GUIDE TO LIGHTING MANAGEMENT SOLUTIONS

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Objectives of Lighting Management Solutions

- Creating a safer and more comfortable environment for building users.
- Minimise the energy consumption

Common Strategies

Types of Lighting Management Solutions

Hard Wired Lighting Management Solution

(Contactors / Relay / 2 way switch / Intermediate Switch)

VS

Lighting Management System

(KNX, Zigbee, Bacnet)

Protocol


KNX


LONMARK®


DALI


ASHRAE
BACnet™


ZigBee®


Green.Smart.Wireless.
enocean®

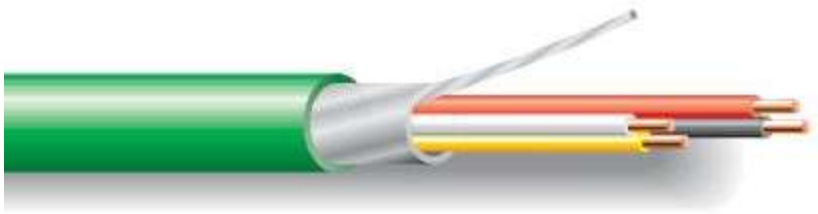

Modbus

Selection Criteria Guide

- Programming Software
- Technical Support
- Pool of SI/Installers/Electrician
- Manufacturer
- Future Proof Products
- Mode of Communication

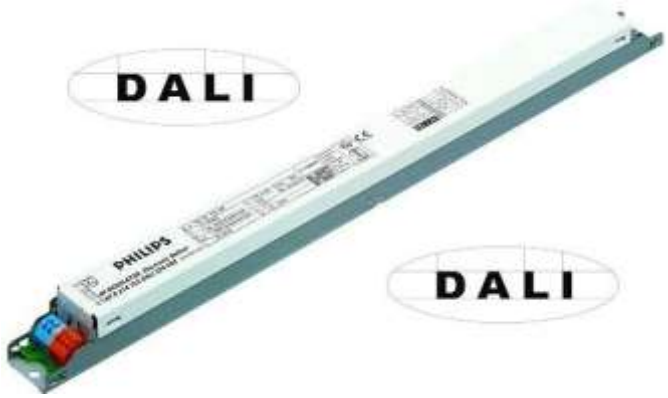
Mode of Communication

- Power Line Control
- Bus Line Control
- IP Control (Remote Access)
- RF Control
- IR Control



Types of Electronic Ballast

- Normal Electronic Ballast
- Built in Electronic Ballast
- 1-10V Electronic Ballast
- DALI Electronic Ballast



EQ11 High Frequency Ballast: NRNC

EQ11	HIGH FREQUENCY BALLASTS	
	Increase workplace amenity by avoiding low frequency flicker that may be associated with fluorescent lighting: Install high frequency ballasts in fluorescent luminaaires over a minimum of 90% of NLA.	1

Dimming System

- Trailing Edge Dimmer
- 1-10V Dimmer
- DALI Dimmer
- Universal Dimmer

DALI VS Conventional Ballast

- Open Office Concept
- Future Expansion
- Flexibility

DALI Transport & Specification

DALI Cable Run Length	Recommended Minimum DALI Cable Conductor Size
Less than 100 Meters	0.5mm²
100 to 150 Meters	0.75mm²
More than 150 Meters	1.5mm²
More than 300 Meters	Not recommended, avoid runs over 300 Meters

Maximum number of devices	64
Number of Groups	16
Number of Scenes per Group	16
Data Cable	2 wires
Data Encoding Method	Manchester
Data Baud Rate	1200 baud
Network Power Supply	16V DC 250mA

Types of Sensor

- Motion Sensor
- Occupancy/Presence Sensor
- Vacancy Sensor
- Brightness/Photocell/Daylight Sensor

Sensor Technology

Passive Infrared Red (PIR) Sensor

Ultrasonic Sensor

Dual Technology

Microwave Sensor

1-10V Dimming Sensor

Sensor Features

- Ceiling Vs Wall Mounted
- IP Rated (IP20 / IP55)
- Surface and Flush
- Integral Photocell
- Coverage: Detection Height & Angle (360, 180 deg)
- Rated Power/Current (1000W / 10A)

Mode of Communication

- Power Line Control
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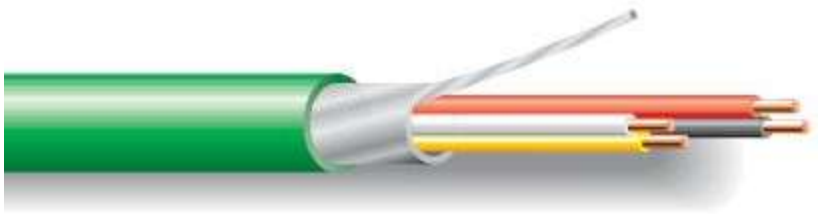
- IR Control



Photocell Sensor

Photocell or Brightness sensor with adjustable lux selection

T&C of the System

Commissioning is defined as the final adjustment, calibration, and tuning of the various components after they have been installed and the space is occupied. This process requires the participation of the building owner, a commissioning agent, the lighting designer, the electrical engineer, a manufacturer's representative, and building maintenance personnel.

Time Switch and Photocell

For System – Include Training of Maintenance team and Program Database

T&C of the System

Electronic Dimming Ballast: Test for full range of dimming capability. Observe for visually detectable flicker over full dimming range

Occupancy Sensor: Test sensors for proper operation. Observe for light control over entire area being covered

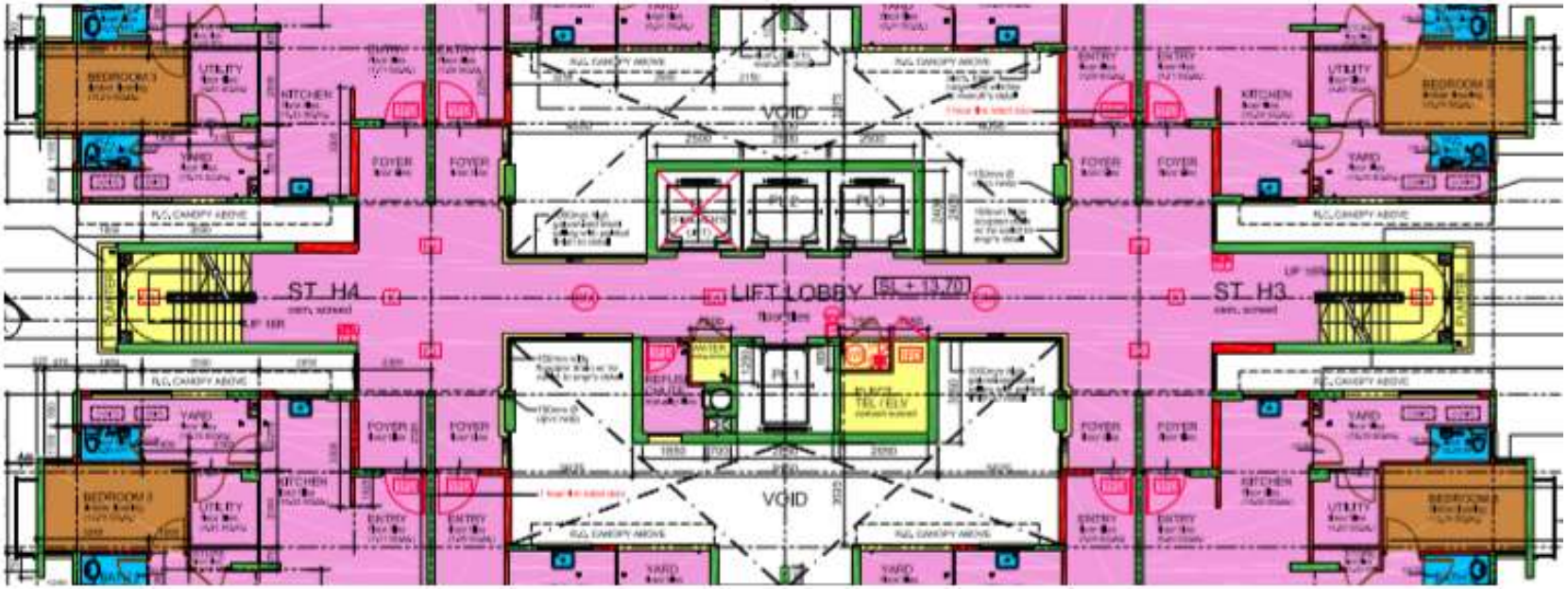
EE2 Lighting Zoning: NRNC

EE2	LIGHTING ZONING	
	Provide flexible lighting controls to optimise energy savings:	
	All individual or enclosed spaces to be individually switched; and the size of individually switched lighting zones shall not exceed 100m² for 90% of the NLA; with switching clearly labelled and easily accessible by building occupants.	1
	Provide auto-sensor controlled lighting in conjunction with daylighting strategy for all perimeter zones and daylit areas, if any.	1
	Provide motion sensors or equivalent to complement lighting zoning for at least 25% NLA.	1

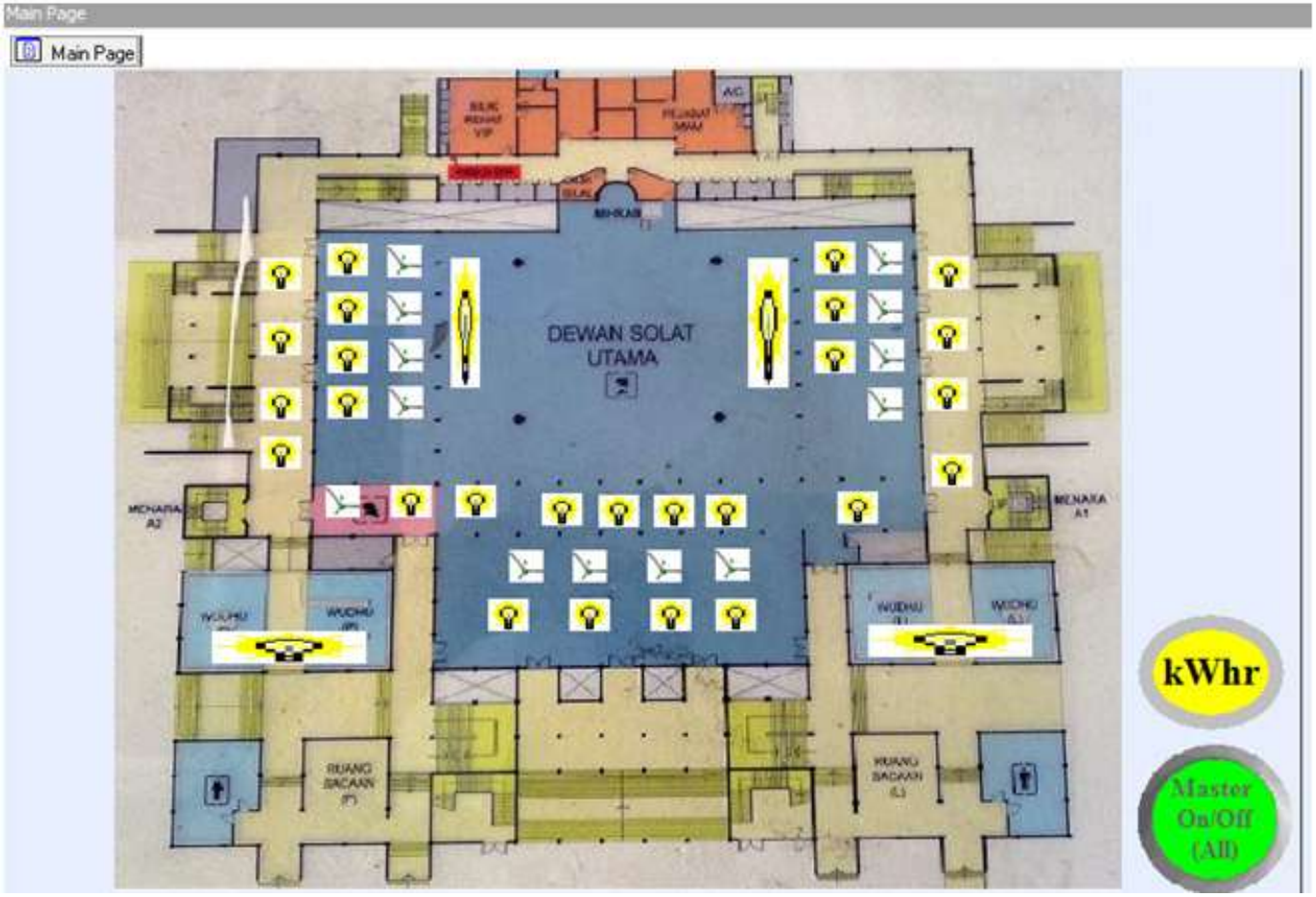
EE2 Lighting Zoning: NRNC Hotel

EE2	LIGHTING ZONING	
	Provide flexible lighting controls to optimise energy savings:-	
	All individual or enclosed spaces to be individually switched; and the size of individually switched lighting zones shall not exceed 30m² for 90% of the NLA; with switching clearly labelled and easily accessible by building occupants/management.	1
	Provide auto-sensor controlled lighting in conjunction with daylighting strategy for all perimeter zones and daylit areas.	1
	Provide motion or occupancy sensors or equivalent to complement lighting zoning equivalent to at least 25% NLA. For guestroom, master switch or access card switch or equiv to switch off all lights, fan, tv and airconditioning when room is not occupied will qualify as occupancy sensor.	1

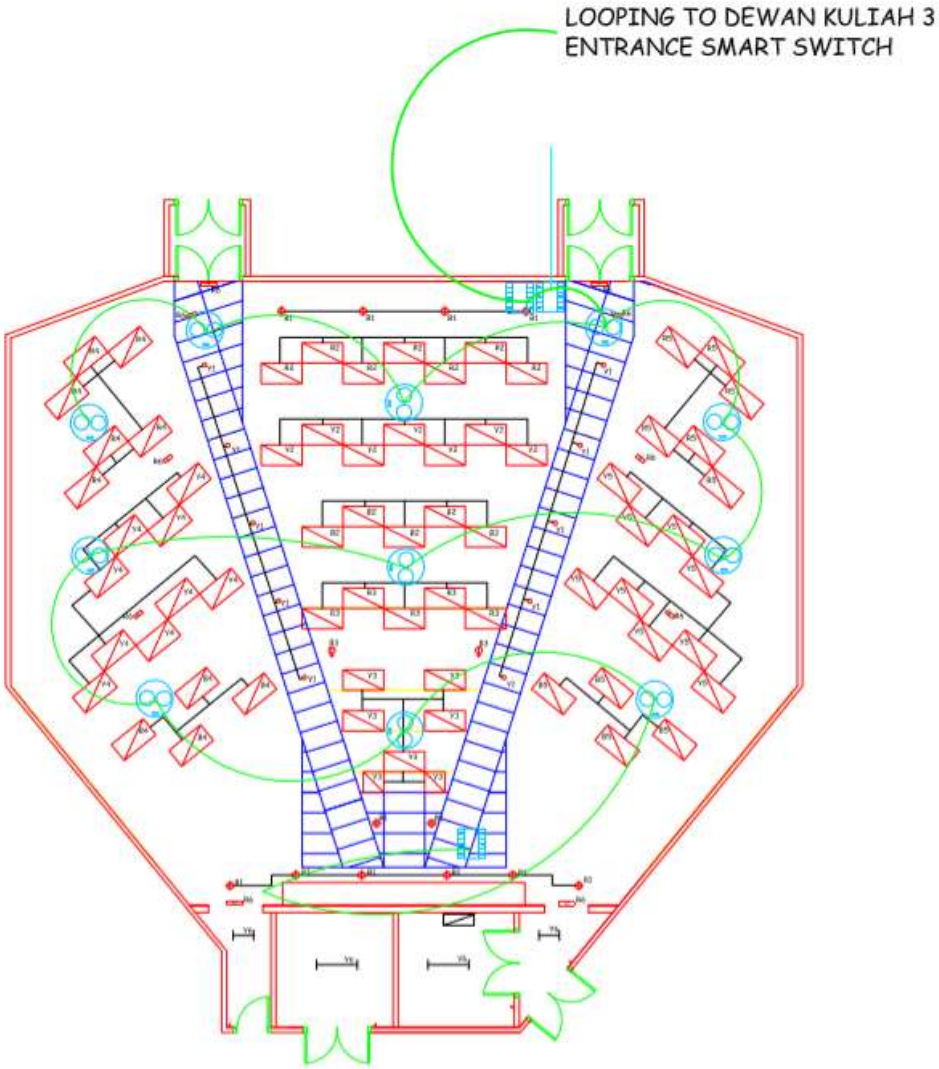
Corridor / Hallway



Mosque



Lecture Halls



Thank You