



市區重建局

URBAN RENEWAL  
AUTHORITY

# Operation Manual

Smart Office System of 907-908 Tower 2 Cheung Sha Wan Plaza

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Smart System is powered by Xtreme Lighting Limited

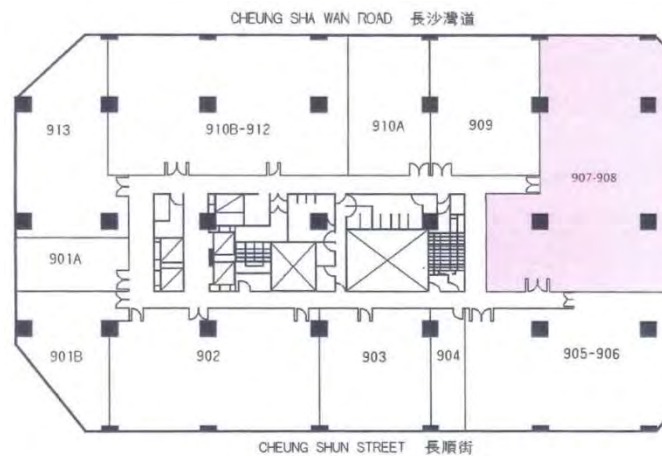




# 1. INTRODUCTION

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Urban Renewal Authority (URA) had expanded her remote office at Cheung Sha Wan Plaza in Q4 2018. Canary Mind Limited (CML) was employed as a technical solution provider to design and set up a Smart Office system (Smart System) with cutting-edge technology for the new premises of Units 907-908 Tower 2 of the complex.



The interior design of new premises provides a co-working environment where consists of two major areas, i.e. open office area and collaboration area. The open office is a working space for staff members with capacity of 50 workstations, while collaboration area includes a wet pantry, an enclosed meeting pod, 2 phonebooths and 7 casual meeting spaces.





The Smart System is custom-made for this premises to optimize users' working environment, especially for light sources and temperature, in order to let users feeling more comfortable during working, apart from green elements and ergonomic furniture designed by interior design consultant.

This document is to describe:

- Overview of Smart System;
- How to operate the system and the control logic behind;
- Add-on features;
- Contingency measures;



## 2. OVERVIEW OF SMART SYSTEM

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### 2.1 ABOUT THE SMART SYSTEM

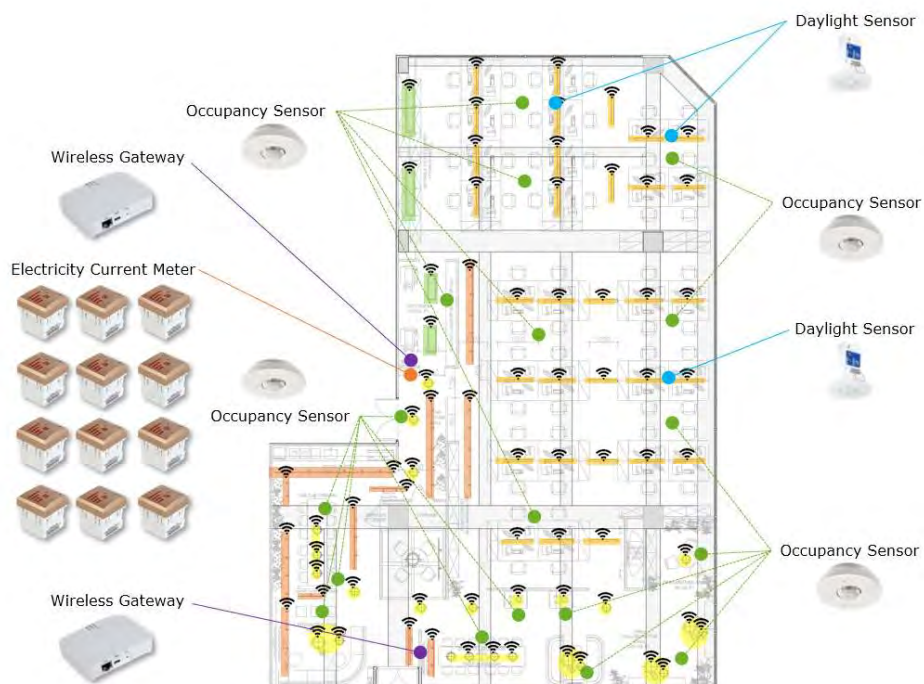
The Smart System is a computerized energy saving system. It reduces power consumption by detection, automation and monitoring for electrical facilities such as lighting, air-conditioning, and audio-visual system, etc.

The Smart System provides below functions:

- Facilities Control and Automation
- Energy Saving
- Energy Monitoring & Reporting
- Climate Monitoring

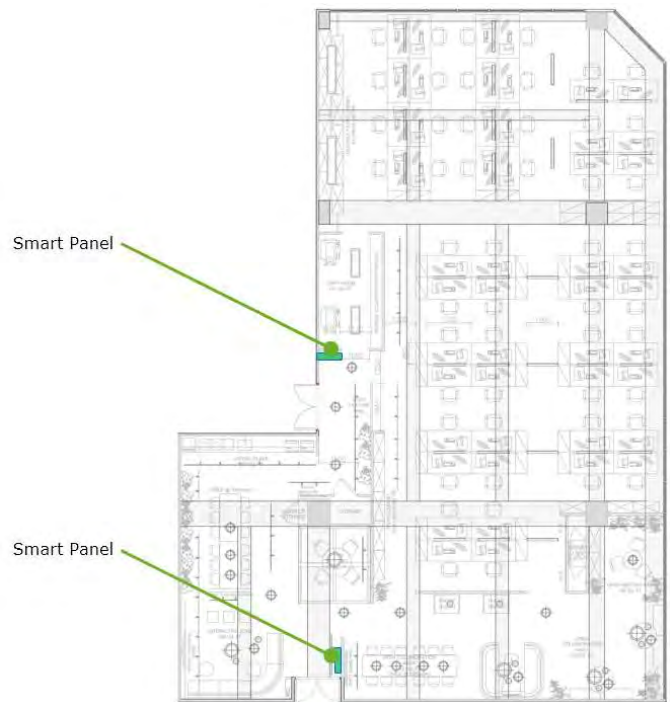
### 2.2 SYSTEM HARDWARE COMPONENT

The infrastructure of Smart System is a Mesh Network, for which most managed devices are driven by wireless drivers. Each wireless driver has capability to repeat the wireless signal among managed devices, e.g. lighting fixtures.

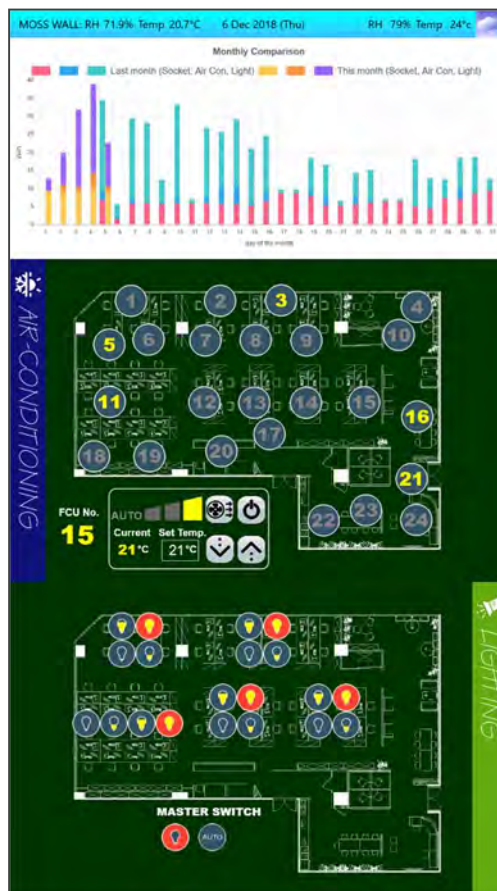




In terms of user operating interface, the Smart System equips with two 40" diagonal portrait-mounted touch screens (thereafter called Smart Panels), instead of traditional lighting switches and air-conditioning panels (or thermal stat) in the office. Smart Panels are wall-mounted at two entrances of the premises.



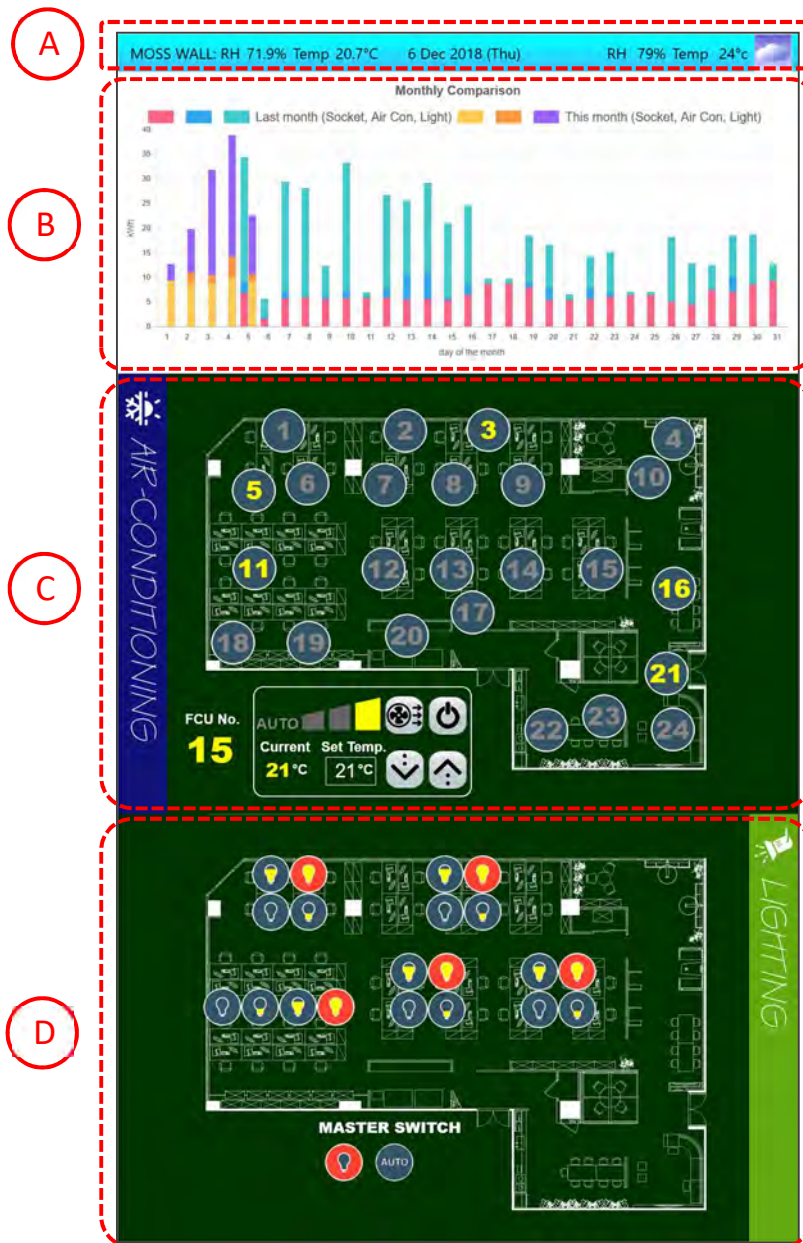
The graphical user interface on Smart Panel is as below shown.





### 3. HOW TO OPERATE THE SYSTEM AND THE CONTROL LOGIC BEHIND

After the Smart System has initialized, it gets ready for use and Smart Panels show below screen.



The screen is divided into 4 parts that have different functions.

- Part A: Climate information
- Part B: Energy dashboard
- Part C: Air-conditioning control
- Part D: Lighting control



## Part A: Climate Information

In the top bar of screen, from left to right, it shows indoor humidity (at moss wall), indoor temperature (at moss wall), current date, outdoor humidity, outdoor temperature, as well as a picture to indicate current weather condition, e.g. cloudy.



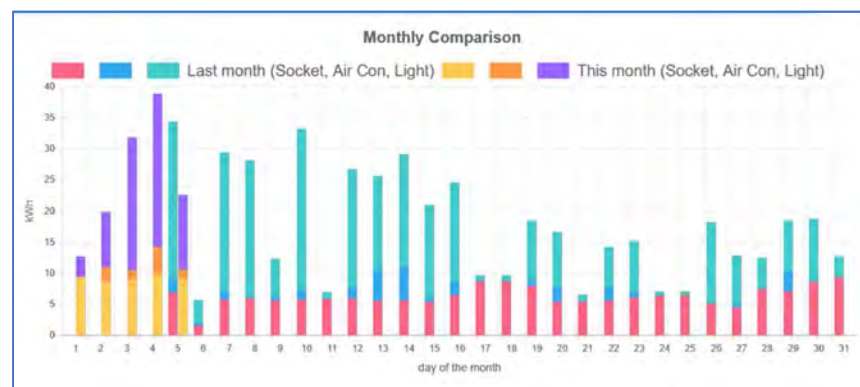
## Part B: Energy Dashboard

Electricity Current Meters (so-called energy meters) monitor each power circuits for three types of facilities, such as air-conditioning, lighting and general power outlets. Power consumption for server room, water boiler, emergency lighting is excluded.

The energy dashboard computes the data collected by energy meters, then produces several graphical charts. The dashboard switches between five different charts with 10 minutes interval. Different charts of power consumption provide illustration of different comparisons for user reference, as well as encourage energy saving practice.

Followings are content of five charts:

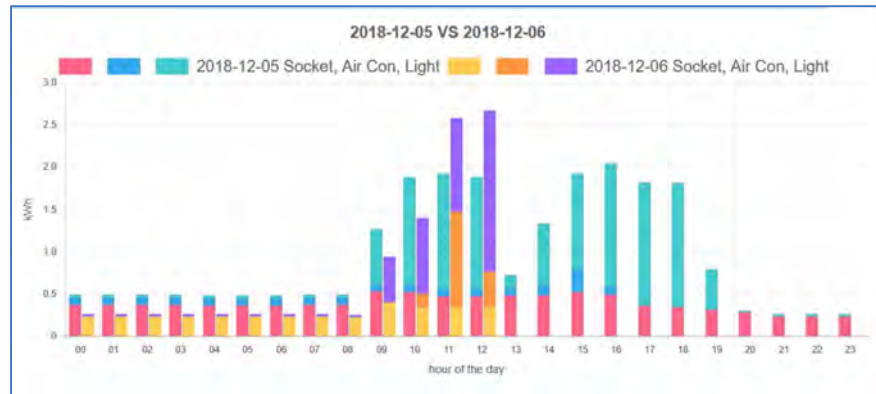
1. Last month's daily power consumption vs This month's daily power consumption



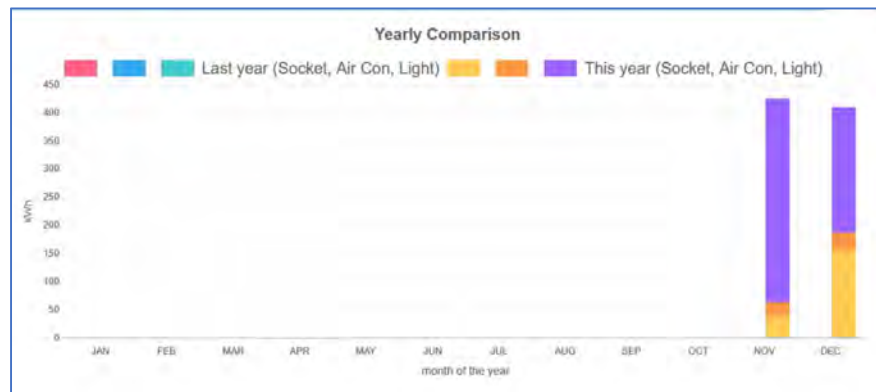




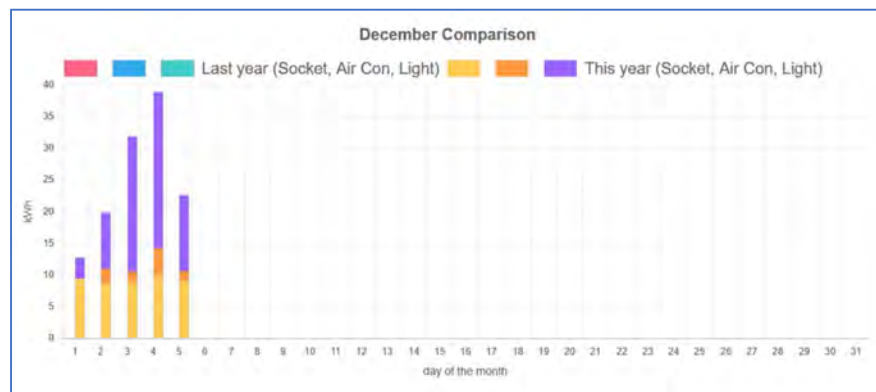
2. Yesterday's hourly power consumption vs Today's hourly power consumption



3. Last year's monthly power consumption vs This year's monthly power consumption

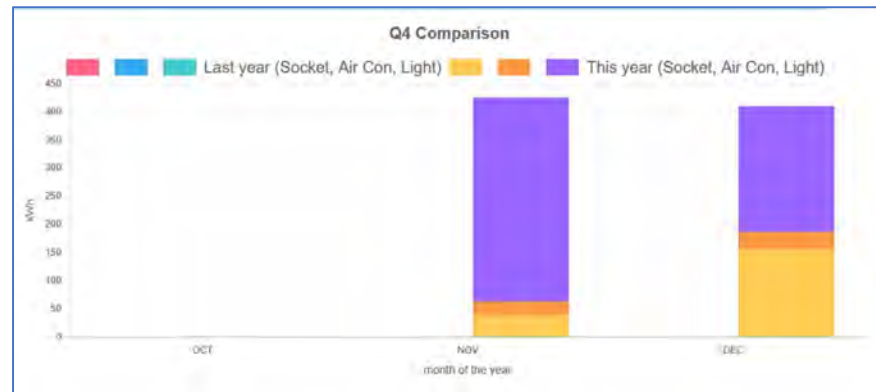


4. Daily power consumption of current month last year (e.g. Dec/17) vs Daily power consumption of the same month this year (i.e. Dec/18)





5. Monthly power consumption of a quarter last year (e.g. Q4/17) vs Monthly power consumption of the same quarter this year (Q4/18)

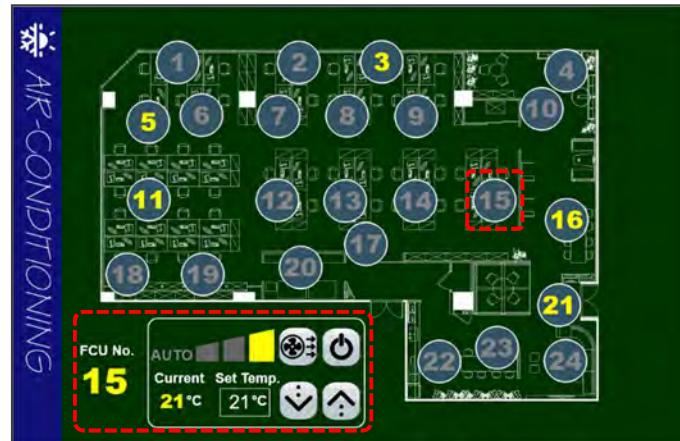


*P.S. (individual lighting/air-con/socket consumptions are show in different colors)*

If user wants to read detailed data of a bar in the dashboard, rolling her/his finger over a bar in the chart to display associated data.



## Part C: Air-conditioning Control



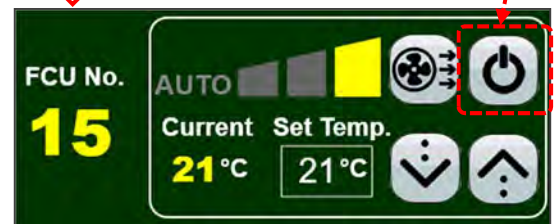
For air-conditioning control, minimal automation is applied due to individual feeling and comfort.

- User to select a fan coil unit (FCU) by pressing a circled number on Smart Panel, e.g. no.15, where numbers in GREY represent FCUs being OFF while numbers in **YELLOW** highlighted represent those FCUs are ON and running.

- The control panel at lower left corner of the section will display current setting and status of selected FCU. The **YELLOW** highlighted reading and symbol indicate current condition, e.g. refer to image at right hand side, current temperature detected by FCU no.15 is 21°C and current fan speed is set to HIGH, but this FCU is currently idle (power off).



currently OFF,  
press to ON

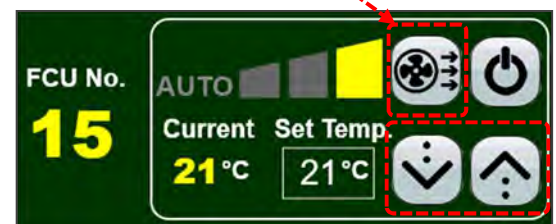


- For user's own comfort, adjust the desired temperature and fan speed by using operation buttons.

- To save energy, user should turn OFF unused FCU after use.

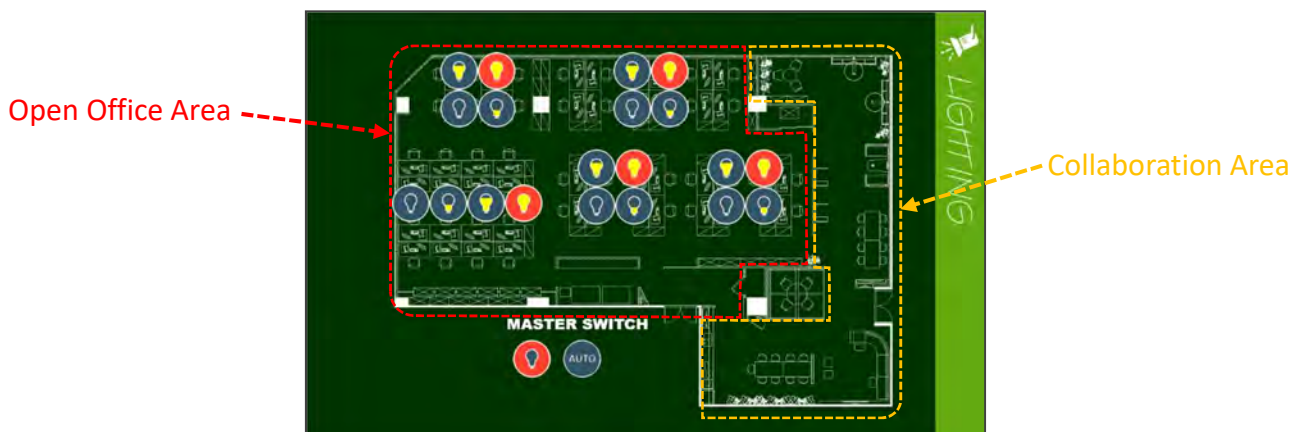
- Smart System will detect totally vacant of the whole premises, then turn OFF all air-conditioning after 50 minutes automatically (applicable to non-business hours).

operation  
buttons





## Part D: Lighting Control



For lighting control, fully automation is applied with following scheme.

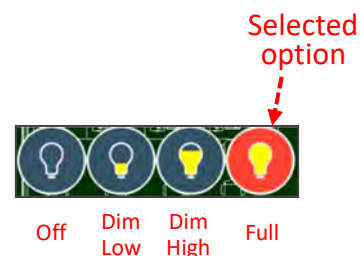
### In Open Office Area:

- Timer to turn on the light automatically for business hours of every working day.  
**8:30am – 12:40pm & 13:20pm -7:00pm** (where 12:40pm to 13:20pm is lunch break)

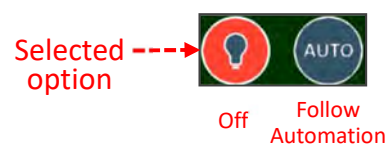
\* Daylight sensors of a zone will activate automatically when any light of the zone is ON.

- Dimming buttons (zoned) for office area & Master OFF switch can override the timer control, when necessary.

When you select an option, it will be **RED** highlighted.

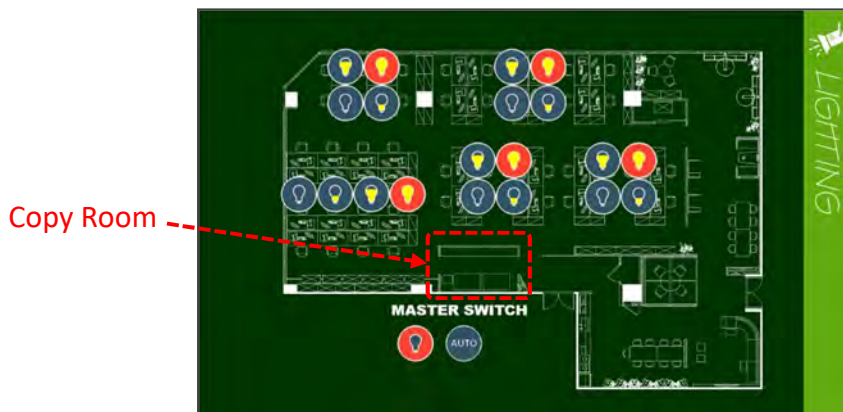


\* Dimming levels of mentioned dimming buttons can be configured with a text file by system administrator.

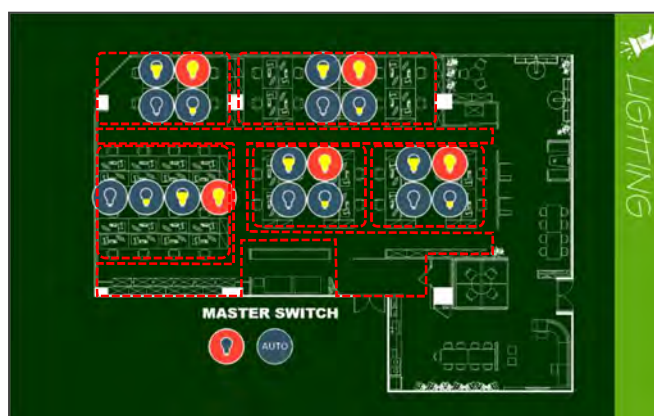




- Particularly for Copy Room, after occupancy sensor has detected first vacant in business hours, the System will dim the lights to 30% level. Then those lights are triggered ON by detecting people till close of business the day, i.e. 7pm.



- During non-business hours or holidays, timer doesn't turn on any light automatically. All lightings are triggered by respective occupancy sensors zone by zone.

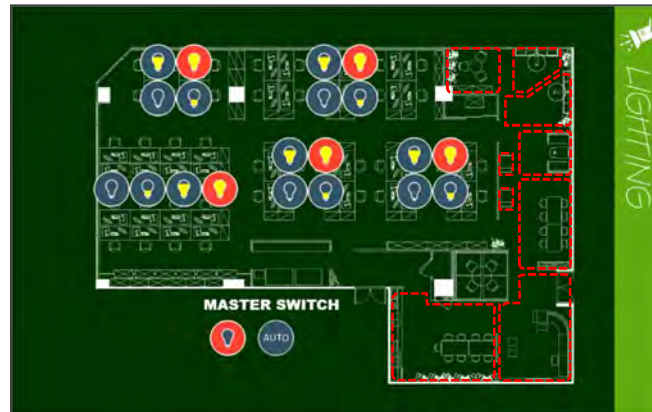


- Reception area plus corridors in office area is a single zone. Associated occupancy sensor is located at reception area.
- Server room, store room and enclosed meeting pod are out of controlled zonings.

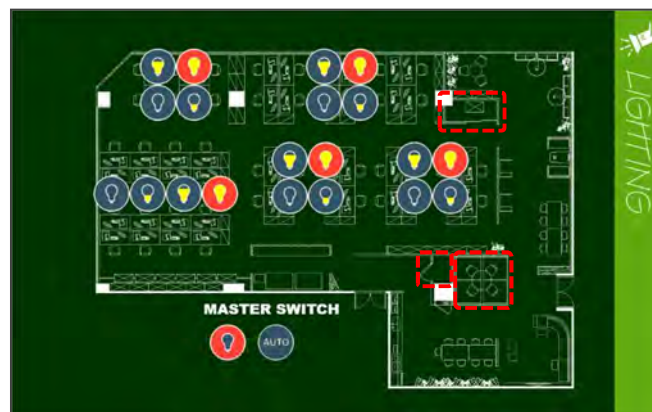


### In Collaboration Area:

- By default, lighting in collaboration area are usually triggered by motion sensors zone by zone automatically.



- When any area is vacant for 20 minutes, associated lightings go OFF.
- The server room, store room and 4-persons enclosed meeting pod are not controlled by the System.





## 4. ADD-ON FEATURES

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### 4.1 Auto-lighting for Watching Screen

There are two 65" interactive touch screen in the collaboration area for users' presentation purpose. When user switch ON an interactive screen, those spot lights in front of screen will turn OFF automatically. In reverse, when the screen is switched OFF, those spot lights will go ON automatically.





## 4.2 Timer Control for Sound System

There is a Sound Masking system in collaboration area. It is built for distracting people's speaking content in the area.

- The playback source of the system is a media player which can read audio files (i.e. pre-stored songs) from USB drive and play them automatically when power is ON. Timer to turn on this media player automatically for business hours of every working day.

**8:30am – 12:40pm & 13:20pm -7:00pm** (where 12:40pm to 13:20pm is lunch break)



16 loudspeakers of Sound Masking system are driven by an 8-channels amplifier (in server rack). Each channel drives 2 speakers, so user would adjust individual volume referring to above speaker labels.





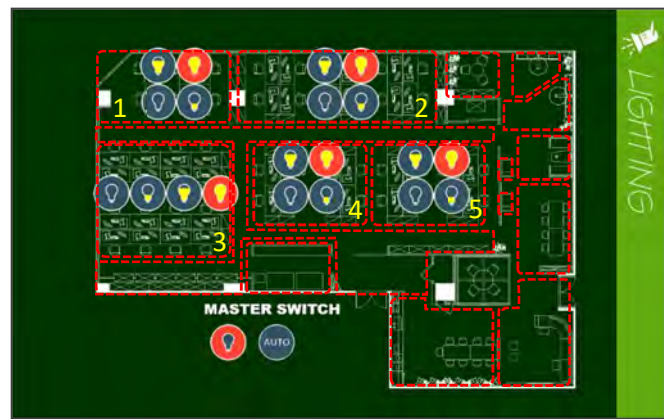


## 5. CONTINGENCY MEASURES

In case of Smart Panels go failure, users would use backup wireless handheld control units to operate lighting and air-conditioning.

For lighting, there are 7 handheld control units. They are part of the Mesh Network, so their signals can be received by any lighting fixtures directly. 2 of the control units are of master control which to turn on and off lighting for whole premises; while other 5 control units are for operating respective zones as following.

1. Open office zones 1 & 2
2. Open office zones 3 & copy room
3. Open office zones 4 & 5
4. Reception area & corridors
5. Whole collaboration area



*Master Control*



*Zones Control*

For air-conditioning, there are 4 spare infra-red (IR) handheld control units. They are not assigned to any particular FCU. Any IR control unit can operate any FCU. User has to point an IR control unit to the FCU she/he wants to adjust, for operation, e.g. ON/OFF, fan speed, temperature adjustment.



In order to retain the system stability, the program will be refreshed periodically. Thus, the system is scheduled to reboot automatically at 6:00am of first Monday in each month.