerard Lighting warrants that the Goods will be free of manufacturing defects and will perform to Gerard Lighting's specifications.
3. The benefit of the Gerard Lighting Warranty extends only to the owner of the property in which the Goods are installed (the Owner) for two (2) years after the date of purchase (Warranty Period).
4. If within the Warranty Period the Goods fail to perform to Gerard Lighting's specifications as a result of some defect in material or workmanship in the Goods (Defect) then Gerard Lighting will, at its option, repair the Goods or supply replacement Goods free of charge.
5. The Gerard Lighting Warranty will not apply to Goods:
    5.1.   installed by any person other than a qualified tradesperson; or
    5.2.   subjected to misuse, neglect, negligence or accidental damage; or
    5.3.   operated in any way contrary to any operating or maintenance instructions; or
    5.4.   improperly handled, installed or maintained; or
    5.5.   altered or modified prior to or after installation.
6. The Gerard Lighting Warranty does not apply to faulty or defective design of Goods unless Gerard Lighting has designed the Goods and Gerard Lighting expressly accepts responsibility for such design in writing.
7. In order to make a claim under the Gerard Lighting Warranty, the Owner must:
    7.1.   contact Gerard Lighting to obtain a Returned Goods Authorisation Number for the Goods and to be notified of Gerard Lighting's return address for the Goods by:
        7.1.1.   freecall **1300 95 DALI (3254)**; or
        7.1.2.   post to **PO Box 314, Padstow NSW 2211**; or
        7.1.3.   fax to **1300 95 3257**; or
        7.1.4.   email to **sales@diginet.net.au**.
    7.2.   return the Goods at the Owners expense to the return address notified by Gerard Lighting together with all accessories, instructions, specifications or other material supplied with the Goods and a notice in writing:
        7.2.1.   stating the Returned Goods Authorisation Number for the Goods;
        7.2.2.   describing in detail the defect or fault in the Goods;
        7.2.3.   setting out the Owner's contact details (including postal address, email address and telephone numbers at which the Owner can be contacted during usual business hours).
    7.3.   Gerard Lighting will not accept any returned Goods which have not been returned strictly in accordance with the above instructions.
8. Gerard Lighting will examine any returned Goods and if Gerard Lighting determines that they are defective through no fault of the Owner and are otherwise undamaged, Gerard Lighting will repair or replace the Goods free of charge.
9. Gerard Lighting will notify the Owner whether it accepts the Goods are defective within a reasonable time of return.
10. Gerard Lighting will not be responsible for any costs of de-installation, re-installation, returning Goods or for redelivery of the Goods (whether original or repaired and/or replacement Goods) by Gerard Lighting and any other related expenses of the Owner in claiming under the Gerard Lighting Warranty.
11. Gerard Lighting will not be responsible for any loss or damage to the Goods occurring while the Goods are in transit (either on return to Gerard Lighting or upon redelivery to the Owner of the original or repaired and/or replacement Goods).
12. Gerard Lighting will not be responsible (whether arising in contract or tort (including negligence) or under any statute) for any special, indirect, incidental, consequential or economic losses or damages (including loss of data, business, profits, revenue, anticipated savings, bargain, opportunity or goodwill) whether or not the possibility of those losses or damages being suffered had been brought to the attention of Gerard Lighting.

The Australian Consumer Law requires the inclusion of the following statement with the Gerard Lighting Warranty:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.