# Window lifter requirements:

**<Req\_01>** Window lifter is the module responsible to control the window movement. **<SHR-01>, <LLR-01>**

**<Req\_02>** Window lifter is controlled by two switches that indicate the direction of the window movement. **SHR-02**

## Window behavior:

**<Req\_03>** For this purpose the window has to be emulated using a 10 led bar. **<SHR-03>, <LLR-3>**

**<Req\_03>** The color of this led bar has to be RED. **<SHR-03>**

**<Req\_04>** The movement of the window has to be simulated turning on/off the LEDS creating the animation of the window movement. **<LLR-04>**

**<Req\_05>** The time between each transition shall be 400 msec. **<SHR-04>**

Window movement graphical description: **<SHR-03>**

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CLOSED OPEN

**<Req\_06>** There are two possible window movements: **<SHR-05>**

-Up

-Down

<**Req\_07>** Each window movement has to be indicated trough a led color. Depending on movement each led has to be turn on. **<SHR-06>**

|  |  |
| --- | --- |
| Movement | LED indicator color |
| UP | BLUE |
| Down | GREEN |

## Button Behavior:

**<Req\_08>** In order to consider a validate button press; the button has to be pressed at least 10 msec. **<SHR-07>, <LLR-19>**

**<Req\_09>** The module has to be able to detect fail button press. In that case the button press or button combination has to be considered as invalid. **<SHR-08>**

In case than a valid button press is detected the module has to follow the next behavior depending on the button pressed.

|  |  |  |
| --- | --- | --- |
| Button Press | Time | Action |
| UP <Req\_10> | >500 msec | The window shall UP until get totally CLOSED while the button keep press. **<LLR-22>** |
| DOWN <Req\_11> | >500 msec | The window shall DOWN until get totally OPEN while the button keep press. **<LLR-23>** |
| UP <Req\_12> | <500 msec | The window shall UP until get totally CLOSED automatically. (Function one touch) **<LLR-24>** |
| DOWN <Req\_13> | <500 msec | The window shall DOWN until get totally OPEN automatically. (Function one touch) **<LLR-25>** |

## Anti pinch functionality:

**<Req\_14>** Anti pinch is a feature than prevents accidents between window and some human body parts like arms, hands, head…. **<STR-09>**

**<Req\_15>** In this case the signal than indicates to the module the detection of a pinch will be a push button.

**<Req\_16>** Anti pinch button press has to follow the same characteristics than UP and DOWN buttons for valid press.

**<Req\_17>** This signal just can be considered as valid when the movement is UP.

<**<Req\_18>** If this signal is valid then the module has to stop the UP Movement and then DOWN the window until the window get totally OPEN.

**<Req\_19>** After window is totally OPEN the module has to ignore during 5 seconds all button press.

**<Req\_20>** After this time the module has to recognize every button press.