

T&J ELECTRIC (SINGAPORE) PTE LTD

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Date: December 16, 2015

Subject: Hotel room cardless mode operation

Introduction

- With "Cardless" mode, the hotel can achieve even more energy-saving and better guest convenience and comfort.
- A guest entering the room does not need to insert the Keycard - lights, power and air-conditioning shall automatically switched on.
- When the guest leaves the room, the lights, power and air-conditioning shall switch off by itself.
- The guest cannot defeat this energy-saving measure, to let the power running while out of the room by keeping the Keycard inserted, as there is no Keycard slot.

"Cardless" mode operation

- When the guest opens the door, system senses the door opened, and the motion sensor will scan for movement of the guest. If sensor detects motion, the power and lighting will switch on. The lighting scene will be the previous lights switch-on status before power off
- When the guest leaves the room, the system detects the door opened, the motion sensor will scan for guest movement, if no motion is detected, and the power and lighting will switch off.
- This system operation can be linked to the room thermostat to set-back the room temperature (to a higher temperature) when the guest exits the room.
- A "Welcome" light scene at the entrance can be programmed and activated whenever the door is opened. The light scene deactivates when the door is closed. Thus, the guest will always experience a consistent lighting scene when entering a room.

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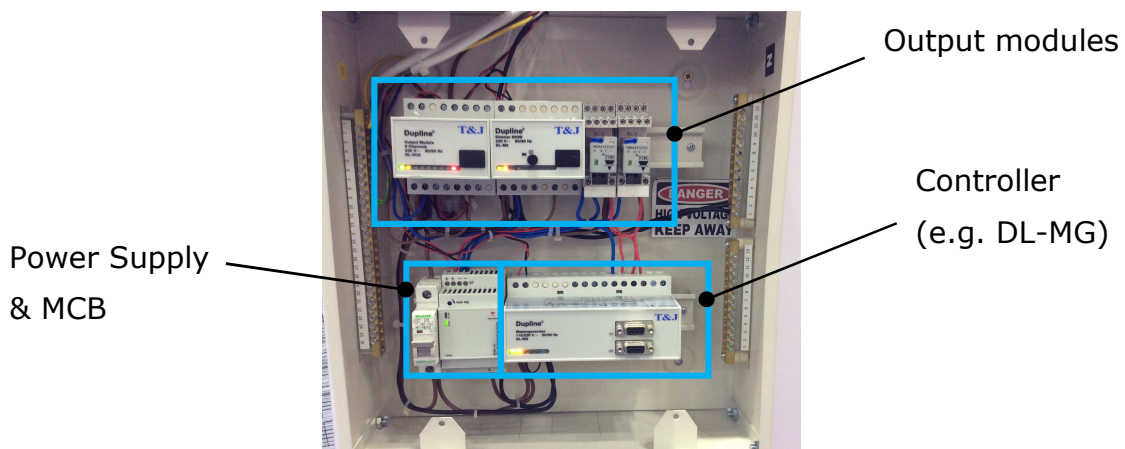
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Hardware Requirements:

- **Room Control Unit (RCU)** – to perform the logic interpretation of the sensor inputs and activate the required outputs and lightings.



- **Magnetic Door sensor switch** – mounted on the room door to detect guest opening and closing of door and relay this signal to the controller.



- **Motion sensors** – detect any movement by the guest(s), in order to signal the controller that guest presence within the sensor detection range.



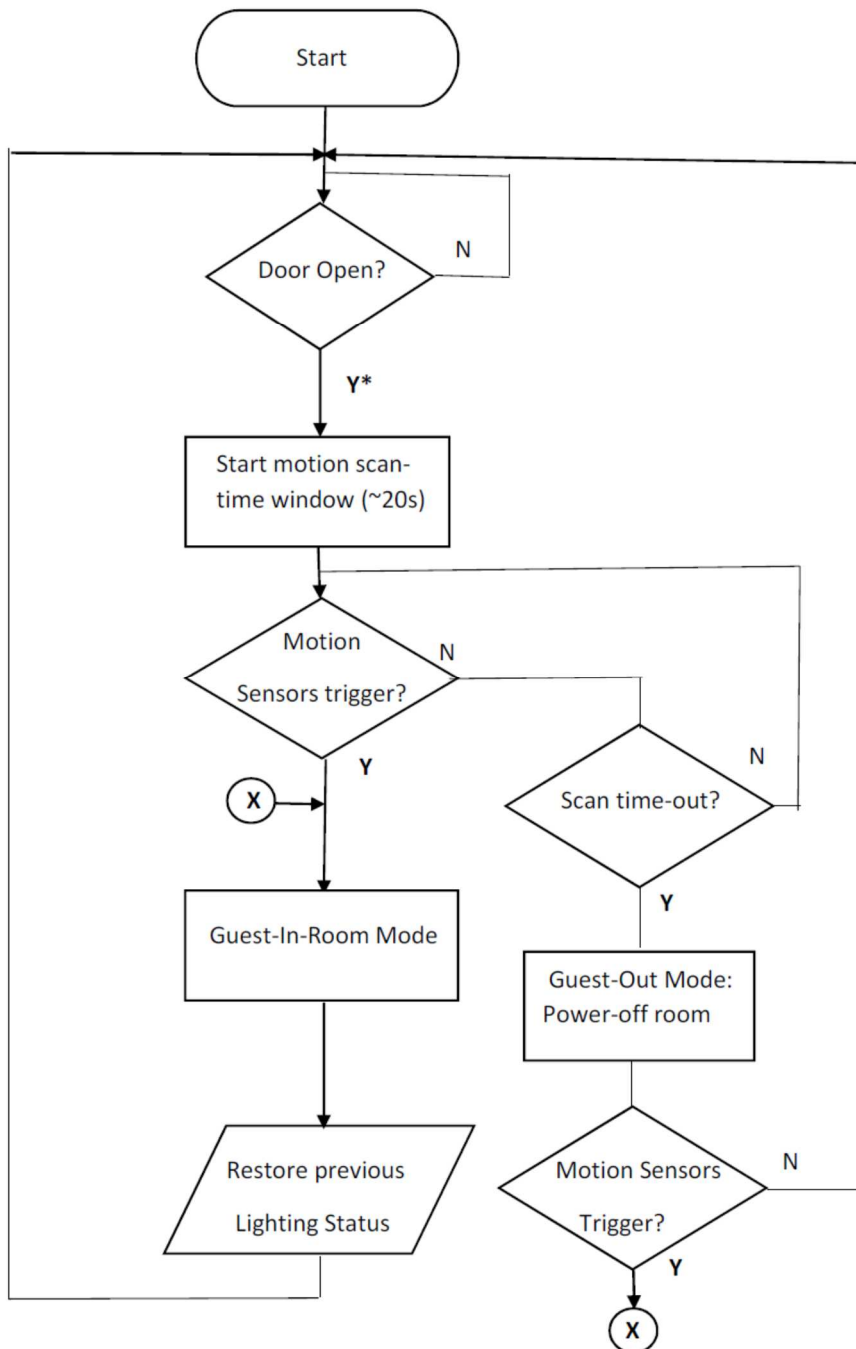
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Control software flowchart:



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Operation sequence

- When the guest enters the room, the door sensor will send a signal to the controller which in turn to verify if there is guest movement in the room via the motion sensors over a programmable period of time (preset at 20 seconds).
- If there is no movement detected by the sensors after that set period of time, the controller shall set the room state as "Guest-out state" or as "unoccupied state".
- If movement is detected, the controller shall set the room state as "Guest-in state" or as "occupied state".
- When in "Guest-in" state, all the lighting that were switched on previously will be restored and all socket outlets are powered up. Afterwards the guest can turn on or off light switches as usual.
- Once the room is in "Guest-in" state, the room will maintain in this state whether the guest is moving, sleeping or in the bathroom. No change in occupied state until the main door opens and closes which initiates the re-evaluation period.
- When the room state is in "Guest-out" state, any momentary triggering of the motion sensor will switch the room state to "Guest-in" state, restoring the previous lighting scene.

Limitation

When there are two or more guests in the room, there is a slim chance that if one guest leaves the room opening and closing the door, while all the other guests were sleeping or keeping very still in the couch for a preset time period, the room operation state may switch to "Guest-out" state. In this case, when the system detects any movement, the previous lighting scene shall be restored and resumed to the "Guest-in" state.