Home lighting

# Walk through area

## Main purpose

Make a apartment light more convenient and just for fun

## Main features:

1. Three lighting modes: ON, OFF, Standby
2. Four independent lighting zones
3. Independent light intensity setting for each zone in each mode
4. Movement detection
5. Lightswitch control only – no external interface, PC connection etc.

## Theory of operation



All lighting zones may lights in one of three modes ON, OFF, or Standby.

ON mode – all zones lights with its own preconfigured intensity; OFF – all zones OFF; Standby – all zones lights with its own preconfigured dimmed intensity.

All switches works as a pushbutton, with two actions possible – push and hold.

A switch PUSH toggles current light mode ON/OFF. A switch HOLD works different in each lighting mode. Holding during ON mode – changes light intensity for particular zone; holding during OFF mode – turn on particular zone to 100%; holding during standby mode changes stand by light intensity.

Standby mode activated by movement detector and deactivated by the standby timer. The standby timer period is hardcoded into FW.

In common form switch behavior might be described as a table where columns is a lighting mode and strings is a button hold or push, like the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mode  SWITCH ACTION | | STANDBY | ON | OFF |
| SW0 | PUSH | ON | OFF | ON |
| HOLD | DIMM STB L0 | DIMM L0 | L0 100% |
| SW1 | PUSH | ON | OFF | ON |
| HOLD | ??? | ??? | ??? |
| SW2 | PUSH | ON | OFF | ON |
| HOLD | DIMM STB L3 | DIMM L3 | L3 100% |
| SW3 | PUSH | ON | OFF | ON |
| HOLD | DIMM STB L2 | DIMM L2 | L2 100% |
| SW4 | PUSH | ON | OFF | ON |
| HOLD | DIMM STB L1 | DIMM L1 | L1 100% |
| DET1 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Light intensity for each zone in each mode is stored separately.

## Light sources specification

L0 – 7x0.8m

L1, L2 – 2x0.5m

L3 – 5x0.8m

# Bathroom control

Bathroom control consists of light control and ventilation control.

Ventilation’s behavior is controlled by the switch button and the movement detector. The bathroom lighting is controlled by button switch only.



## Theory of operation

The light source is controlled by the switch SW1, while ventilation is controlled by the switch SW2 and movement detector.

Lighting control functioning in the following maner:

Light OFF mode:

SW1 OFF->ON light ON

SW1 ON->HOLD light ON min. (dimmed)

SW1 ON->HOLD NEXT light ON dimming control.

Light ON mode:

OFF->ON Light OFF

ON->HOLD Light ON toggle highlight

Ventilation control functioning in the following manner:

SW2 OFF->ON toggling between FORCED\_ON/FORCED\_OFF/AUTO

FORCED\_ON mode activates ventilation for ~2 hours (unconditionally) and then switching back to AUTO.

FORCED\_OFF mode deactivates ventilation for ~1hour (unconditionally) and then switching back to AUTO.

AUTO mode activates ventilation after 30 sec since movement detection and disable ventilation after 2min since movement disappear.

