



LAING O'ROURKE
COMPANY NAME Enterprise Solutions - Lighting Control

CONTRACT NUMBER N3844

DESCRIPTION OF
OPERATION FOR Factory International

REFERENCE NUMBER MF-CHT-XX-XX-SH-YX-0001

REVISION	PREPARED BY	COMPANY	DATE
P01	Steve Patton	Laing O'Rourke - Enterprise Solutions	27/02/2023
C01	Steve Patton	Laing O'Rourke – enterprise Solutions	15/05/2023

Notes to this version - All diagrams within this document are for illustration purposes only, exact product details are to be shown on manufacturing drawings which are available upon request.

PROJECT	CLIENT	PRINCIPLE CONTRACTOR	DESIGNERS / CONSULTANTS
Factory	Manchester City Council	Laing O'Rourke	BDP

Copyright Information © The subject matter of this document has been produced by Crown House Technologies Limited – Enterprise Solution and it shall not be disclosed to any person other than offices and employees of your organisation. It shall not be duplicated, disclosed or used, in whole or in part, for any other purpose other than to evaluate this tender. This document and all its contents are copyright of Crown House Technologies Limited – Enterprise Solutions.

VERSION TRACKER

ISSUE	ISSUE DATE	CHANGES	APPROVED BY
P01	27/02/2023	First Issue	Liam Beaumont
C01	15/05/2023	Updated	Liam Beaumont

Contents

1. Introduction

- 1.1 System Description
- 1.2 Parameters
- 1.3 DALI default vs Enterprise Solution's default values

2. Graphical Visualisation

- 2.1 Graphical Visualisation

3. Switching Scenarios

- 3.1 Fire Alarm Interface
- 3.2 Emergency Lighting Test Schedule
- 3.3 Absence Detection with Switch Override including Dimming (DALI) - Scenario 1 (S1)
- 3.4 Controlled by Charcoal Blue - Scenario 2 (S2)
- 3.5 Full Lighting DALI Control including Scene Setting & Daylight Dimming - Scenario 3 (S3)
- 3.6 Manual Switching - Scenario 4 (S4)
- 3.7 PIR / Presence Detection - Scenario 5 (S5)
- 3.8 PIR / Presence Detection with daylight Dimming - Scenario 6 (S6)
- 3.9 PIR / Presence Detection with Switch Override including Dimming - Scenario 7 (S7)
- 3.10 External Photocell, Timeclock & Scene Set Override – Scenario 8 (S8)
- 3.11 KNX Emergency Override for Charcoal Blue Performance areas

4. Lighting Control Matrix

- 4.1 Room Operation

1. Introduction

1.1 System Description

DALI (Digital Addressable Lighting Interface) is a protocol used by manufacturers for standardised control of electronic ballasts in lighting applications (DIN IEC 62386). With DALI complex lighting scenes and group functionality can be realised. Beyond that, using the Zencontrol application controller, allows for any combinations of DALI certified hardware to be utilised. Up to 64 DALI slaves can be installed. Each slave can be assigned to 16 individual groups or 16 individual scenes. Addressing, allocating and parameter changes to the slaves are done using an IEC 61131-3 application. This application accesses both the implemented DALI standard command sets according to DIN IEC 62386 and an extended command set (Extended Commands).

The DALI application controller is used as an interface between DALI slaves and other components in building management applications. The logical assignment between sensors, control elements and DALI devices is done by the fieldbus controller. The devices are controlled by individual addresses (short addresses) whereas individual groups are controlled by group addresses. Controlling all devices at the same time is made possible by broadcast addressing.

Using DALI, up to 64 short addresses (with circa 10% left for future expansion), 16 group addresses and 16 scene light values can be defined per application controller. Address assignment is done using the software so that the system configuration can be modified without changing the installation.

The settings and light values stored in an electronic ballast/driver can be programmed using the DALI commands.

1.2 Parameters

- Individual driver address (multiple lamps off the same driver will all have the same settings)
- Group assignment/s
- Operating margins of the lamp (e.g., minimum, and maximum levels)
- Light scene values
- Fade rate
- System failure level
- Power on level

The electronic ballasts are provided with a logarithmic dimming curve so that adaptation to the eye sensitivity can be achieved. Emergency operation settings will be automatic if the data line is interrupted. Additionally, the status inquiry and the error message of electronic ballasts are possible. This is very important for the building management, e.g., with BACnet, Modbus or KNX, and can take place according to the addressing via DALI-commands, from individual electronic ballast, or via Extended Commands, by groups.

1.3 DALI default vs Enterprise Solution's default values

Enterprise Solutions alters the default values of both Standard and emergency ECGs for the users and maintenance's ease of use and functionality. The only parameter we change is POWER ON LEVEL that has a value of 255 (101%) that means the driver takes the last known state. Note all emergency outputs will be 100% and this setting is only for standard DALI drivers.

Figure 1 - DALI Default values - Standard ECGs vs Altered Settings

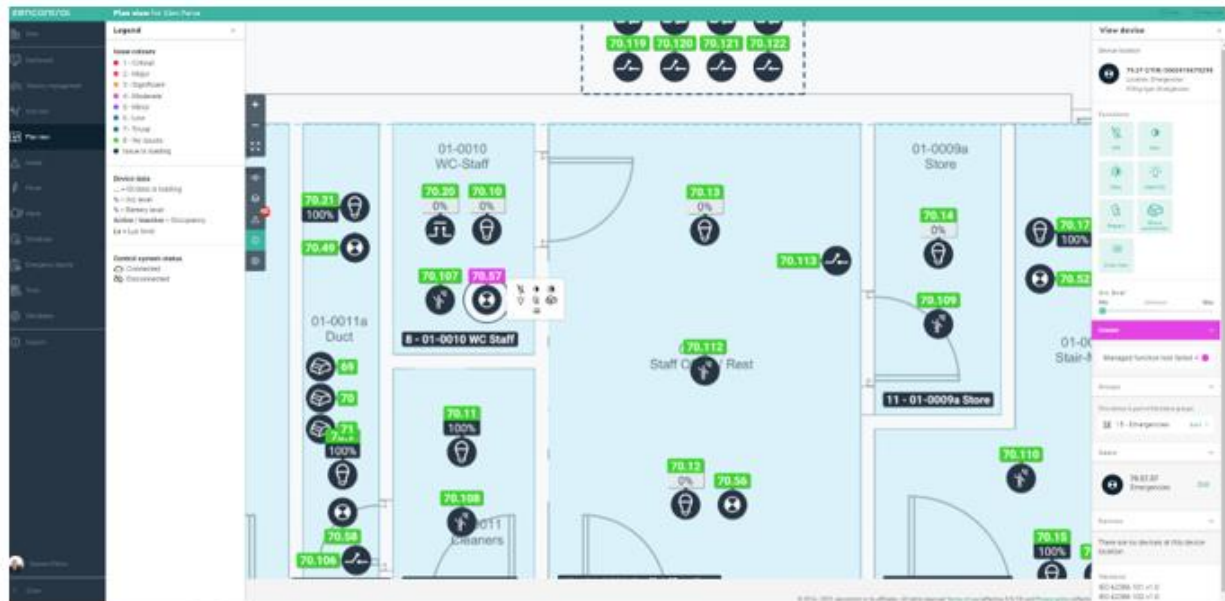
Name	Value	Scaled Value	Unit
Physical Min level (Minimale Physikalische Lampenleistung)			%
Version Number (Versionsnummer)			
Power on level (Lampenleistung bei Spannungswiederkehr)	254	100.000	%
System failure level (Lampenleistung bei Systemstörungen)	254	100.000	%
Min level (Min Lampenleistung)	85	0.991	%
Max level (Max Lampenleistung)	254	100.000	%
Fade time (Überblendzeit)	0		
Fade rate (Überblendgeschwindigkeit)	7		

Name	Value	Scaled Value	Unit
Physical Min level (Minimale Physikalische Lampenleistung)			%
Version Number (Versionsnummer)			
Power on level (Lampenleistung bei Spannungswiederkehr)	255	NaN	%
System failure level (Lampenleistung bei Systemstörungen)	254	100.000	%
Min level (Min Lampenleistung)	85	0.991	%
Max level (Max Lampenleistung)	254	100.000	%
Fade time (Überblendzeit)	0		
Fade rate (Überblendgeschwindigkeit)	7		

The system is IP based with a cloud head end where the client can utilise their own PC/Tablets for controls of lighting.

2.1 Graphical Visualisation

A cloud-based head end enables controls of groups and alterations to scene values



2.1.1 Emergency Lighting Testing and reporting

3.0 Switching Scenarios

Several lighting control philosophies (scenarios) are required both site wide and in local areas that are described in the following section. For common room applications, a control scenario number will be assigned for specialist areas these will be described on a room per room basis.

IMPORTANT: If there are multiple entrances to a room the switches will be identical unless highlighted in a unique switching scenario.

Exclusions:

1. Charcoal Blue are controlling get in, Light Locks, Green Rooms, Rehearsal, Tech Grid, Control Room, Warehouse, Towers & Main Theatre space.
2. Plantrooms spaces all 230vac switched and not connected to site wide lighting control system.

3.1 Fire Alarm Interface

There is a fire alarm interface that brings all lights onto a pre-set commissioned value of 80% where possible. This level can be amended if required

3.2 Emergency Lighting

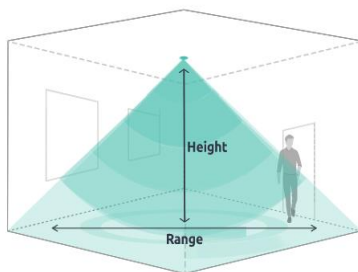
There is no facility for automated emergency Lighting Testing and reporting, this is carried out by manual key switches located at each Lighting DB

3.3 Absence Detection with Switch Override including Dimming (DALI) - **Scenario 1 (S1)**

S1 ABSENCE DETECTION WITH SWITCH OVERRIDE INC. DIMMING

Detection pattern

Mounting height	2 - 12 m	Range ϕ	10 m (mounted at 2.7 m)
-----------------	----------	--------------	-------------------------



Operation

A – Quick press and release turns lights "On". Press and hold for greater than half a second dims the lights up.

B – Quick press and release turns lights "Off". Press and hold for greater than half a second dims the lights down.

PIR – After no presence of 30mins the lights setback & switch dim to 30% and then after a further 5mins of no presence switch "Off". If presence is detected within this period, the lights turn back to 100%. The switch A ("On") requires pressing again after the lights turn "Off".

3.4 Controlled by Charcoal Blue - **Scenario 2**

S2 CONTROLS BY CHARCOAL BLUE

All Performance Lighting is controlled by Charcoal Blue via DMX controls / DALI interfaces

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

3.5 Full Lighting DALI Control including Scene Setting & Daylight Dimming - Scenario 3 (S3)

S3

FULL LIGHTING CONTROL INC. SCENE SETTING AND DAYLIGHT DIMMING

Additional Information available - See Scene Set MF-ESO-XX-XX-DR-EL-01-0080

SCENE SET SWITCH SCHEDULE

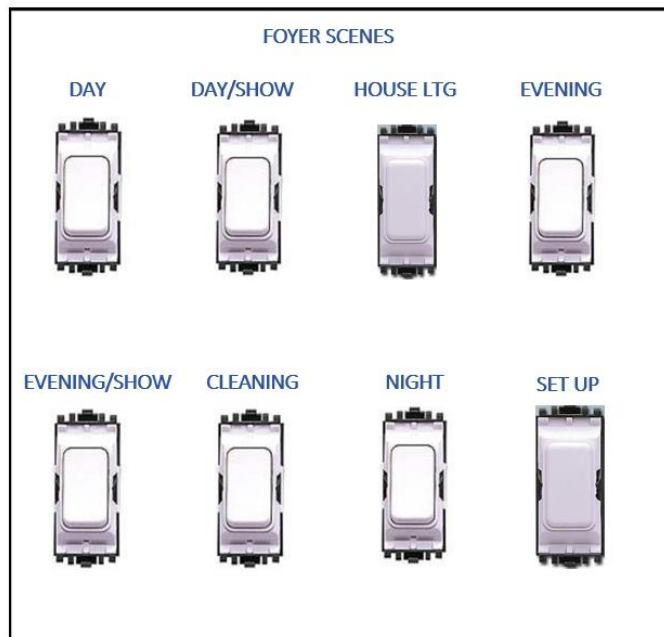
SWITCH REF	LOCATION		LEVEL	WAYS	SW PLATE HEADING	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
A	FOYER	NORTH ENTRANCE	Grd	8	FOYER SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
B	FOYER	BAR	Grd	8	FOYER SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
C	WAREHOUSE	NORTH ENTRANCE	Grd	8	WAREHOUSE SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
D	UNDERCROFT	BAR	GRD	1	UNDERCROFT OVERRIDE	OVERRIDE							
E	THEATRE	BAR	2	8	THEATRE SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
F	THEATRE	BAR	3	8	THEATRE SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
G	TOWERS	GREEN ROOM	3	8	GREEN ROOM SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
H	TOWERS	LOUNGE NORTH	4	8	LOUNGE SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
I	TOWERS	LOUNGE SOUTH	4	8	LOUNGE SCENES	DAY	DAY/SHOW	HOUSE LTG	EVENING	EVENING/SHOW	CLEANING	NIGHT	SET UP
J	OFFICES	OFFICE NORTH	5	8	OFFICE SCENES	LIGHTS ON NORTH	LIGHTS OFF NORTH	DAY	EVENING	EVENING SHOW	CLEANING	NIGHT	SCENE 1
K	OFFICES	OFFICE SOUTH	5	8	OFFICE SCENES	LIGHTS ON SOUTH	LIGHTS OFF SOUTH	LIGHTS ON NORTH	LIGHTS OFF NORTH	DAY	EVENING	EVENING SHOW	CLEANING
L	BOARD ROOM	NORTH	6	8	BOARD ROOM SCENES	TUBE LIGHTS ON	TUBE LIGHTS OFF	SPOT LIGHTS ON	SPOT LIGHTS OFF	SCENE 1	SCENE 2	SCENE 3	SCENE 4
L	BOARD ROOM	NORTH	6	8	BOARD ROOM SCENES	TUBE LIGHTS ON	TUBE LIGHTS OFF	SPOT LIGHTS ON	SPOT LIGHTS OFF	SCENE 1	SCENE 2	SCENE 3	SCENE 4
	MEETING ROOM	North	5	2	MEETING ROOM	LINEAR LIGHTS	SPOT LIGHTS	-	-	-	-	-	-
	MEETING ROOM	SOUTH	5	2	MEETING ROOM	LINEAR LIGHTS	SPOT LIGHTS	-	-	-	-	-	-
	MEETING ROOM	North	6	2	MEETING ROOM	LINEAR LIGHTS	SPOT LIGHTS	-	-	-	-	-	-

FOYER SCENES MATRIX

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

FOYER SCENE SWITCHES

Entrance Lobby / Main Foyer GF WH – (Switch Located in Main Entrance Lobby)



As Foyer Scenes Matrix

- SW1 Day
- SW2 Day: Show / Performance
- SW3 House Lighting (Warehouse/Theatre)
- SW4 Evening
- SW5 Evening: Show / Performance
- SW6 Cleaning (Venue closed to public)
- SW7 Night (Venue Closed)
- SW8 Set Up (Warehouse/Theatre)

NB: BLUE is for Engraving on switch plate

WAREHOUSE SCENES MATRIX

Layers of Lighting Description of Elements	Warehouse					
	General Lighting Downlights	Blues	General Lighting	Warehouse Stair - Handrail	Warehouse Stair - Linear feature (A56)	Warehouse Stair - Low / Mid / Top / Landings
Area	Light Lobby - Corridor 2		Stairs	Level 02		
Lighting Scene / % Dimming						
Day	90	0	90	90	90	90
Day: Show / Performance	0	0	0	70	70	70
House Lighting (Warehouse / Theatre)	25	0	0	0	0	0
Evening	0	0	50	70	70	70
Evening: Show / Performance	0	90	0	50	50	50
Cleaning (venue closed to public)	90	0	90	90	90	90
Night (venue closed)	0	0	0	0	0	0
Set up (Warehouse / Theatre)	0	0	0	0	0	0

Client: Manchester City Council

Public Stair 003 / Space 289 / Lobby Stair 3.1 GF WH – (Switch Located Adjacent to Public Stair)



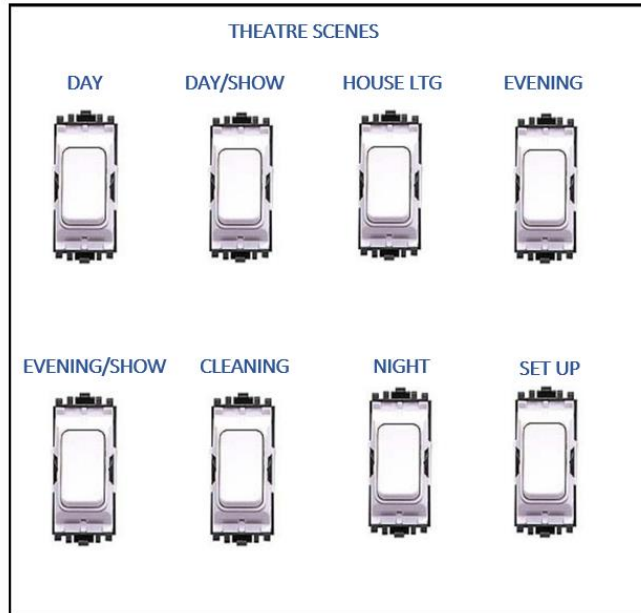
Plus Signals to Charcoal Blue required from all switches

NB: BLUE is for Engraving on switch plate

[illegible]

THEATRE SCENE SWITCHES

Level 02 Bar / TH - Foyer



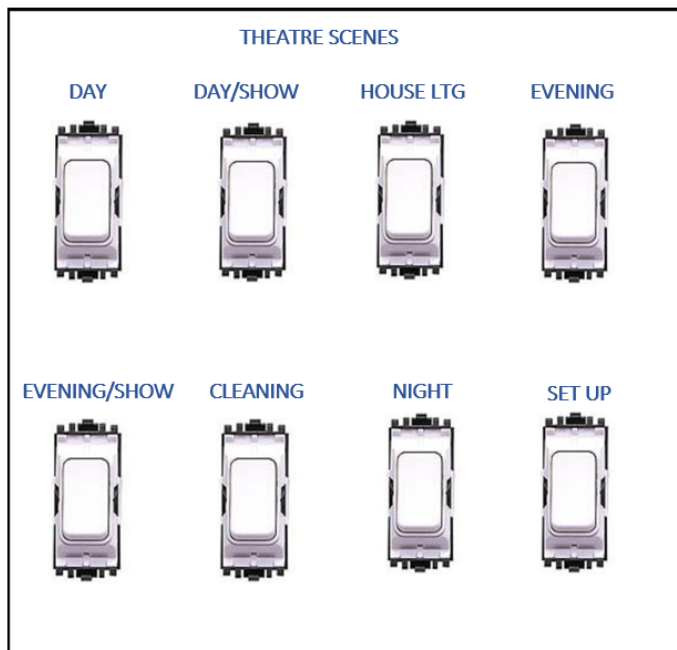
As Theatre Scenes Matrix

- SW1 Day
- SW2 Day: Show / Performance
- SW3 House Lighting (Warehouse/Theatre)
- SW4 Evening
- SW5 Evening: Show / Performance
- SW6 Cleaning (venue closed to public)
- SW7 Night (venue closed)
- SW8 Setup (Warehouse/Theatre)

NB: BLUE is for Engraving on switch plate

THEATRE SCENE SET SWITCHES

Level 03 Bar



As Theatre Scenes Matrix

- SW1 Day
- SW2 Day: Show / Performance
- SW3 House Lighting (Warehouse/Theatre)
- SW4 Evening
- SW5 Evening: Show / Performance
- SW6 Cleaning (venue closed to public)
- SW7 Night (venue closed)
- SW8 Setup (Warehouse/Theatre)

TOWERS SCENES MATRIX

Layers of Lighting Description of Elements	TOWERS															
	Green Room - Tube sources	Green Room - Spots	Green Room - Spots curtains	Dressing Room - Linear	Lounge - Linear	Lounge Spot	Main Office	Meeting room	Office spots North/South circulation route / seating	Conference space - Tube	Conference space - Spot	Conference Meeting room	Office spots North/South circulation route / seating			
Area	Level 3				Level 4			Level 5			Level 6					
Lighting Scene / % Dimming																
Day	90	90	0	90	90	80	90	90	90	90	50	90	90			
Day: Show/Performance	90	-	-	-	-	-	-	-	30	-	-	-	-			
House Lighting (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-	-	-			
Evening	0	50	30	50	50	50	80	0	50	0	70	0	50			
Evening: Show/Performance	30	30	30	0	30	30	10	0	10	-	-	-	-			
Cleaning (venue closed to public)	90	90	90	90	90	90	90	90	90	90	90	90	90			
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0			
Set Up (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-	-	-			

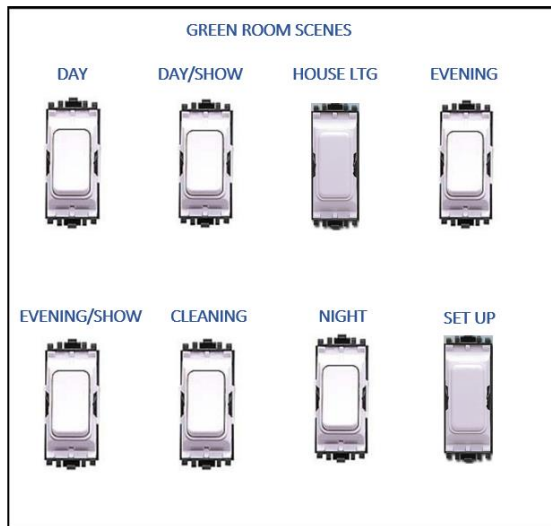
Notes
 Estimated dimming levels
 Subject to client approval
 Site commissioning required

Key
 - Scene not applicable to this area
 n Numbers indicates dimming percentage

TOWERS SCENE SWITCHES

TOWERS SCENE SET SWITCHES

Green Room Level 03



As Towers Scenes Matrix

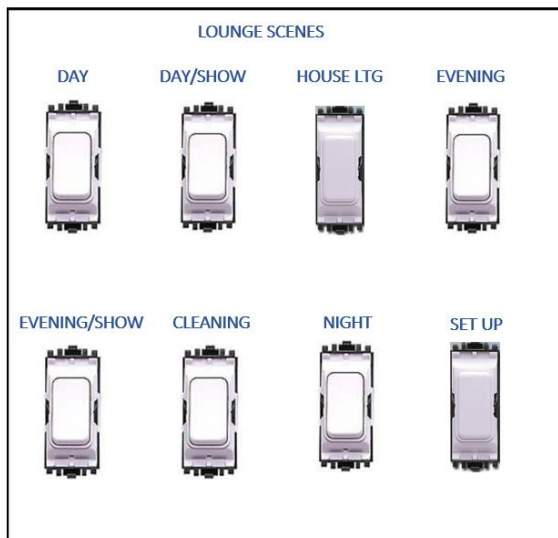
- SW1 Day
- SW2 Day: Show / Performance
- SW3 House Lighting (Warehouse/Theatre)
- SW4 Evening
- SW5 Evening: Show / Performance
- SW6 Cleaning (venue closed to public)
- SW7 Night (venue closed)
- SW8 Setup (Warehouse/Theatre)

PIR - Absence during opening hours / presence when venue is closed.

NB: Green Room is also controlled via Charcoal Blue

TOWERS SCENE SET SWITCHES

Lounge North Area Level 04



As Towers Scenes Matrix

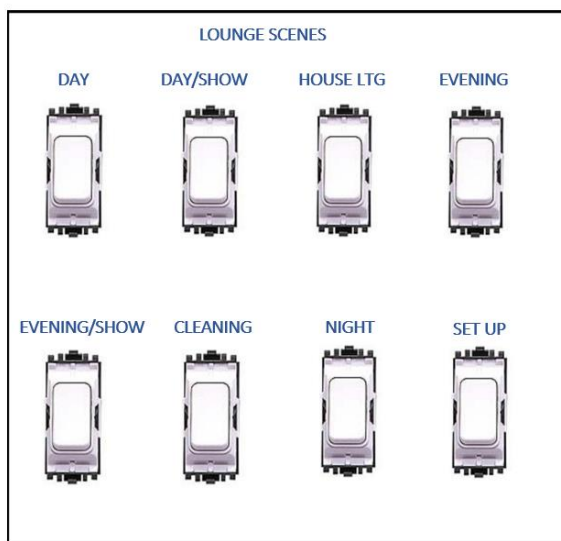
SW1 Day
SW2 Day: Show / Performance
SW3 House Lighting (Warehouse/Theatre)
SW4 Evening
SW5 Evening: Show / Performance
SW6 Cleaning (venue closed to public)
SW7 Night (venue closed)
SW8 Setup (Warehouse/Theatre)

Lounges are also controlled via Charcoal Blue

PIR - Absence during opening hours / presence when venue is closed.

TOWERS SCENE SET SWITCHES

Lounge South Area Level 04



As Towers Scenes Matrix

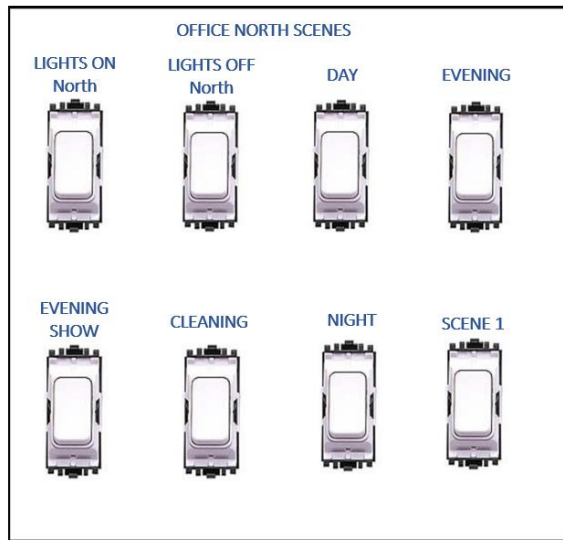
SW1 Day
SW2 Day: Show / Performance
SW3 House Lighting (Warehouse/Theatre)
SW4 Evening
SW5 Evening: Show / Performance
SW6 Cleaning (venue closed to public)
SW7 Night (venue closed)
SW8 Setup (Warehouse/Theatre)

Lounges are also controlled via Charcoal Blue

PIR - Absence during opening hours / presence when venue is closed.

OFFICES SCENE SET SWITCHES

Office Area North Level 05



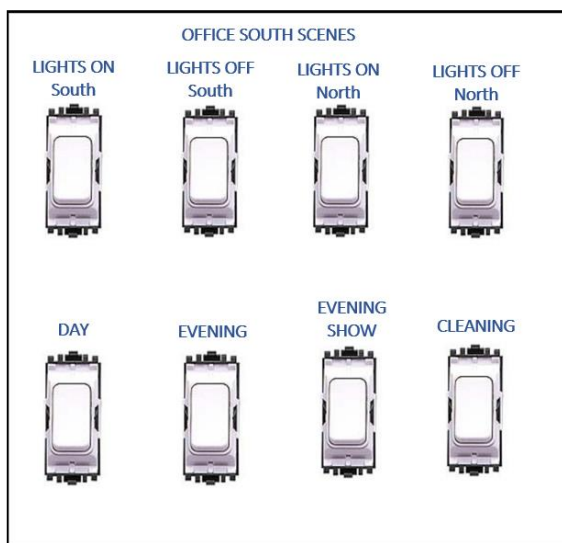
Office Scenes

SW1 Lights On & Dim up / 2 Way with South Switch
 SW2 Lights Off & Dim down / 2 Way with South Switch
 SW3 Scene 1 (Day) 90%
 SW4 Scene 2 (Evening) 80%
 SW5 Scene 3 (Evening: Show Performance) 10%
 SW6 Scene 4 (Cleaning) 90%
 SW7 Scene 5 (Night) 0%
 SW8 Scene 1 SPARE

PIR - Absence during opening hours / Presence when venue is closed.

OFFICES SCENE SET SWITCHES

Office Area South Level 05



Office Scenes

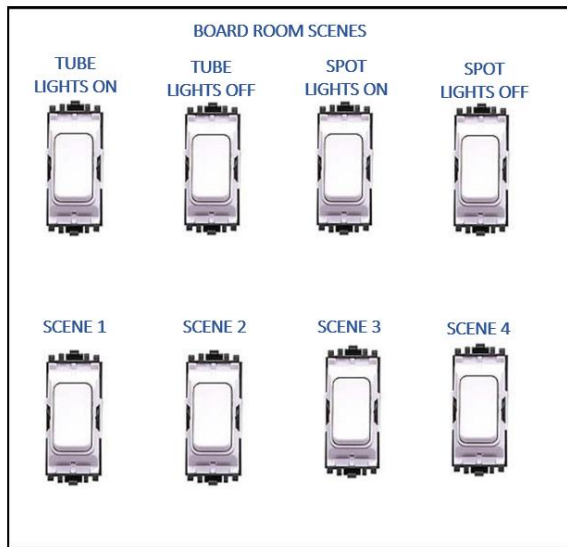
SW1 Lights On & Dim up + Charcoal Blue Override
 SW2 Lights Off & Dim down + Charcoal Blue Override
 SW3 Lights On & Dim Up / 2 way from North Switch
 SW4 Lights Off & Dim Down / 2 Way from North Switch
 SW5 Scene 1 (Day) 90%
 SW6 Scene 2 (Evening) 80%
 SW7 Scene 3 (Evening: Show Performance) 10%
 SW8 Scene 4 (Cleaning) 90%

PIR – Default Presence – when scene switches operated lights go to Absence

This Office is also controlled via Charcoal Blue

CORPORATE BOARD ROOM SCENE SET SWITCHES

Corporate Board Room Level 06



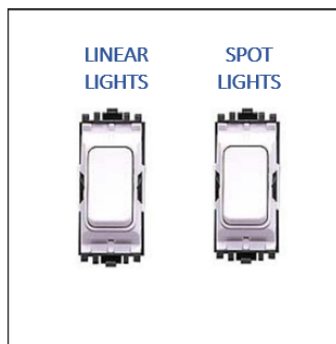
Board Room Scenes

SW1 Tube Lights On & Dim up
 SW2 Tube Lights Off & Dim down
 SW3 Spot Lights On & Dim up
 SW4 Spot Lights Off & Dim down
 SW5 Scene 1
 SW6 Scene 2
 SW7 Scene 3
 SW8 Scene 4

PIR – Default Presence – when scene switches operated lights go to Absence

MEETING ROOMS SWITCHES

Meeting Rooms Levels 05 & 06



Meeting Room

SW1 Linear Lights On / Off & Dim Up / Down
 SW2 Spot Lights On / Off & Dim Up / Down

PIR - Absence during open hours / Presence when venue is closed

3.6 Manual Switching - **Scenario 4 (S4)**



Rooms with manual switching are controlled by 230vac switches

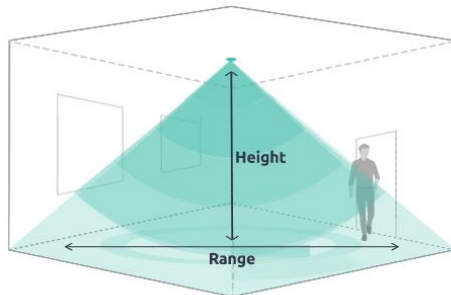
3.7 PIR / Presence Detection - **Scenario 5 (S5)**

S5 PIR CONTROLLED

230vac Stand Alone PIRs control all lighting via DALI Broadcast.

Detection pattern

Mounting height	2 - 12 m	Range ø	10 m (mounted at 2.7 m)
------------------------	----------	----------------	-------------------------



Operation - as Lighting Criteria Table above

PIR – After no presence of 30mins the lights setback & switch dim to 30% and then after a further 5mins of no presence switch "Off". If presence is detected within this period, the lights turn back to 100%. The switch A ("On") requires pressing again after the lights turn "Off".

Restrooms (WCs) will be 30mins setback switch to 30% & 5mins off

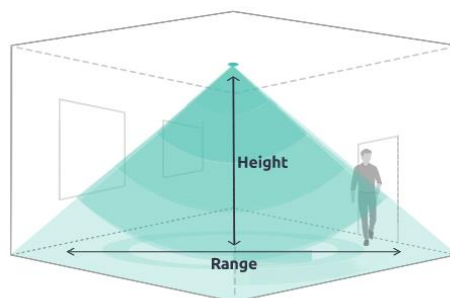
3.8 PIR / Presence Detection with Automatic Daylight Dimming - Scenario 6 (S6)

S6 PRESENCE DETECTION WITH AUTOMATIC DAYLIGHT DIMMING

230vac Stand Alone PIRs to control all lighting via DALI Broadcast c/w Daylight linked dimming

Detection pattern

Mounting height	2 - 12 m	Range ø	10 m (mounted at 2.7 m)
------------------------	----------	----------------	-------------------------



Operation

PIR – After no presence of 30mins the lights setback & switch dim to 30% and then after a further 5mins of no presence switch "Off". If presence is detected within this period, the lights turn back to 100%. The switch A ("On") requires pressing again after the lights turn "Off".

Restrooms (WCs) will be 30mins setback switch to 30% & 5mins off

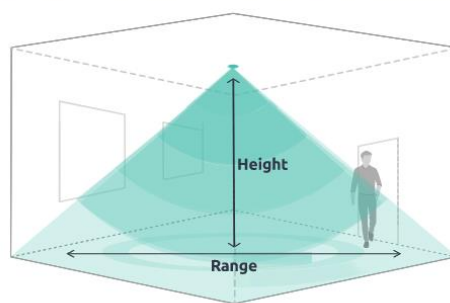
3.9 PIR / Presence Detection with Switch Override including Dimming - **Scenario 7 (S7)**

S7 PRESENCE DETECTION WITH SWITCH OVERRIDE INC. DIMMING

230vac Stand Alone PIRs to control all lighting via DALI Broadcast c/w 230vac wall switch for override "On/Off"

Detection pattern

Mounting height	2 - 12 m	Range ø	10 m (mounted at 2.7 m)
------------------------	----------	----------------	-------------------------



Operation

PIR – After no presence of 30mins the lights setback & switch dim to 30% and then after a further 5mins of no presence switch "Off". If presence is detected within this period, the lights turn back to 100%. The switch A ("On") requires pressing again after the lights turn "Off".

Restrooms (WCs) will be 30mins setback switch to 30% & 5mins off

3.10 Photocell, Timeclock & Scene Set Override - Scenario 8 (S8)**External, Public Realm & Under-Croft**

All Lighting will be controlled via Lux Sensors, timeclock and Scene set override

Lux - lighting to be controlled based on ambient lux levels (see matrix below)

Timeclock - based on Open / Closed initially set to Open - 0900 > Closed - 2300

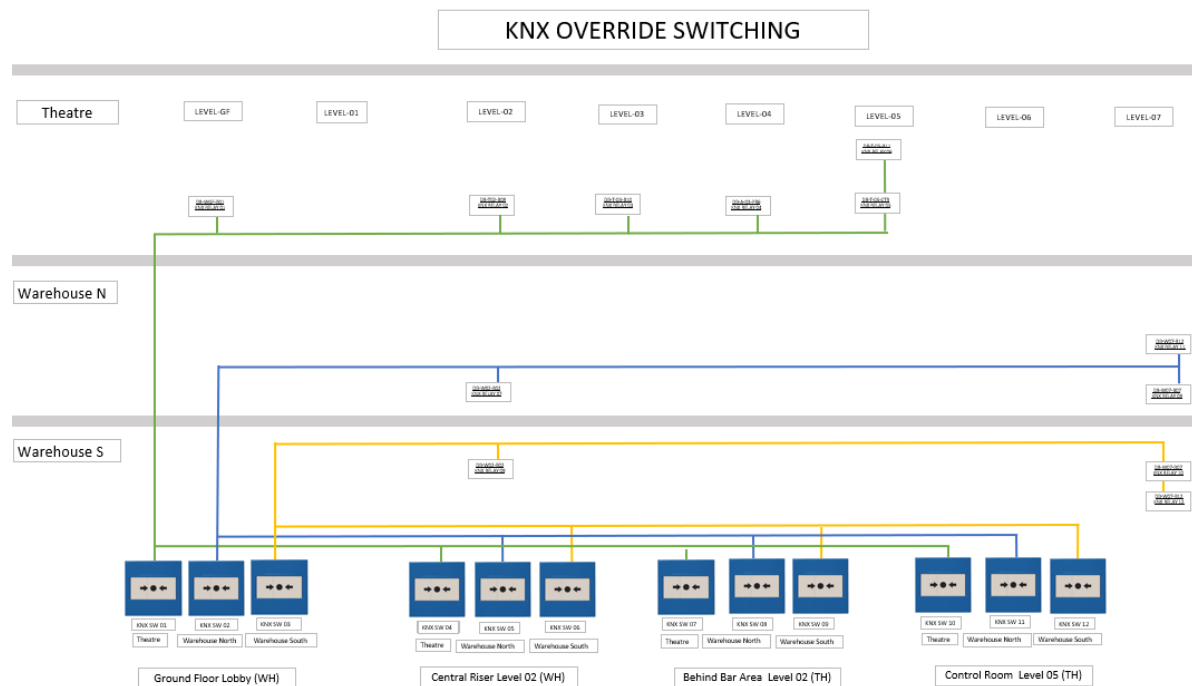
All Lux & lighting levels will be agreed / confirmed at time of commissioning

			Externals											
			C1	C2	C3	L1	L2	L3	L8	L7	L11	L12	L13	
			Column Mounted Spotlights	Column Mounted Spotlights	Column Mounted Spotlights	Wall Mounted Spolidights	Paragel Spotlights	Paragel Spotlights	Wall Mounted Mono spotlights	Ceiling Mounted Flood Projectors	Wall Mounted Linear Uplight (Truck-Lift)	Surface Mounted Tubular Lights	Wall Mounted Recessed Downlights	
		Average LUX	Public Realm								Undercroft			
Day (Open)	< 550lux	30	80%	80%	80%	60%	50%	50%	80%	80%	80%	70%	70%	
	500lux > 1500lux		60%	60%	60%	40%	40%	40%	80%	60%	60%	50%	50%	
	1500lux +		5%	5%	5%	5%	5%	5%	80%	5%	5%	5%	5%	
Day (Closed)	< 550lux	15	30%	30%	30%	15%	15%	15%	30%	10%	10%	10%	10%	
	500lux > 1500lux		-	-	-	-	-	-	-	10%	-	10%	-	
	1500lux +		-	-	-	-	-	-	-	10%	-	10%	-	
Night (Open)	< 550lux	40	60%	60%	60%	60%	40%	40%	100%	80%	80%	70%	70%	
	500lux > 1500lux		50%	50%	50%	50%	30%	30%	100%	60%	60%	50%	50%	
Night (Closed)	< 550lux	15	5%	5%	5%	15%	10%	10%	-	20%	20%	20%	20%	
	500lux > 1500lux		-	-	-	-	-	-	-	5%	5%	5%	5%	

Under croft also has a latching switch located in the bar so when operated the lighting dims to a pre-set down to min level (1lux) for temporary performances.

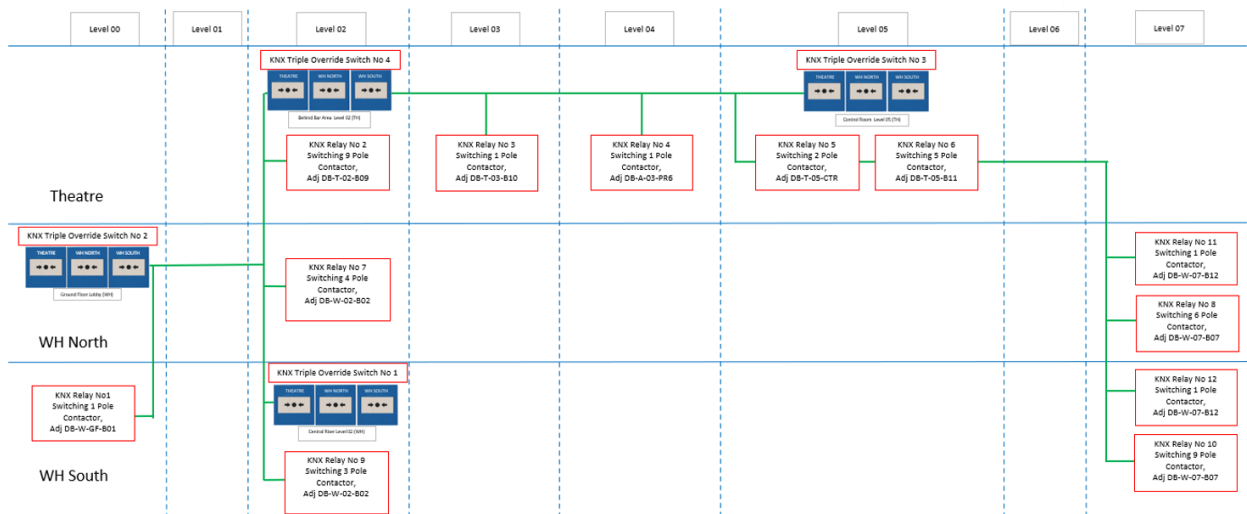
Truck Lift override will provide Public Realm illumination at ground level along access road and localised to the lift

3.11 KNX Emergency Override for Charcoal Blue Performance areas



Lighting Control Interface Wiring

KNX Override Switch Network



4,0 Lighting control Matrix

Section 3 highlights several control scenarios (philosophies) that are assigned to each room or space as listed in the below matrix. Where areas of multiple DALI groups are concerned the commissioning drawings should be referenced to understand how the lights are grouped together and confirm lights operate as expected.

All groups & Scene values have been defined by BDP and will be followed to achieve designed operation.

WAREHOUSE

Warehouse						
Layers of Lighting Description of Elements	General Lighting Downlights	Blues	General Lighting	Warehouse Stair - Handrail	Warehouse Stair - Linear feature (A56)	Warehouse Stair - Low - Mid - Top - Landings
Area	Light Lobby - Corridor 2		Stairs	Level 02		
Lighting Scene / % Dimming						
Day	90	-	90	90	90	90
Day: Show / Performance	-	-	-	70	70	70
House Lighting (Warehouse / Theatre)	25	0	-	-	-	-
Evening	-	-	50	70	70	70
Evening: Show / Performance	0	90	-	50	50	50
Cleaning (venue closed to public)	90	0	90	90	90	90
Night (venue closed)	0	0	0	0	0	0
Set up (Warehouse / Theatre)	-	-	-	-	-	-

FOYER

FOYER											
Layers of Lighting Description of Elements	General Lighting Track Spotlights Cool white / Day	General Lighting Track Spotlights Warm white / Day	Wall Brick Uplight Wash	Wall Downlight Wash	Mega Pig - Architectural Lighting	Polycarbonate Screens	Brick Arch Uplight	Bar Lighting (in ABEYANCE)	Entrance Lobby 001 - Orchestra pit feature	Entrance Lobbies 006 - Downlights	Entrance Lobbies 006 - Circular feature
Area	Main Foyer								Entrance Lobbies		
Lighting Scene / % Dimming											
Day	90	0	0	90	90	90	90	90	90	90	90
Day: Show/Performance	50	0	0	90	90	90	90	90	90	90	90
House Lighting (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-
Evening	0	90	50	0	50	50	50	50	50	50	50
Evening: Show/Performance	0	25	25	0	25	25	50	50	25	50	50
Cleaning (venue closed to public)	90	0	0	90	50	0	90	90	0	90	90
Night (venue closed)	0	0	25	0	25	25	25	25	25	25	25
Set Up (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-

Notes

Estimated dimming levels
Subject to client approval
Site commissioning required

Key

- Scene not applicable to this area
n Numbers indicates dimming percentage

THEATRE

THEATRE																			
Layers of Lighting Description of Elements	Grid White Workers	Grid Blues	White Workers	House Lights	Wall Uplights	Uplight to Soffit	Stair Lights	Retractable Seating Stair Lights	White Workers SL	White Workers SR	Blues SL	Blues SR	Orchestra Pit	Orchestra Pit - Blues	Rear Wall - Low Level Light	General Lighting	Track & Spot	Wall Uplighting - Theatre Walls	Wall wash downlighting
Area	Auditorium															Stairs	Foyer - Level 02		
Lighting Scene / % Dimming																			
Day	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	90	90	90
Day: Show/Performance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
House Lighting (Warehouse/Theatre)	0	0	0	50	50	50	90	90	0	0	0	0	25	0	90	-	50	50	-
Evening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	50	50	25
Evening: Show/Performance	0	50	0	10	0	0	10	10	0	0	50	50	0	50	10	-	25	25	50
Cleaning (venue closed to public)	90	0	90	0	0	0	90	90	0	0	0	0	90	0	90	90	90	90	90
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set Up (Warehouse/Theatre)	90	0	90	0	0	0	90	90	90	90	0	0	90	0	90	-	-	-	-
																	Light Lobby Level 02		
Lighting Scene / % Dimming																			
Day	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	90	90	90
Day: Show/Performance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
House Lighting (Warehouse/Theatre)	0	0	0	50	50	50	90	90	0	0	0	0	25	0	90	-	50	50	-
Evening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	50	50	25
Evening: Show/Performance	0	50	0	10	0	0	10	10	0	0	50	50	0	50	10	-	25	25	50
Cleaning (venue closed to public)	90	0	90	0	0	0	90	90	0	0	0	0	90	0	90	90	90	90	90
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set Up (Warehouse/Theatre)	90	0	90	0	0	0	90	90	90	90	0	0	90	0	90	-	-	-	-
																	Foyer - Level 03		
Lighting Scene / % Dimming																			
Day	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	90	90	90
Day: Show/Performance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
House Lighting (Warehouse/Theatre)	0	0	0	50	50	50	90	90	0	0	0	0	25	0	90	-	50	50	-
Evening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	50	50	25
Evening: Show/Performance	0	50	0	10	0	0	10	10	0	0	50	50	0	50	10	-	25	25	50
Cleaning (venue closed to public)	90	0	90	0	0	0	90	90	0	0	0	0	90	0	90	90	90	90	90
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set Up (Warehouse/Theatre)	90	0	90	0	0	0	90	90	90	90	0	0	90	0	90	-	-	-	-
																	Light Lobby Level 03		
Lighting Scene / % Dimming																			
Day	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	90	90	90
Day: Show/Performance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
House Lighting (Warehouse/Theatre)	0	0	0	50	50	50	90	90	0	0	0	0	25	0	90	-	50	50	-
Evening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	50	50	25
Evening: Show/Performance	0	50	0	10	0	0	10	10	0	0	50	50	0	50	10	-	25	25	50
Cleaning (venue closed to public)	90	0	90	0	0	0	90	90	0	0	0	0	90	0	90	90	90	90	90
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set Up (Warehouse/Theatre)	90	0	90	0	0	0	90	90	90	90	0	0	90	0	90	-	-	-	-

Notes
Estimated dimming levels
Subject to client approval
Site commissioning required

Key
- Scene not applicable to this area
n Numbers indicates dimming percentage

TOWERS

Layers of Lighting Description of Elements	TOWERS														
	Green Room - Tube sources	Green Room - Spots	Green Room - Spots curtains	Dressing Room - Linear	Lounge - Linear	Lounge Spot	Main Office	Meeting room	Office spots North/South circulation route / seating	Conference space - Tube	Conference space - Spot	Conference Meeting room	Office spots North/South		
	Area			Level 3			Level 4			Level 5			Level 6		
	Lighting Scene / % Dimming														
	Day	90	90	0	90	90	80	90	90	90	90	50	90	90	
	Day: Show/Performance	90	-	-	-	-	-	-	-	30	-	-	-	-	
	House Lighting (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Evening	0	50	30	50	50	50	80	0	50	0	70	0	50	
	Evening: Show/Performance	30	30	30	0	30	30	10	0	10	-	-	-	-	
	Cleaning (venue closed to public)	90	90	90	90	90	90	90	90	90	90	90	90	90	
Night (venue closed)	0	0	0	0	0	0	0	0	0	0	0	0	0		
Set Up (Warehouse/Theatre)	-	-	-	-	-	-	-	-	-	-	-	-	-		

Notes
Estimated dimming levels
Subject to client approval
Site commissioning required

Key
- Scene not applicable to this area
n Numbers indicates dimming percentage

For example, the below "Sample Room" is assigned the switching scenario 3 which is **"Full Lighting Control including Scene Setting and Daylight Dimming"**

GF	007	Sample Room	S3
----	-----	-------------	----

4.1 Room Operation

Level	Room Number	Description	Switching Scenario
GF Theatre	001	ENTRANCE LOBBY	S3
GF Theatre	002	INCOMING SERVICES	N/A
GF Theatre	003	PUBLIC STAIR	S3
GF Theatre	004	MAIN FOYER	S3
GF Theatre	005	PUBLIC STAIR/ESCALATOR	S3
GF Theatre	006	WEST ENTRANCE LOBBY	S3
GF Theatre	007	ARCH 8 - UNISEX TOILETS	S5
GF Theatre	008	ARCH 7 - UNISEX TOILETS	S5
GF Theatre	009	ARCH 6 - UNISEX TOILETS	S5
GF Theatre	010	CHANGING ROOM	S5
GF Theatre	011	ARCH 5 - MENS URINALS	S5
GF Theatre	012	ARCH 5 - UNISEX TOILETS	S5
GF Theatre	013	ARCH 4 - LOBBY	S3
GF Theatre	014	ARCH 3 - PREP KITCHEN	S4
GF Theatre	018	WC	S5
GF Theatre	019	STAFF	S5
GF Theatre	020	OFFICE	S5
GF Theatre	021	ARCH 2 - LOBBY	S3
GF Theatre	022	ARCH 2 - ELECTRICAL SWITCHROOM AND TRANSFORMER	S4
GF Theatre	023	ARCH 2 - ELECTRICAL SWITCHROOM AND TRANSFORMER	S4
GF Theatre	024	ARCH 1 - WATER TANK	S4
GF Theatre	025	ARCH 1 - REFUSE ROOM, 20 EUROBINS	S4
GF Theatre	026	METERING ROOM	S4
GF Theatre	027	RMU ROOM	S4
GF Theatre	028	STORAGE BUFFER	S7
GF Public Realm	029	ESCAPE STAIR 9	S5

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

GF	030	FIRE LOBBY	S5
GF	031	STAIR 10	S5
GF	032	TRUCK LIFT	S4
GF Theatre/Public Realm	033	ACCESS/ENCLOSURE	S4
GF	035	LOBBY	S5
GF Theatre/Public Realm	036	STAIR 1	S5
GF Public Realm	Externals	PUBLIC REALM	S7
GF Theatre	038	GAS METER & RISER	S4
GF Theatre	040	TRUCK LIFT SERVICES	S2
L1 Towers	101	PUBLIC STAIR	S3
L1 Theatre	102	ORCHESTRA PIT	S2
L1 Theatre	103	LOBBY	S2
L1 Theatre	104	AWC	S2
L1 Theatre	105	ORCH. PIT MEP	S4
L1 Theatre	106	STAIR 8 LOBBY	S5
L2 Warehouse	201	WAREHOUSE	S2
L2 Mega Wall	202	ACOUSTIC CAVITY / CIRCULATION	S5
L2 Towers	203	STAIR 1	S5
L2 Towers	204	WORKSHOP	S4
L2 Towers	205	MAIN IT COMMS RM	S4
L2 Towers	206	TEMP EQUIPMENT	S4
L2 Towers	207	CLEANING RM	S4
L2 Towers	208	AWC	S5
L2 Towers	209	AWC	S5
L2 Towers	210	LOADING & TEMP EQUIPMENT	S2
L2 Towers	211	CORRIDOR	S2
L2 Towers	212	PUBLIC STAIR	S2
L2 Towers	213	STAIR 3	S3
L2 Towers	214	AWC	S5
L2 Towers	216	SECURITY	S1
L2 Towers	217	TECH CUPBOARD	S4

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L2 Towers	218	AWC	S5
L2 Towers	219	STAIR 5	S2
L2 Mega Wall	220	ACOUSTIC CAVITY CIRCULATION	S2
L2 Theatre	221	LOBBY	S2
L3 Theatre	221-1	LOBBY-1	S2
L2 Theatre	222	TRUCK LOADING	S2
L2 Theatre	224	STAIR 10	S5
L2 Mega Wall	225	TRUCKLIFT_LOBBY	S2
L2 Theatre	225-1	TRUCKLIFT_LOBBY	S2
L2 Mega Wall	226	LOBBY	S2
L2 Theatre	226-7	LOBBY-7	S2
L2 Mega Wall	227	LOBBY	S2
L2 Theatre	228	FIRE LOBBY	S5
L2 Theatre	229	CORRIDOR	S2
L2 Theatre	230	CONTROL ROOM	S2
L2 Theatre	232	SOUND LOBBY	S2
L2 Mega Wall	234	LOBBY	S2
L2 Theatre	236	SOUND LOBBY	S2
L2 Theatre	237	LOWER FOYER	S3
L2 Theatre	237-2	LOWER FOYER-2	S3
L2 Theatre	238	LANDING STAIR 7	S2
L2 Theatre	239	MECHANICAL	S2
L2 Theatre	240	AWC	S2
L2 Theatre	241	AWC	S2
L2 Theatre	242	TRUCK LIFT CONTROL ROOM	S4
L2 Theatre	243	BAR STORE	S2
L2 Theatre	244	PLATFORM LIFT	S2
L2 Theatre	244-1	PLATFORM LIFT-1	S2
L2 Theatre	253	STALLS	S2
L3 Towers	301	STAIR 1	S5
L3 Towers	302	GREEN ROOM	S2
L3 Towers	303	AWC	S5
L3 Towers	304	LIFT LOBBY	S5

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L3 Towers	305	TOILETS	S5
L3 Towers	306	KITCHEN	S4
L3 Towers	307	AV RACK ROOM (BLDG)	S4
L3 Towers	308	STAIR 3	S3
L3 Theatre	310	FOYER	S3
L3 Theatre	311	LOBBY	S3
L3 Theatre	312	SOUND LOBBY	S2
L3 Theatre	313	FEMALE TOILETS	S5
L3 Theatre	314	CLEANER STORE	S5
L3 Theatre	315	AWC	S5
L3 Theatre	316	MALE TOILETS	S5
L3 Theatre	317	BALCONY	S2
L3 Theatre	317-3	SOUND LOBBY-3	S2
L3 Theatre	317-4	SOUND LOBBY-4	S2
L3 Theatre	318	SOUND LOBBY	S2
L3 Theatre	319	URINAL ROOM	S5
L3 Theatre	320	SOUND LOBBY	S2
L3 Theatre	321	FOYER	S3
L3 Theatre	322	LIFT LOBBY	S3
L3 Theatre	323	LOBBY/STORAGE BUFFER	S2
L3 Theatre	324	STAIR 10	S5
L3 Theatre	325	TECH ROOM	S4
L3 Theatre	326	FIRE LOBBY	S5
L3 Theatre	327	FIRE LOBBY	S5
L3 Theatre	328	NORTH BOX TRUSS	S2
L3 Mega Wall	329	BOH LOBBY	S2
L5 Mega Wall	329	BOH LOBBY	S2
L4 Towers	401	STAIR 1	S5
L4 Towers	402	LOUNGE	S2
L4 Towers	403	DRESSING ROOM	S1
L4 Towers	404	DRESSING ROOM	S1
L4 Towers	405	DRESSING ROOM	S1
L4 Towers	406	DRESSING ROOM	S1

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L4 Towers	407	DRESSING ROOM	S1
L4 Towers	408	SHOWERS/WC	S5
L4 Towers	409	SHOWERS/WC	S5
L4 Towers	410	LIFT LOBBY	S5
L4 Towers	411	TOILETS	S5
L4 Towers	412	AWC	S5
L4 Towers	413	COSTUMES/ LAUNDRY	S4
L4 Towers	246	ACC. BATHROOM	S5
L4 Towers	415	LOUNGE	S2
L4 Towers	416	SHOWERS/WC	S5
L4 Towers	417	SHOWERS/WC	S5
L4 Towers	245	SHOWER/WC	S5
L4 Towers	419	DRESSING ROOM	S1
L4 Towers	247	SHOWER/WC	S5
L4 Towers	421	DRESSING ROOM	S1
L4 Towers	422	BATHROOM	S1
L4 Towers	423	BATHROOM	S1
L4 Towers	424	STAIR	S5
L4 Towers	425	DRESSING ROOM	S1
L4 Towers	426	SOLOIST ROOM	S1
L4 Towers	427	SOLOIST ROOM	S1
L4 Towers	428	DRESSING ROOM	S1
L4 Towers	429	STAIR 3	S3
L4 Theatre	430	FIRE LOBBY	S5
L4 Theatre	431	STAIR	S5
L4 Theatre	432	AWC	S5
L4 Theatre	433	ELECTRICAL / COMMS ROOM	S4
L4 Theatre	434	QUIET ROOM	S4
L4 Theatre	435	CORRIDOR	S2
L4 Theatre	437	TECH ROOM	S4
L4 Theatre	438	SOUND LOBBY	S2
L4 Theatre	439	CORRIDOR	S2
L4 Theatre	440	LOBBY STORAGE/BUFFER	S2

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L4 Theatre	441	THEATRE BALCONY	S2
L4 Theatre	443	AV RACK	S2
L4 Theatre	445	BOH	S2
L5 Towers	501	STAIR 1	S5
L5 Towers	502	OFFICE	S2 /S3
L5 Towers	503	LIFT LOBBY	S5
L5 Towers	504	MEETING ROOM	S3
L5 Towers	505	TOILETS	S5
L5 Towers	506	AWC	S5
L5 Towers	507	STAIR 3	S3
L5 Towers	508	IT COMMS ROOM	S4
L5 Towers	509	MEETING ROOM	S3
L5 Towers	510	STAIR 5	S5
L5 Theatre	511	TECH ROOM	S2
L5 Theatre	514	UPPER BALCONY	S2
L5 Theatre	515	AWC	S5
L5 Theatre	516	FIRE / LIFT LOBBY	S2
L5 Theatre	517	STAIR	S5
L6 Theatre	517	STAIR	S5
L5 Theatre	518	SOUND LOBBY	S2
L5 Theatre	519	CORRIDOR	S2
L5 Theatre	520	CENTRAL BATTERY	S4
L5 Theatre	521	LOBBY	S2
L5 Theatre	522	AV RACK	S2
L5 Theatre	523	THEATRE GRID LOBBY	S2
L5 Mega Wall	524	LOBBY	S2
L5 Theatre	525	BACK OF HOUSE	S2
L5 Mega Wall	526	WEST WALL ACOUSTIC CAVITY	S2
L5 Mega Wall	527	LOBBY	S2
L6 Towers	601	STAIR 1	S5
L6 Towers	602	CORPORATE / BOARD ROOM / EDUCATION SPACE	S3
L6 Towers	603	MEETING ROOM	S1
L6 Towers	604	LOBBY	S5

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L6 Towers	605	LIFT LOBBY	S5
L6 Towers	606	TOILETS	S5
L6 Towers	607	AWC	S5
L6 Towers	608	IT COMMS ROOM	S4
L6 Towers	609	STAIR	S3
L6 Towers	610	CORRIDOR	S5
L6 Towers	611	BOILER / CHILLER ROOM	S4
L6 Towers	612	CREW ROOM	S1
L6 Towers	613	STAIR 5	S5
L6 Towers	614	KITCHENETTE / STORAGE	S4
L6 Theatre	616	BACK OF HOUSE	S4
L6 Theatre	617	CONTROL ROOM	S2
L6 Theatre	618	LOBBY	S2
L6 Theatre	619	FIRE LIFT LOBBY	S5
L6 Mega Wall	620	PROSCENIUM OPENING	S2
L6 Mega wall	621	PROSCENIUM OPENING	S2
L7 Towers	039	GAS METER AND RISER	S1
L7 Warehouse	701	TECHNICAL GRID	S2
L7 Warehouse	702	TECHNICAL GRID	S2
L7 Warehouse	703	TECHNICAL GRID	S2
L7 Towers	704	CORRIDOR	S2
L7 Towers	705	TEMP EQUIPMENT ROOM	S4
L7 Towers	706	LIFT LOBBY	S2
L7 Towers	707	COMMS ROOM	S4
L7 Towers	709	TOILETS	S5
L7 Towers	710	STAIR 3	S3
L7 Towers	711	CORRIDOR	S2
L7 Towers	712	TEMP EQUIPMENT ROOM	S4
L7 Towers	714	STAIR 5	S5
L7 Towers	715	AHU	S4
L7 Mega Wall	716	LOBBY	S2
L7 Towers	717	EXTERNAL PLANT ROOM	S4
L7 Mega Wall	718	PROSCENIUM OPENING	S2

Reference number: MF-CHT-XX-XX-SH-YX-0001

Client: Manchester City Council

L6 Theatre	721	THEATRE ACOUSTIC CAVITY	S2
L8 Towers	801	STAIR 3	S5
L8 Towers	802	EXTERNAL PLANT ROOM	S4
L8 Towers	803	GENERATOR DECK	S4