

DSN3v5 Detached Sensor Node



| Description | Code |
|----------------------|-------------------------------------|
| Detached Remote Node | Select variant based on application |

| DSN3 Surface Mounted | DSN3 Recessed | DSN3 Suspended |
|----------------------|--------------------|--------------------|
| EL-ACC-OR3-DSN-000 | EL-ACC-OR3-DSN-001 | EL-ACC-OR3-DSN-002 |
| | | |

The Detached Sensor Node conveniently extends the Intelligent Lighting Control and connectivity of the Organic Response system to non-box integrated sensor luminaires such as:

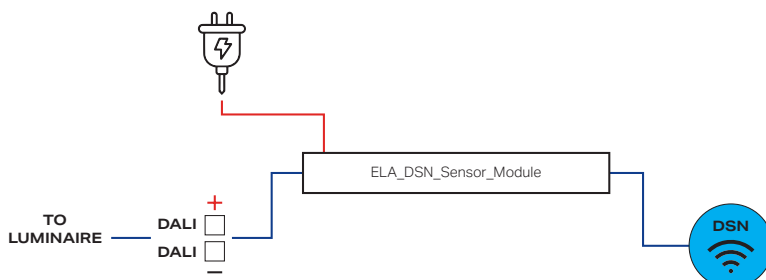
- Suspended lights
- Downlights
- Track lights
- Other Applications.

Organic Response (OR) Detached Sensor Nodes (DSN) require 230VAC supply from any circuit irrespective of the controlled lights, and can connect to and operate **up to 12 DALI devices or luminaires.**

| Technical Specifications | | | | | | | |
|--------------------------|---|-------------|---------------|-----------------------|--------------------------------------|------------------------|--------------------------------|
| Code | Description | Height [mm] | Diameter [mm] | Cut-out Diameter [mm] | Clearance for all power cabling [mm] | Installed Height | Load |
| EL-ACC-OR3-DSN-100 | SN3v5 DETACHED SENSOR NODE SURFACE MOUNTED | 39.4 | 74.8 | 63.5 | 100 | No greater than 3.7mts | DALI - Up to 12 x DALI Devices |
| EL-ACC-OR3-DSN-101 | SN3v5 DETACHED SENSOR NODE RECESSED | 48.3 | 81 | 63.5 | 100 | No greater than 3.7mts | DALI - Up to 12 x DALI Devices |
| EL-ACC-OR3-DSN-102 | SN3v5 DETACHED SENSOR NODE SUSPENDED | 34.7 | 74.8 | 63.5 | 100 | No greater than 3.7mts | DALI - Up to 12 x DALI Devices |
| EL-ACC-OR3-DSN-108 | SN3v5 DETACHED SENSOR SWITCHED RELAY RECESSED | 39.4 | 74.8 | 63.5 | 100 | No greater than 3.7mts | Max 400w -1.5A Switched Load |

DSN3 Wiring System Overview

A detached sensor node comprises a Box Module that has a cable for the **Sensor Head** (recessed, surface or suspended), **DALI tail**, and a **3 Pin 230VAC Plug**.



- The DALI tail is what you connect to a luminaire's DALI terminal or fly lead.
- The DALI twin is looped, daisy chained or star connected between the group of lights.
- The DSN sensor will broadcast the same DALI commands to ALL the lights over the cable.
- A DSN can be described as a unique dimming channel/switch wire.

DO NOT install and connect:

- With other DALI LINES, or add additional DALI Power Supply Units.
- More than one DSN per light, or group of lights being controlled.
- Within 1.2m of HVAC – Heating and or Cooling Vents, Registers.

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Installation Guide

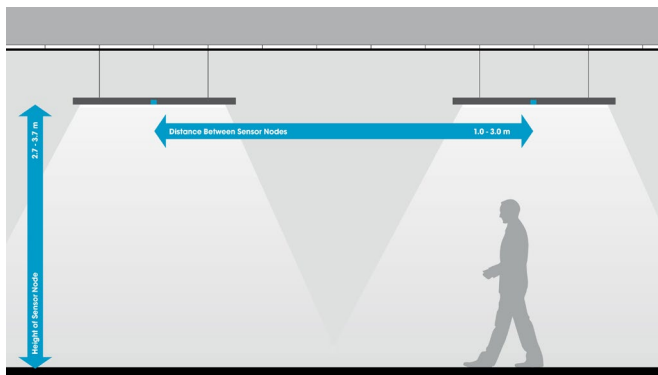


Organic Response Control System Design Parameters

Nodes are spaced no greater than **3.0m** and at a height not exceeding **3.7m**

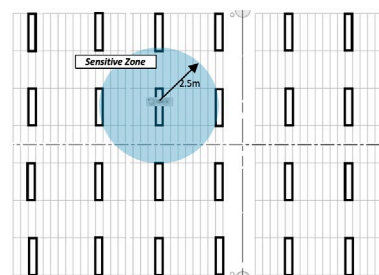
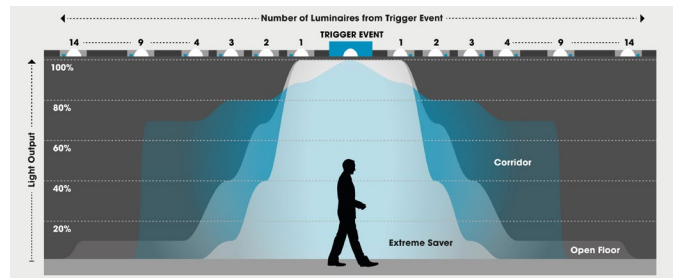
Keeping the OIC Contiguous

Organic Response Sensor Nodes communicate with each other wirelessly to form a smart sensor network which we call the Occupancy Information Cloud (OIC)™. The system relies on peer to peer communication between neighbouring Sensor Nodes to maintain the integrity of the OIC and allow the light fittings to operate as a system. For this reason, nodes must be installed with the spacing indicated below:



Infra_Red_Wireless Communications Control Messages OIC:

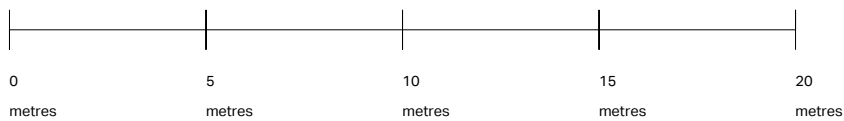
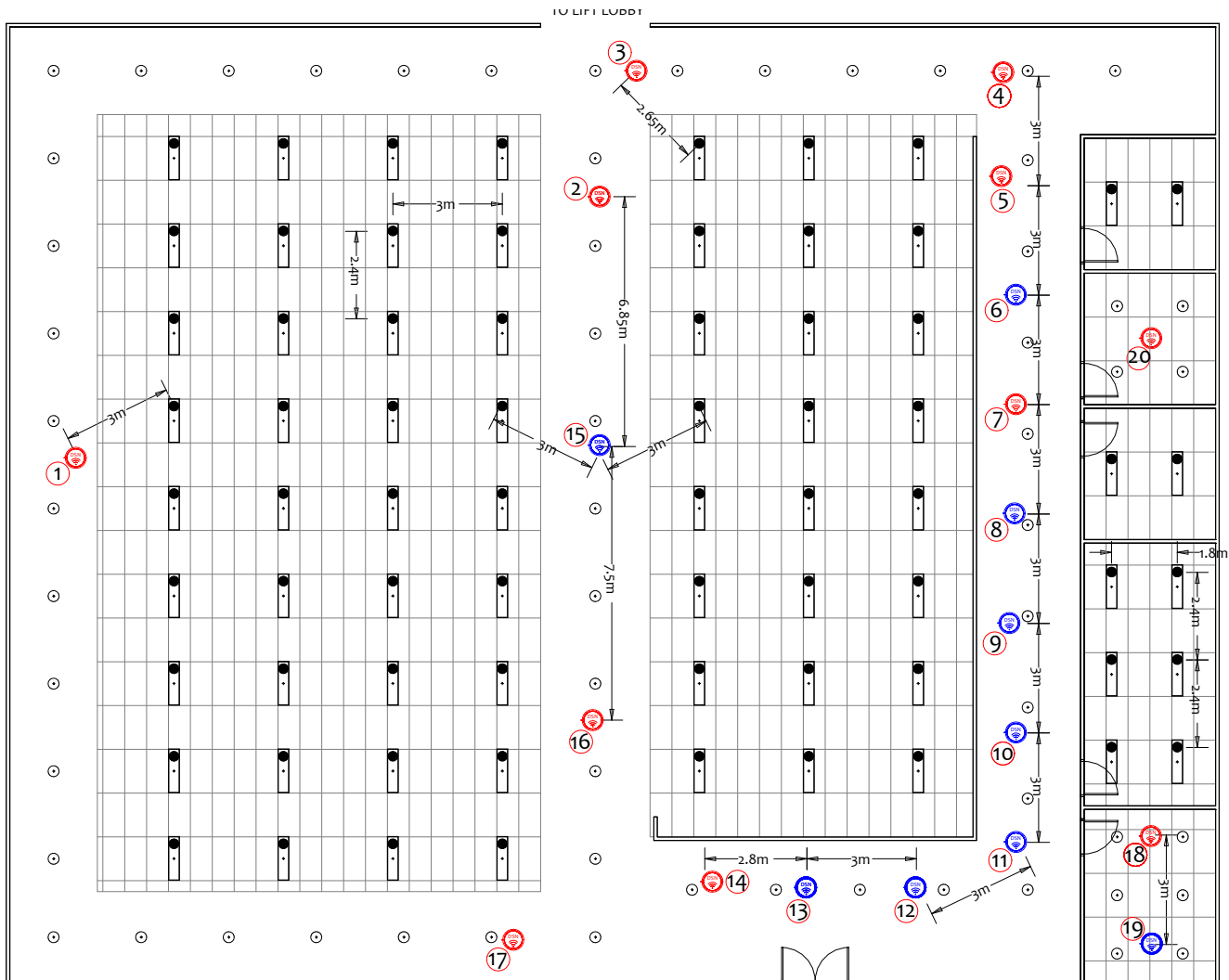
All Organic Response nodes (integrated or detached) have a PIR and PE sensor.








Motion Sensor - Detection Range of a single Sensor Node imposed over a Typical RCP (2.5m circular radius, 2.7m luminaire height).

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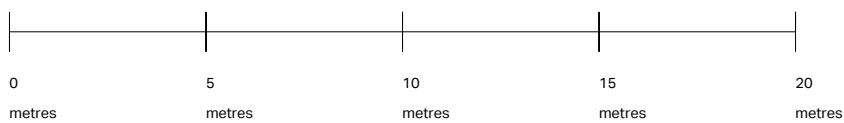
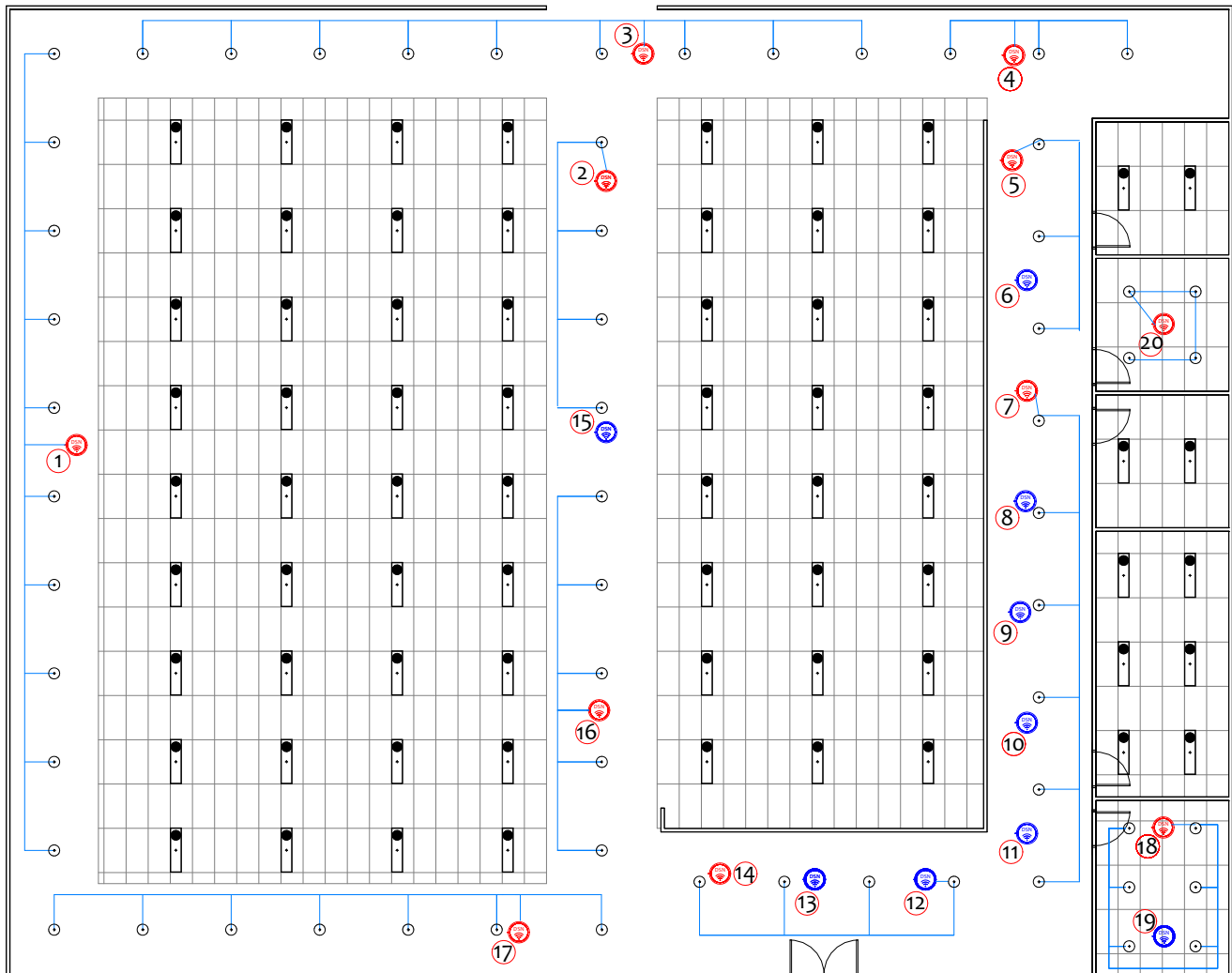
Example Organic Response Sensor Node Design layout:








-  DOWNLIGHT
-  TROFFER WITH INTEGRATED 360deg ORGANIC RESPONSE NODE
-  DALI LOOP CABLE FROM DSN
-  DETACHED 360deg SENSOR NODE RECESSED
-  DETACHED 360deg SENSOR NODE_EXTENDER NO DALI TAIL

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Application Examples



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-  TROFFER WITH INTEGRATED 360deg ORGANIC RESPONSE NODE
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Refer to this for application Use Cases for the example office layout:

DSN3v5 Detached Sensor Node

Use Case 1 – Window Perimeter Row Downlights

Grouping 12 or more downlights on a window perimeter row will easily determine daylight contribution for PE functionality, and can serve as daylight dimming. Furthermore, occupancy detection of a perimeter node can be associated with any of the adjacent nodes in the open office area, as the linear troffer lights are within the **3.0m** spacing requirement.

Note:

Nodes 1 and 17 on the **West** and **South** side of the floor, are examples of one DSN being used as a PE and PIR sensor to control a large group of lights.

Use Case 2 – Corridor – Circulation area Downlights Areas

With corridors or circulation areas, there may be several downlights or a long continuous extrusion that make up a long path or area. It is important to consider the correct DSN sensor location for detection and to maintain the OIC.

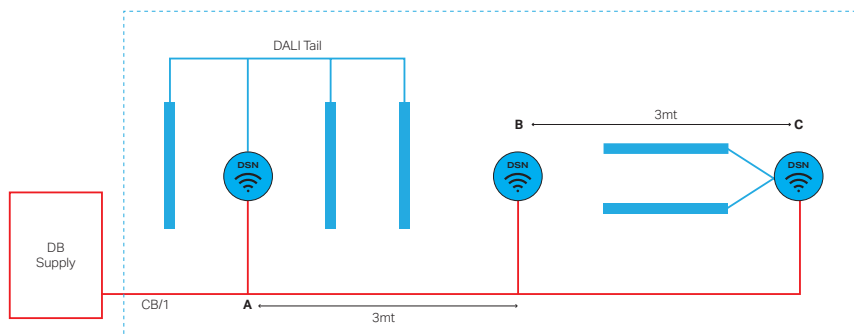
Ultimately, the 3.0m node spacing guidelines need to be applied.

In this application, it is unlikely that one sensor per twelve downlights will be suitable, as consideration must be given to the PIR motion detection trigger points

Notes:

- **Assumptions:**
 - The open floor troffers are programmed as Zone 1.
 - Centre open circulation is Zone 2, and comprises 9 downlights.
 - 3 nodes are assigned as Zone 2 (2, 15 & 16)
- **The spacing of the nodes are well over the 3.0m rule, however they are all within reach of other nodes in Zone 1. Hence the Zone 2 control message (OIC) will be wirelessly sent over the Zone 1 nodes.**
- **Eastern Corridor / Passage Zone 3 comprises 9 down lights.**
 - In this example, 9 lights are served by 7 DSN sensors
 - This is to keep within the 3.0m spacing requirement for the peer-to-peer communications.
 - The DSN's are not within visibility of other nodes as in the case of the open floor Zone 1 sensors.
 - Whilst the nodes in the western meeting rooms may be in range, they are enclosed by walls.
- **In application cases where the 3.0m line of sight spacing and IR transmission cannot be achieved or maintained, we try increasing the IR Transmission. Alternatively, we recommend that you reach out to your Eagle touchpoint for further assistance.**

Use Case 3 – Co-work lab / Reading / Feature Lighting Areas



Assume that a section of the open plan office above comprises an area of feature pendants.

A group of 5 linear extrusion suspended fittings, each comprising 2 DALI drivers. It may be more convenient to junction box the 5 tails from ALL 5 lights at this juncture. Conversely, you would make the one DSN twin DALI tail.

Note:

DSN B is 230VAC powered, so the DALI tail is not used. It will be easily configured with the App as the same zone that **DSN A** and **DSN C** are programmed, to maintain IR communications.

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Use Case 4 – Board- Meeting Room

Meeting-Board Room Design Considerations:

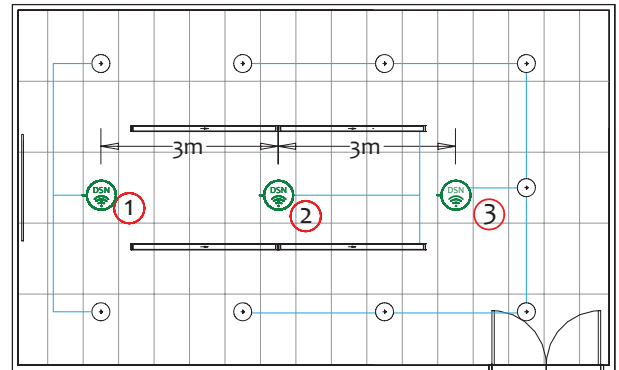
Given the Audio Visual functionality of the room, various presets and scenes may be required. **Think of a DSN as a dedicated dimming or switch channel.**

An Example of Scene Presets.

- **All On – Auto** – As triggered by PIR motion entering the room = Max Light (100%)
- **Scene A – Medium** – All lights down to 50%
- **Scene B – A/V Presentation:**
 - Front row downlights 0%
 - Centre extrusion 25%
 - Side-back downlights 10%.

Notes:

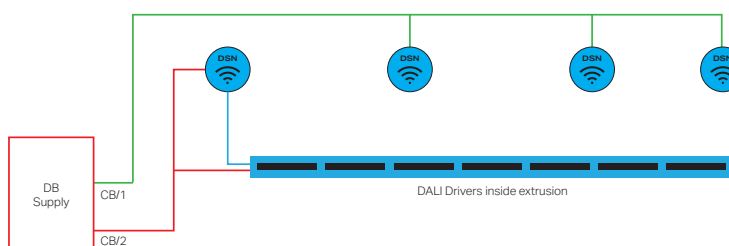
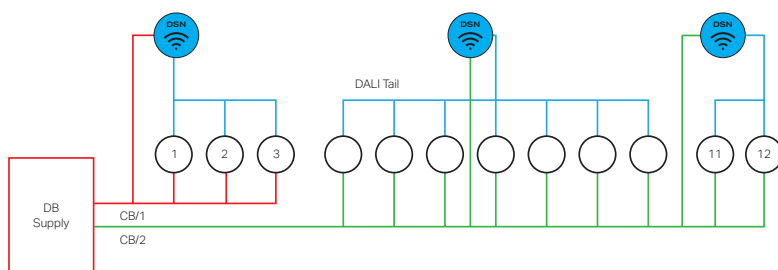
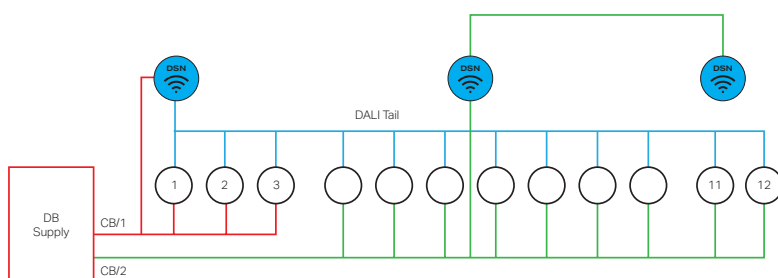
- Nodes **18&19** – are examples of 2 DSNs installed.
- ALL 6 downlights are connected to the DALI tail of DSN 18.
- All these lights will work as a one dimming channel.
- DSN 19 is installed to ensure adequate movement detection within the room.



Wiring Examples

Electrical connections of Detached Sensor Nodes.

You can determine connection in any number of configurations.



Electrician's Notes :

- Install a 2.5mm TWE and 2.5mm Twin (DALI) (5 wires circuit) at the light or groups of lights, leaving a loop at each of the downlights or extrusions.
- 3 pin quick connect/surface socket-230VAC and Mini Junction box or similar for the DALI.
- In the case of long extrusion:
 - Same concept applies. **Only 1 sensor requires physical connection to the light (DALI Tail)**, and the subsequent sensors are connected to 230VAC supply.
- In the case of the luminaire having more than 12 DALI drivers, you would need to split the Luminaire or ** Contact ELA with the details for a **Special-Order node NSPR with a higher-current DALI power supply.**
- **DO NOT connect more than one sensor node per DALI Twin Tail**

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Use Case 5 – Feature Lights and or Pendant/s – NON DALI

Specify and order pendants with DALI drivers where possible. Where the light has no dimming or can't comprise a DALI Driver (e.g Switched On/Off State), please order a DSN RELAY - **see below**.

** 1.5A Switched Relay Control Load – Detached Sensor Node

Part # EL-ACC-OR3-DSN-108

Where the application calls for a SWITCH – Non-Dimming load, ELA can provide a Detached Sensor Node that provides a 230VAC – Max 400W -1.5A Switched Load

