

RAPIX Lighting Control System - eHub



Designed in Australia to
meet Australian Standards
and installation conditions



1. Product item

This guide provides user operation and product specification information for the RAPIX Lighting Control System 'eHub', item number **DOZ-EHUB-4G-2S**.

2. Product package contents

The eHub package includes the following:

- 1 x eHub
- 1 x 12V dc SELV power supply.

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 eHub 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/Data cabling and mains/DALI Line cabling in accordance with local regulations
- There are no user serviceable parts inside the eHub. Do not attempt to disassemble or operate the device with any covers removed
- The eHub 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 eHub, 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 eHub is a RAPIX lighting control system device which connects between input peripherals and a DALI line. The eHub manages input peripheral power requirements, as well as embedded logical functions and DALI communications for these connected input peripherals. The connected input peripherals, such as RAPIX modular switches and PIR sensors, are then able to communicate with a DALI Line.

The unit includes four inputs for connecting to RAPIX smart input peripherals, and two additional input connections for occupancy sensors and/or dry contacts.

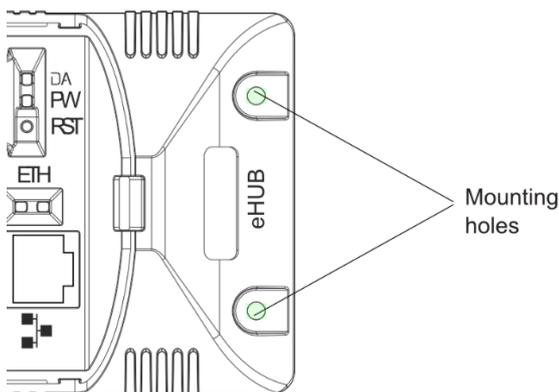
The eHub is a compact unit which fits through a standard 90mm downlight ceiling hole and is suitable for locating in a ceiling void.

The eHub is configured via the Diginet RAPIX software suite.

5. Product features

- Powered via external 12V dc SELV power supply
- Input sockets for quick and easy input peripheral connection
- Segregated terminal block for DALI Line connections
- LED indicators for power, DALI and Ethernet
- Suitable for mounting in a ceiling void
- Fits through a 90mm downlight hole
- Programmed via DALI
- Four input connections for RAPIX smart input peripherals
- Two input connectors for occupancy sensors and/or dry contacts input peripherals
- Actions for connected input peripherals are configurable. For example, a RAPIX modular switch can be configured as a toggle dimmer, memory dimmer, long press fade time, double tap action and many other configurations
- Support for 32 'Zones', Zones being collections of DALI Groups and/or DALI Short Addresses
- Support for up to 16 DALI scenes and (additionally) 16 RAPIX scenes.

6. Mounting the eHub



The eHub is suitable for mounting in a variety of indoor locations, including above suspended tile ceilings and fixed plasterboard ceilings.

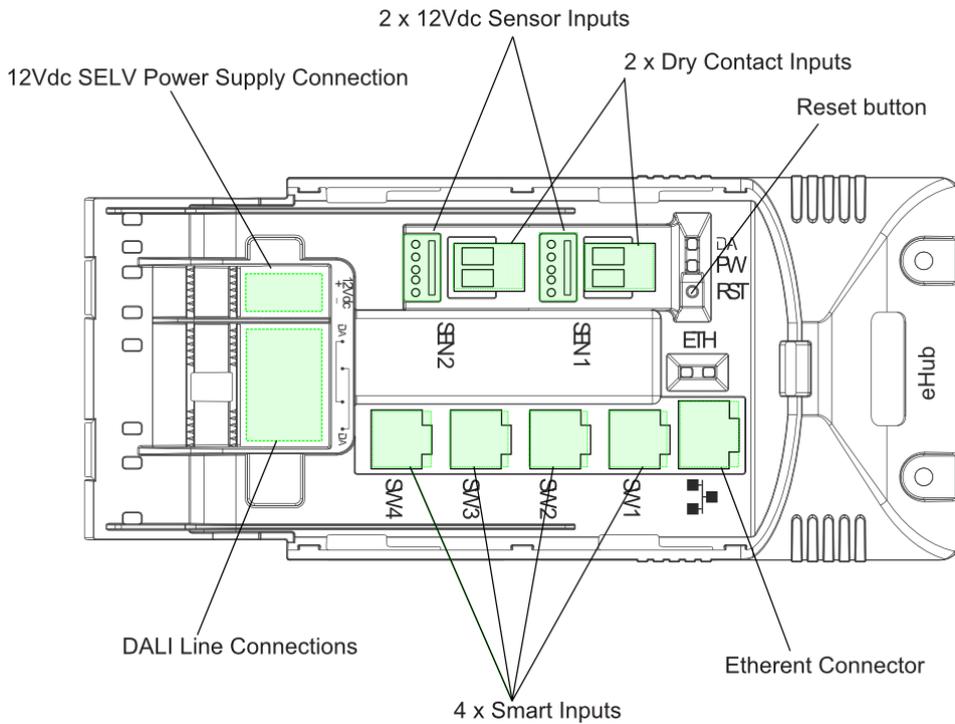
The eHub has an ingress protection rating of IP20 and as such is not protected against moisture ingress. It is therefore not suitable for mounting in an outdoor environment without being housed in a suitable weatherproof enclosure.

The eHub includes two 6mm mounting holes. These can be used to anchor the eHub in a suitable location, typically using fixing screws or cable ties.

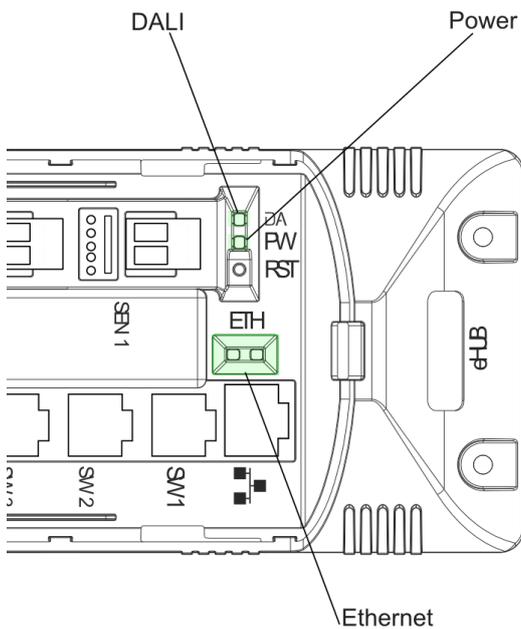
7. Inputs and output connections

The eHub connects to the following:

- 12V dc SELV power supply connection
- A DALI Line, with up to 64 DALI devices (each with a DALI Short Address) connected to the line
- Four connections for RAPIX smart input peripherals
- Two input peripheral connections for dry contacts and two 12V dc sensors (*Note: each pair of dry contact and 12V dc sensor inputs are internally connected in parallel*)
- An Ethernet connection (future use)



8. Indicators



Power Indicator

Indicator	Indicator Meaning
Red	Power available
Red - Flash OFF	Received Data from Inputs
OFF	eHub not powered

DALI Indicator

Indicator	Indicator Meaning
Green - Flash OFF	DALI available
Green - Flash ON	DALI not available
Green Fast Flashing ON/OFF	DALI communications

Ethernet Indicator

Indicator	Indicator Meaning
Green ON	Link/Active
Green OFF	No Link
Yellow Flashing	Data activity

9. Powering connected input peripherals

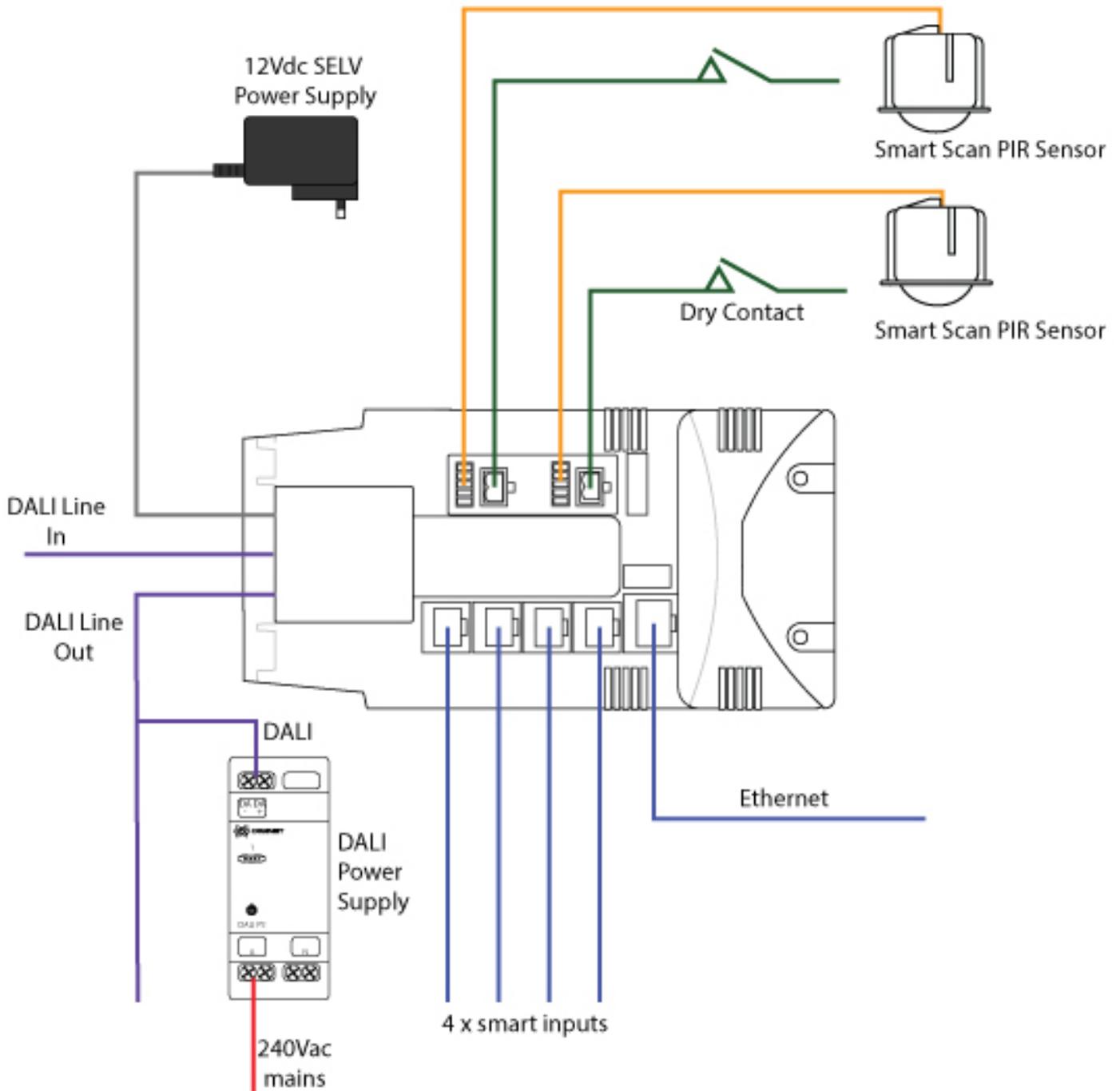
The eHub supplies power to all connected input peripherals such as RAPIX modular switches and 12V dc sensors.

10. Connections Overview



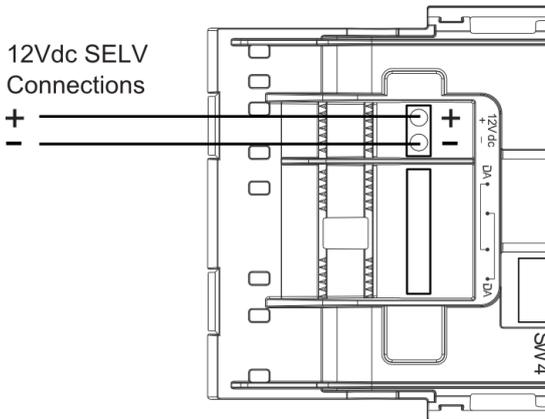
WARNING - DALI Lines must be considered at 240Vac electrical mains potential due to basic equipment isolation and cable segregation between mains and DALI.

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.



11. Connecting 12V dc SELV power supply

The eHub is powered via an external 12V dc SELV power supply, supplied with the unit. The power supply is connected as shown below.



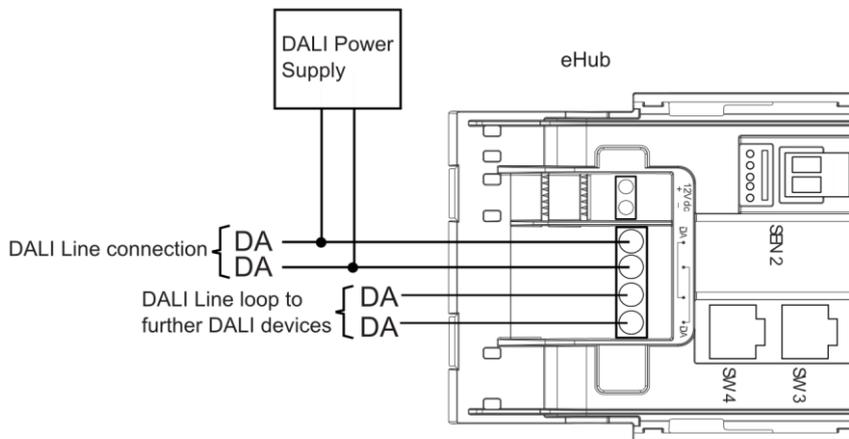
A third party 12V dc SELV powered supply can be used to power the eHub. Any third party power supply used with the eHub must be 12V dc regulated and must be capable of supplying 1.5A @ 12V dc.

12. Connecting to a DALI Line



WARNING - DALI Lines must be considered at 240Vac electrical mains potential due to basic equipment isolation and cable segregation between mains and DALI. 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 eHub can be connected to a single DALI Line, as shown below. Separate DALI loop-off terminals are also provided.



The DALI Line cable has two conductors and these are not polarity sensitive. DALI Line cabling must be double insulated and mains rated.



Each DALI Line requires an external DALI compliant power supply to be connected before it will operate. A Dignet DALI Power Supply, item number **DGLMPS01** (purchased separately), can be connected to each DALI Line to fulfil this requirement.

13. Connecting RAPIX modular switches

RAPIX modular switches are wall switches for the RAPIX Lighting Control System which fit in standard Australian wall switch grid plates. RAPIX modular switches function as eHub input peripherals.



A RAPIX modular master switch mounted in a typical Australian one-gang wall switch grid plate.

RAPIX modular switches are available as ‘masters’ or ‘slaves’.

Master RAPIX modular switches connect directly to the eHub.

Slave RAPIX modular switches connect via master RAPIX modular switches

RAPIX modular switches are configured in RAPIX software to perform a wide range of functions and each modular switch (both masters and slaves) includes two software configurable LED indicator colours, white and amber.

13.1. Features

- Two configurable LED colours, white and amber
- Fits standard Australian wall plate apertures
- Master RAPIX modular switches connect to the eHub and are powered via the eHub
- Slave RAPIX modular switches connect to a master and are powered via the master
- Typical functions include
 - Toggle on / off
 - Fade lights up or down
 - Start or cancel a timer
 - Recall a fixed level
 - Toggle between off and the current Level
 - Issue a scene

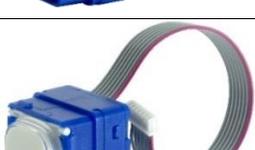
All commissioning is carried on via Diginet RAPIX software suite. The configuration is downloaded to the eHub via a DALI line.



Do not connect RAPIX modular switches to the building/house ac mains supply. RAPIX modular switches are control devices which are powered by the eHub via an SELV connection and must only be connected as described in this guide. That is, master switches are connected to the eHub, slave switches are connected to master switches.

13.2. Range

The following RAPIX modular switches can be connected to each of the four smart input peripheral connectors on the eHub.

Diginet Part Number	Description	
DOZ-MOSW-M-PB	RAPIX modular switch – Push Button Master	
DOZ-MOSW-M-RO	RAPIX modular switch – Rocker Master	
DOZ-MOSW-M-RE	RAPIX modular switch – Rotary Master	
DOZ-MOSW-S-PB	RAPIX modular switch – Push Button Slave	
DOZ-MOSW-S-RO	RAPIX modular switch – Rocker Slave	
DOZ-MOSW-S-RE	RAPIX modular switch – Rotary Slave	

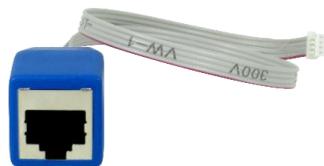
Note that RAPIX modular switches are purchased separately.

14. Connecting RAPIX modular switches to the eHub

Each master RAPIX modular switch is supplied with the following patch leads.



eHub to RJ-45 patch lead



Master RAPIX modular switch to RJ-45 patch lead

These two patch leads are used in conjunction with standard Cat5/Cat5e cable and RJ-45 connectors to connect master RAPIX modular switches in the eHub. See the pictures and diagram on the following page.

14.1. RAPIX modular switch eHub patch lead connections



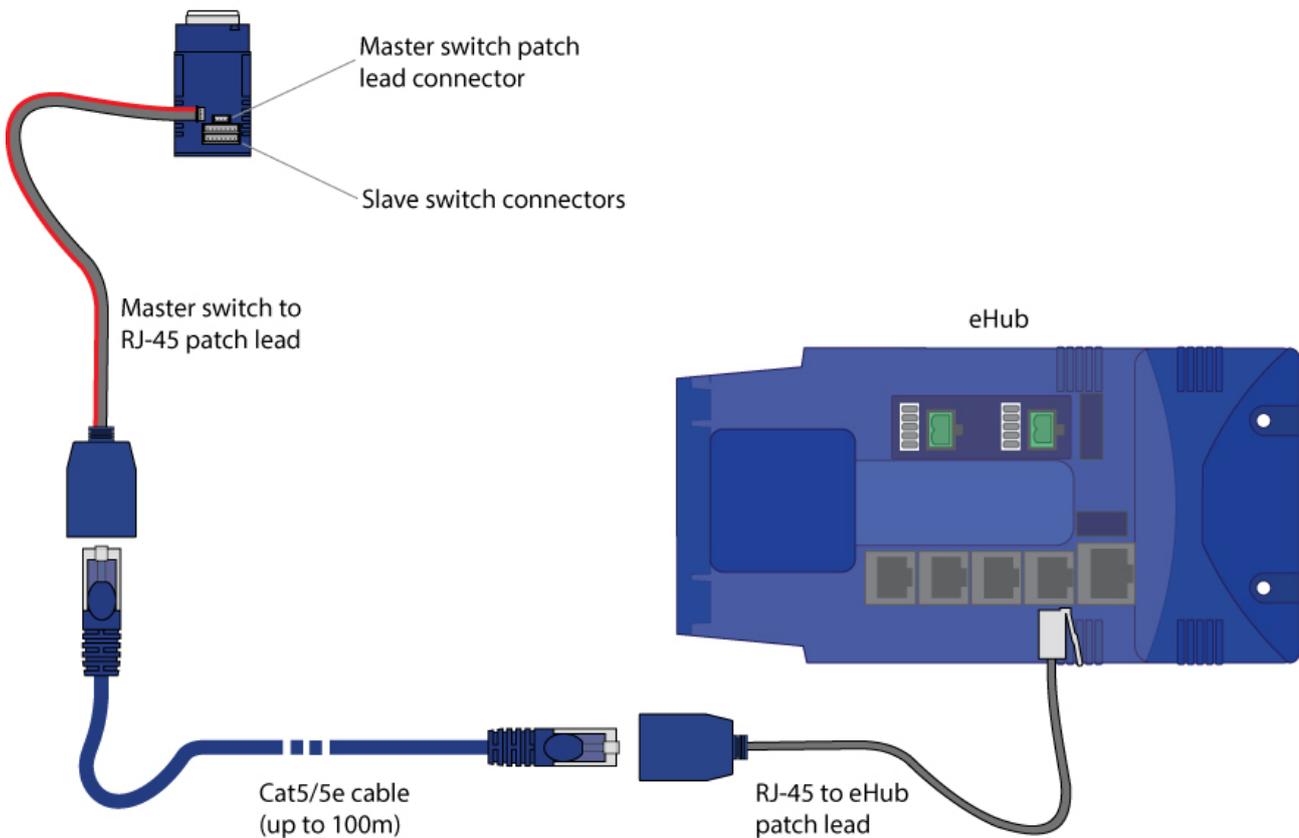
Connection between a master RAPIX modular switch and RJ-45 patch lead



Connection between the eHub and RJ-45 patch lead

14.2. Connections from the eHub to a master RAPIX modular switch

The diagram below shows the connections between the eHub and a master RAPIX modular switch. The maximum distance between a master RAPIX modular switch and the eHub is 100m.



All master RAPIX modular switches (push button, rocker and rotary) are connected to the eHub in the same way as indicated above

15. Connecting masters to slaves

Slave RAPIX modular switches connect directly to masters. Slaves have an integrated flying lead with a male connector. Masters have matching female sockets.



Connection between a master and slave RAPIX modular switch

15.1. Typical installed connections



Typical connections between master and slave rotary RAPIX modular switches in a two gang grid plate



Typical connections between a master and three slave RAPIX modular switches in a four gang grid plate

15.2. Maximum number of master / slave connections

The number of slave RAPIX modular switches supported by each type of master are shown in the table below.

Master type	Number of possible slaves connected	
	Slave Push Buttons or Rockers	Slave Rotary
Push Button	Up to 5	N/A
Rocker	Up to 5	N/A
Rotary	N/A	1



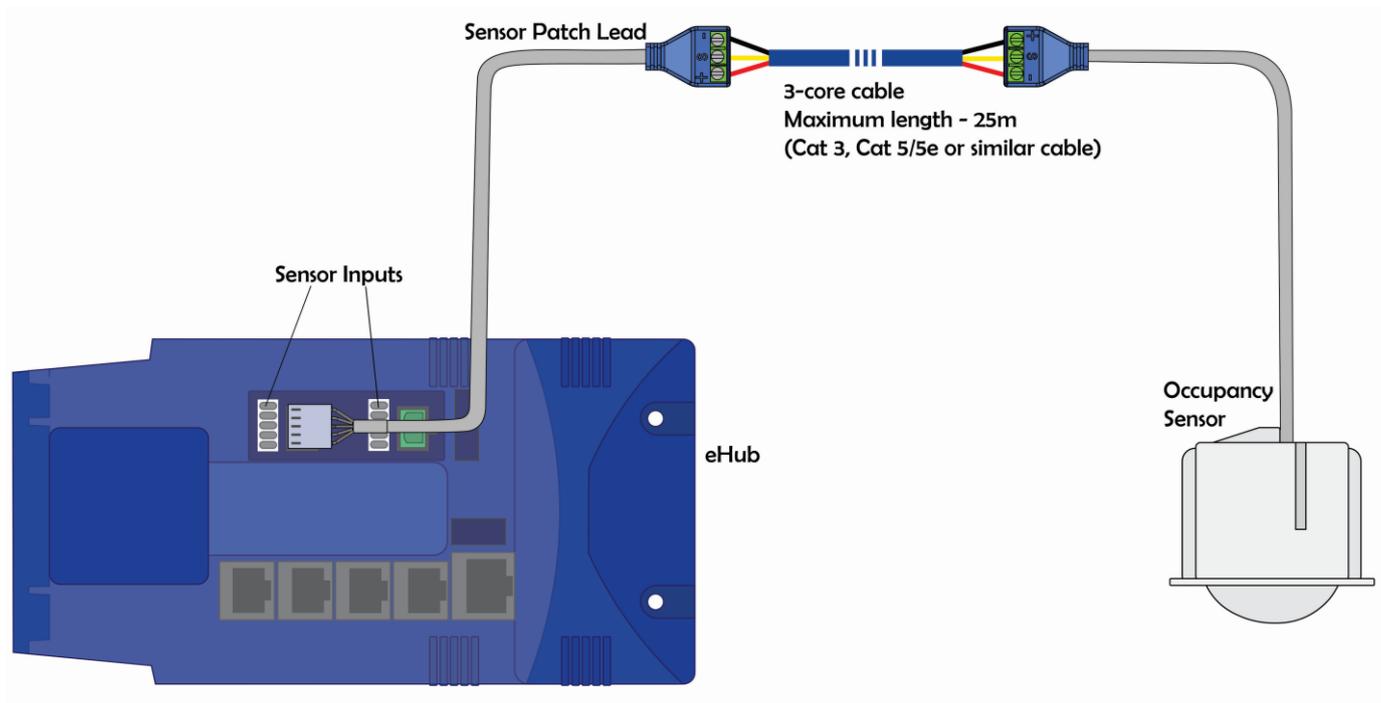
The maximum permissible distance between the master and slaves RAPIX modular switches is limited to the pre-terminated slave cable length. This pre-terminated cable must not be extended or shortened.

16. Connecting occupancy sensors to the eHub

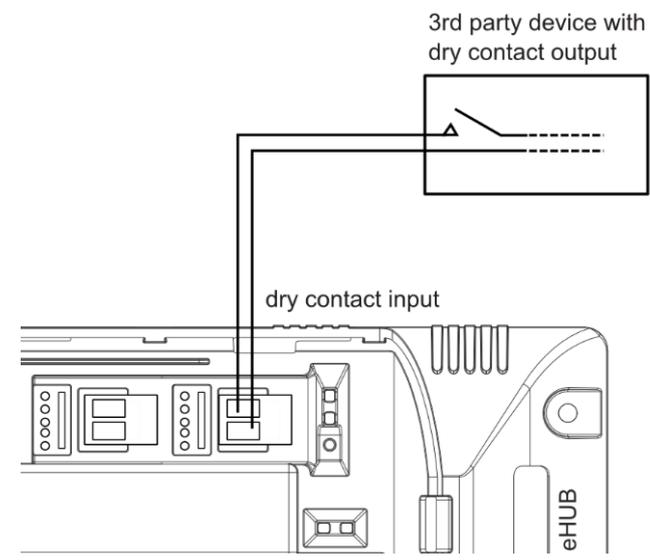
The following occupancy sensors can be connected and powered from one of the two eHub sensor inputs.

	Manufacture	Item Number	Description
	Gerard Lighting	Diginet DGEMS360CL	Smart Scan PIR Sensor, 360 degree ceiling mount, recessed
	Sensor Switch	CM-PDT-9-AU	Sensor Switch dual technology sensor with PIR and Microphonics detection, ceiling mounted

A sensor patch lead is provided with the above sensors and connected to the eHub as shown below.



17. Connecting a dry contact input



The eHub includes two separate dry contact inputs for connecting contact closure outputs signals from 3rd party devices into the eHub. Typical connections are shown on this diagram.

18. Powering and commissioning the eHub

The eHub has no power on/off switch, therefore when it is connected to a suitable 12V dc SELV power supply, it will power up. If the relevant cable connections are also connected, the eHub can be commissioned when 12V dc power is applied.

19. Commissioning and testing

Commissioning of the eHub, which forms part of a complete RAPIX Lighting Control System, should be carried out using the Dignet RAPIX software suite, which can be downloaded from the Dignet web site at dignet.net.au.

20. Power surges

The eHub 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. Any induced voltages or surges 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.

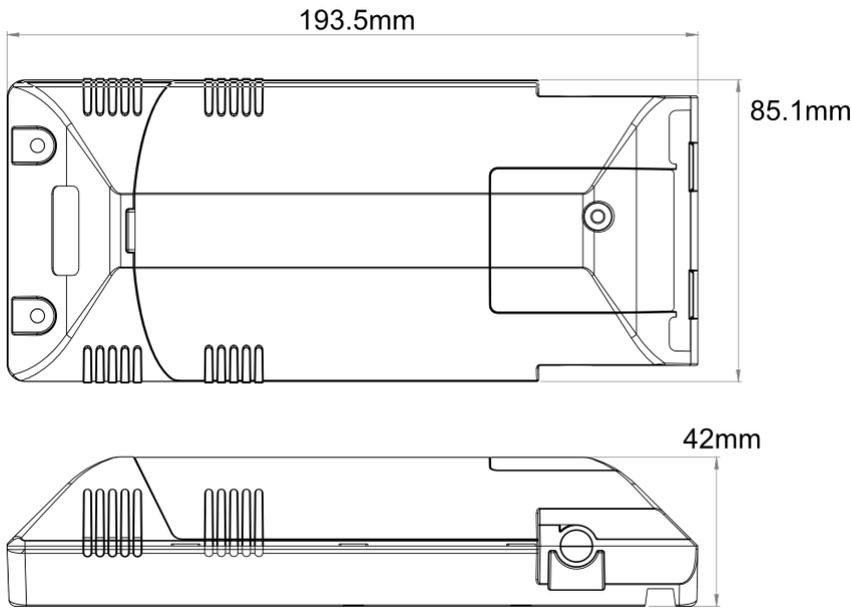
21. Insulation resistance testing

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 eHub to conduct the test and then reconnected.

22. eHub specifications

Parameter	Specification
DALI Line capacity	Connection for 1 DALI line Up to 64 devices with DALI Short Addresses can be connected Note: The eHub itself does not require a DALI Short Address to be allocated
Max no. of unit's per DALI Line	24
DALI Line operating voltage	18V dc (nominal), supplied by external DALI power supply
DALI Line current draw	2mA (nominal)
Power	External SELV power supply, 12V dc <u>regulated, 1.50Am @</u> (including <u>power capacity for</u> input <u>peripheral</u> devices)
Number of smart inputs	4
Number of dry contact inputs	2 <u>voltage free, isolated</u> , dry contact inputs (in parallel with sensor inputs)
12V dc Sensor inputs	2 sensor inputs (in parallel with dry-contact inputs)
Ethernet Connection	10/100 Base-T, RJ45 connector
DALI connection	<u>4 Tunnel</u> Terminal block, <u>each tunnel</u> suitable for 2 x 2.5sqmm
LED Indicators	Power – <u>Red</u> DALI – <u>Green</u> Ethernet – <u>Green (Link) + Yellow (Data)</u>
External Power connector	Two tunnel terminal block for dc + and -
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 ABS
Weight	215g
Approvals	    

23. eHub dimensions



24. eHub standards and compliance

The eHub is designed to meet/exceed 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 CISPR15	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.

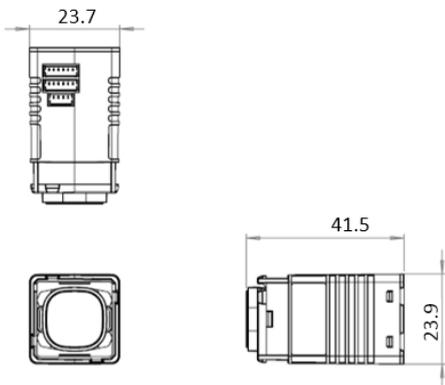
Regulation	Standard	Title
Digital Addressable Lighting Interface (DALI)	IEC 62386-101	Digital Addressable Lighting Interface – Part 101: General Requirements – System
	IEC 62386-102	Digital Addressable Lighting Interface – Part 102: General Requirements – Control Gear

25. RAPIX modular switch range specifications

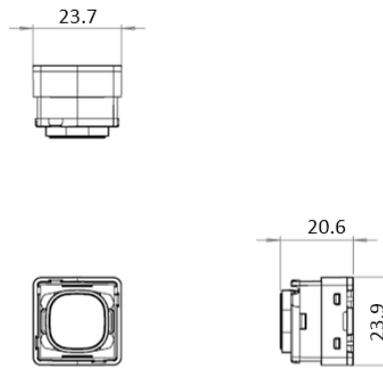
Parameter	Specification		
Available types	Push Button Master Rocker Master Rotary Master	Push Button Slave Rocker Slave Rotary Slave	
LED colours	Master and slave RAPIX modular switches include both white and amber LED indicators. The operation of these LEDs and LED colours is configured in the RAPIX software tools		
Number of slaves which can be connected to a master	Master switch type	Slave push / rocker switches	Slave rotary switches
	Push Button	Up to 5	N/A
	Rocker	Up to 5	N/A
	Rotary	N/A	1
Maximum distance between a master and eHub	100m		
Maximum distance between a master and a connected slave	100mm (via pre-terminated slave cable)		
IP Rating	IP20		
Approvals			 

26. RAPIX modular switch dimensions

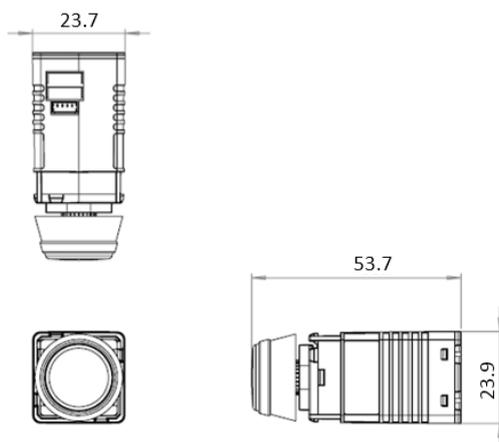
Master push button / rocker



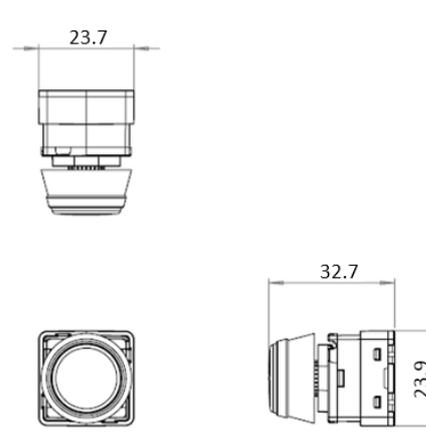
Slave push button / rocker



Master rotary



Slave rotary



27. Product warranty

The eHub 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.

Gerard Lighting Pty Ltd (Gerard Lighting) reserves the right to alter the specifications, designs or other features of any items and to discontinue any items at any time without notice and without liability. While every effort is made to ensure that all information in this user and installation guide is correct, no warranty of accuracy is given and Gerard Lighting shall not be liable for any error.

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