RAPIX LIGHTING CONTROL SYSTEM

DALI-2 Zone Controller Installation Guide

Zone Controller DGOZ-ZONEC-2DA
DGOZ-ZONEC-4DA

Designed in Australia.

TRUSTED AUSTRALIAN DESIGN

1. Product Item

This guide provides user operation and product specification information for the RAPIX DALI Zone Controller, item number **DGOZ-ZONEC-2DA** (2 DALI lines) and **DGOZ-ZONEC-4DA** (4 DALI lines).

2. Product package contents

The Zone Controller package includes the following.

- 1 x Zone Controller
- 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 9.5 V and 22.5 V 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 require the device to be housed in a suitable IP rated enclosure and compliance with the product environmental specifications.
- 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 Support. Contact details are provided on the back cover of this guide and also at www.ozuno.com

4. Product summary and capabilities

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

Each Zone Controller connects to 1 – 2 physical DALI lines (DGOZ-ZONEC-2DA) or 1 – 4 DALI lines (DGOZ-ZONEC-4DA) and communicates over an Ethernet network to DALI lines on other Zone Controllers. A Zone Controller can also connect to (optionally) 1 or 2 RAPIX DALI Ethernet Interfaces; allowing each Zone Controller to support either an additional 2 or 4 DALI lines.

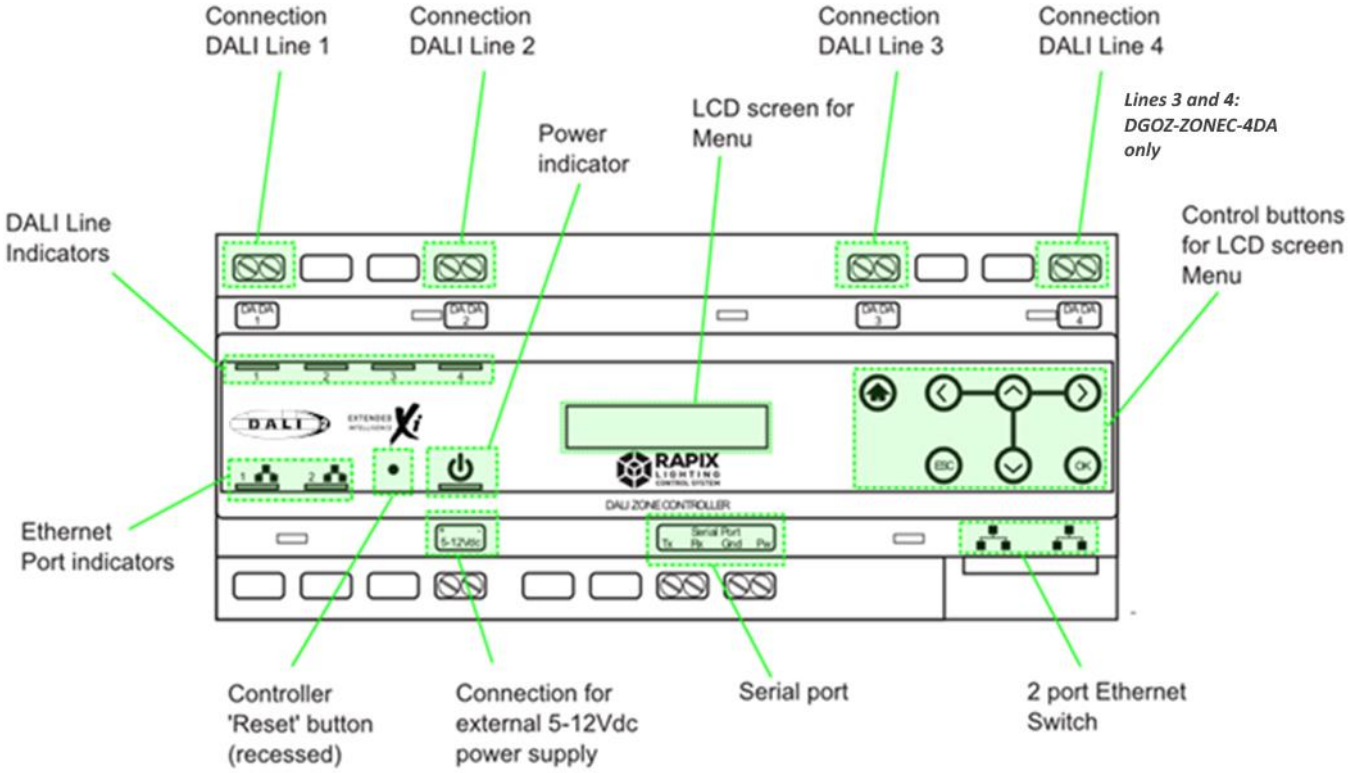
RAPIX Integrator software allows DALI devices and DALI groups across any mix of DALI lines to be linked together to form Extended Intelligence 'Zones' and 'Scenes' to suit the application.

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 two or four DALI lines (depending on model)
- 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 from external 5-12 V dc SELV supply.
- Configured using the 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.
- Includes API, Modbus, MQTT and user programming in the C# programming language.
- DALI-2 Certified – operates with DALI-2 instance types 1, 2, 3 and 4.

6. Connections and Interface



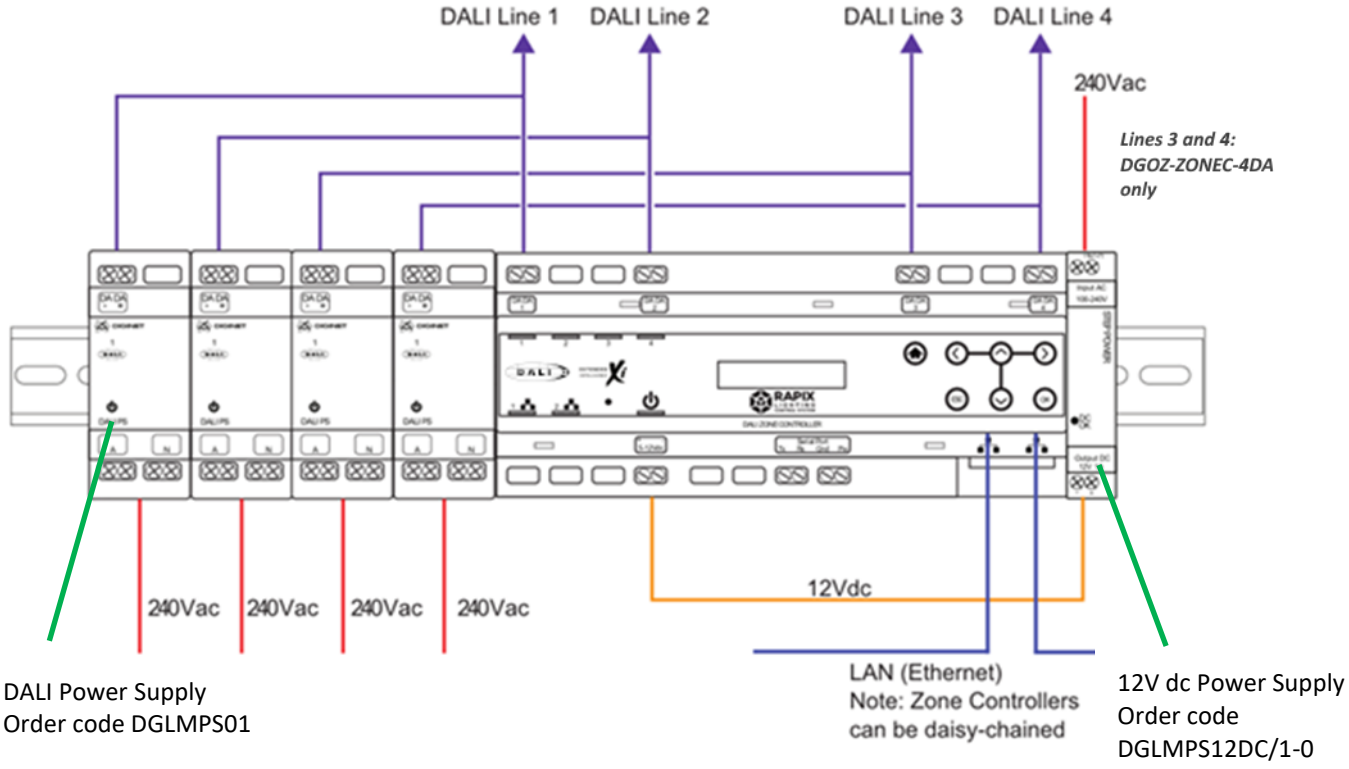
7. Mounting the Zone Controller

- The Zone Controller should be mounted onto standard 35mm DIN Rail.
- DALI lines must be considered at ac 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 the electrical code or your wiring rules.
- The installer must be suitably qualified and should work in accordance with standard safety procedures for mains-powered electrical equipment.

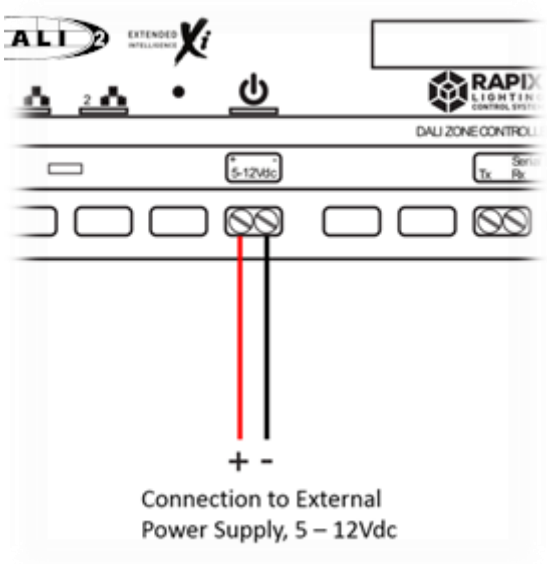
8. Connections

The Zone Controller connects to the following:

- Up to two or four (depending on model) separate DALI lines, each line with up to 64 DALI control gear product. Each DALI control gear product on a DALI line has a DALI Short Address.
- An external 5 - 12 V dc 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 is supported for use by the users own C# programming, if required.



9. Connecting 12V dc power

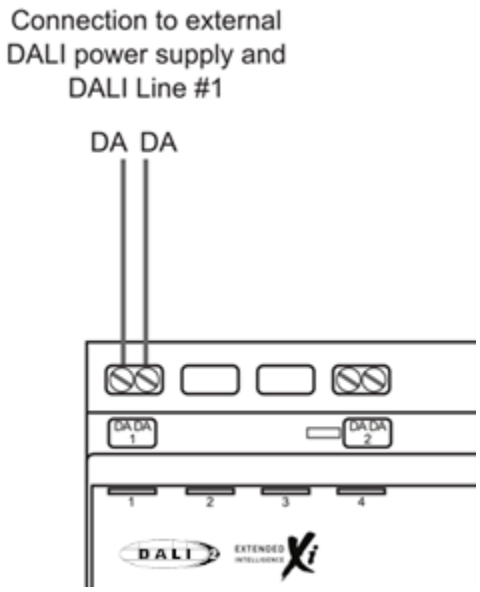


The Zone Controller is externally powered from a 5-12 V dc SELV power supply capable of supplying at least 200 mA @ 12 V dc (500 mA @ 5 V dc).

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

12V dc power supply order code DGLMPS12DC/1-0 is available from Ozuno.

10. Connecting DALI

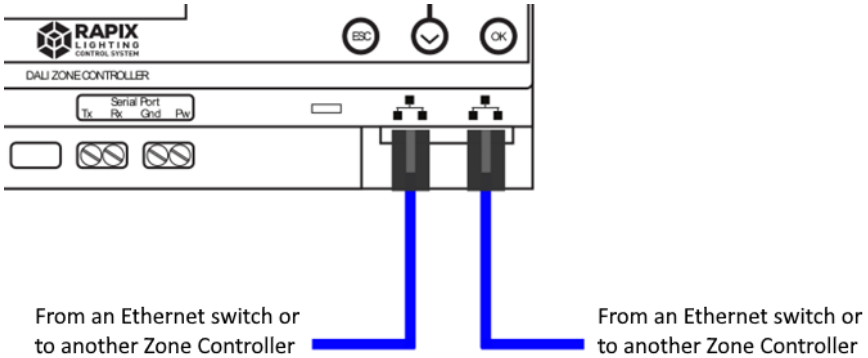


Up to two or four DALI lines (depending on model) can be connected to a Zone Controller. Each DALI line has two conductors which are not polarity sensitive. DALI line cabling must be double-insulated and mains rated.

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

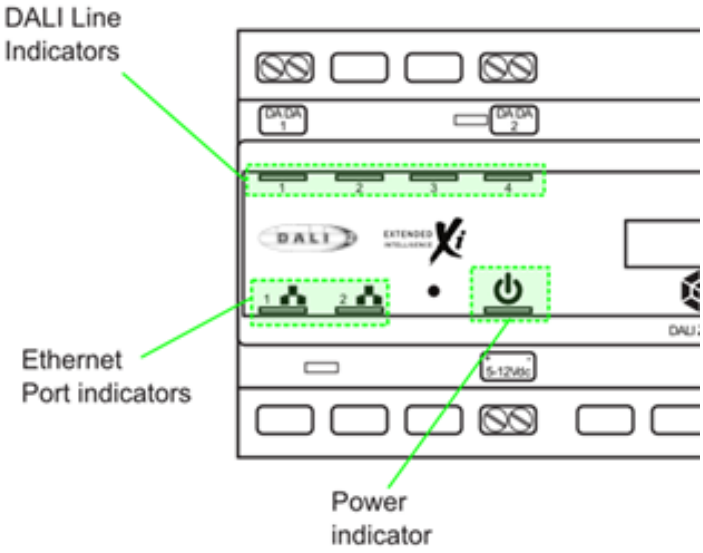
Warning: DALI lines must be considered at ac electrical mains potential due to basic equipment isolation and cable segregation between mains and DALI.

11. Connecting Ethernet



Ethernet is connected to the Zone Controller with standard Cat5e / Cat5 / Cat6 cable, terminated with RJ45 connectors.
The two RJ45 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



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.

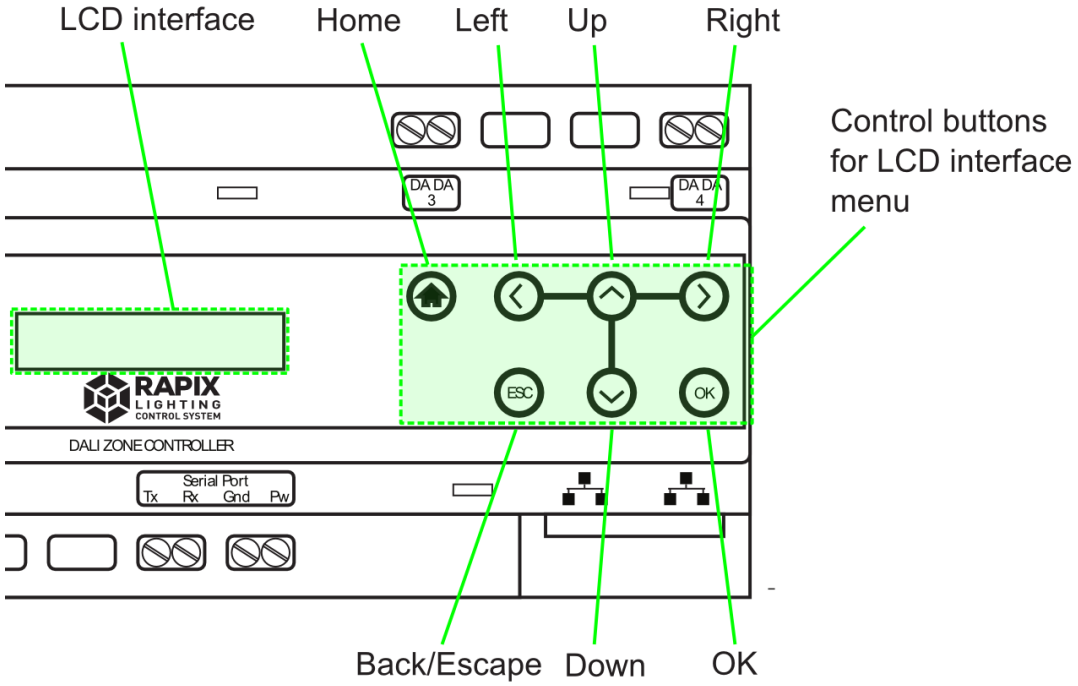


Figure 4 – Zone Controller User Interface

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 5-12 V dc 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 out 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 Ozuno web site at www.ozuno.com

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

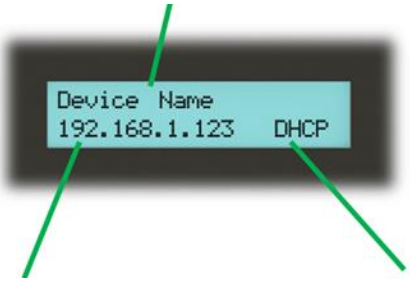
Home Screen

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** (or other information, as set in RAPIX Integrator software) is displayed here.

If there is no project file loaded then '**No Project**' is displayed.

If a project is loaded , but the IP address isn't in the project, then '**Not Running**' is displayed.



The Zone Controller IP Address is displayed here (or other information set by RAPIX Integrator software)

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

Set IP Address Screen (Static IP Address only)

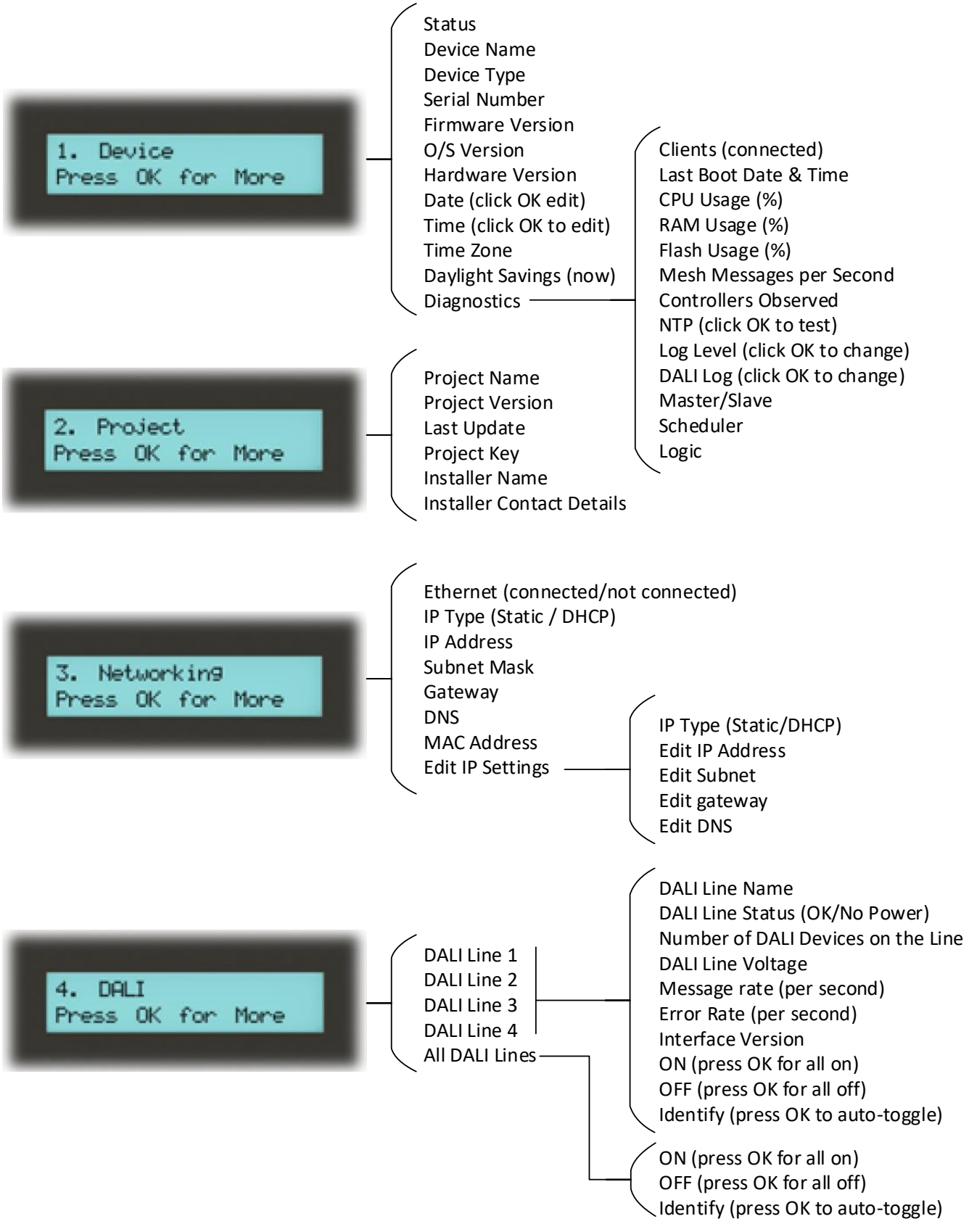
If the device is set to accept a Static IP address, pressing the right arrow button when in the Home screen, will display the screen shown below. A static IP address can be entered here, along with the Subnet address, Gateway address and DNS address.

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 must 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.



16. Power surges

The Zone Controller has no mains connection. Induced voltages or surges may occur on electrical circuits and communication cabling in an installation due to excessive voltages from external influences, and these induced voltages 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	DGOZ-ZONEC-2DA: Up to 2 DALI lines. DGOZ-ZONEC-4DA: Up to 4 DALI lines. A DALI line can have up to 64 control gear devices on each line. Each Zone Controller can be linked to 0, 1, or 2 RAPIX Ethernet DALI Interface products (item number DGLMIFE02), adding 0, 2 or 4 DALI lines.
DALI line operating voltage	18 V dc (nominal), supplied by external DALI power supply
DALI line current draw	2 mA (nominal) per DALI line
Power source	External: 5-12 V dc, 200 mA @ 12V dc (500 mA @ 5V dc) *Note: a 12 V dc power supply, item number DGLMPS12DC/1-0, is available from Ozuno*
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 (5-12 V dc, 100 mA)
User Programming	C# language, through RAPIX Integrator software
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	IP20
Materials	Enclosure – Flame retardant Polycarbonate, UL 94V-0
Weight	400g
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

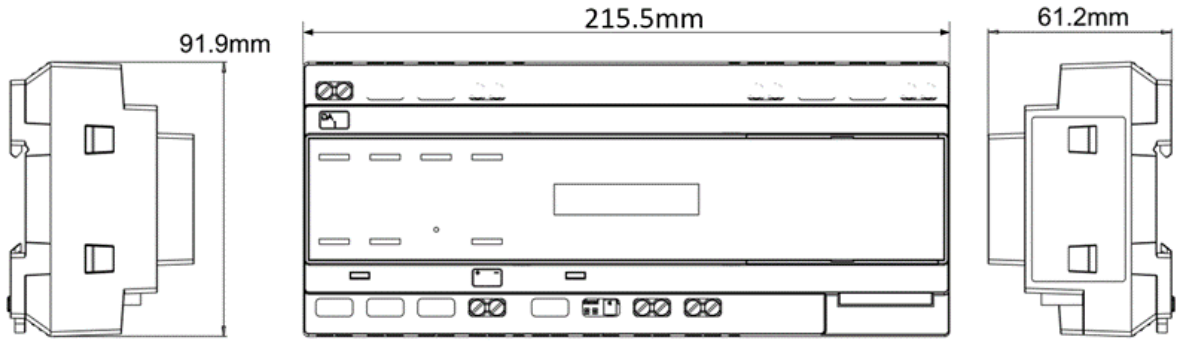


Figure 6 – Zone Controller dimensions

21. Standards and compliance

The Zone Controller is meets or exceeds requirements of the following standards.

EMC and Electrical Safety Frameworks and Standards

EN 55015
EN 55022, AS/NZS CISPR 22
EN 55024
EN 61547
EN 61000-3-2
EN 61000-3-3
EN 61347-1, AS/NZS 61347.1
EN 61347-2-11, AS/NZS 61347.2.11

DALI Standards

IEC 62386-101 Ed 2 (DALI-2)
IEC 62386-102 Ed 2 (DALI-2)

EU Directives

2014/35/EU	Low Voltage
2014/30/EU	Electromagnetic Compatibility (EMC)
2015/863	Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment

22. Product warranty

This product has a FIVE YEAR warranty against manufacturing defects. The warranty applies from the date of purchase.

Refer to ozuno.com for the full conditions for warranty and returns process. A summary of the process:

1. Contact the seller of the goods, or in their absence contact Ozuno to request a return goods authorisation.
2. When a return is authorised, the goods must be returned to Ozuno at the owners expense for technical evaluation.
3. The warranty claim will be evaluated by Ozuno and accepted if the goods are found to be faulty, or rejected if the fault was caused by conditions beyond the responsibility of Ozuno. Considerations of installation, removal, return, freight and testing are not the responsibility of Ozuno.

The Australian Consumer Law requires the inclusion of the following statement with this 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.

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