



**ALTENBURGER**

ELECTRONIC GMBH

## **Multi-Switch (MS)**

**Integrated Multi-Sensor-Switch for  
lighting automation**

## **What the multi-switch (MS) can and is**

### **The MS can:**

- Switching illuminations in dependence of daylight and motion
- Deactivating daylight dependence, operating just motion dependent
- Deactivating motion dependence, operating just daylight dependent
- Setting of a delay time range after presence detection between 1 and 60 min.
- Signalizing the delay time 30 secs before its termination
- Setting of the daylight dependent switch ON level between 30 and 300 lux.
- The integrated threshold control automatically computes the daylight dependent ON and OFF switch values under consideration of the necessary hysteresis
- Maximum switch capacity: 10A
- Range of identification for presence detection: 9 m in diameter.  
For the extension of this range up to 6 multi-sensors can be switched in parallel.

### **The multi-switch is:**

#### **An integrated switch for lighting automation**

- A typical payback product. The portion of lighting energy of the total electrical energy consumption in a building comprises 40 – 60 %.  
This applies for all types of buildings, from schools over office buildings to factories.
- The multi-switch is reasonable-priced, simple in installation and robust.

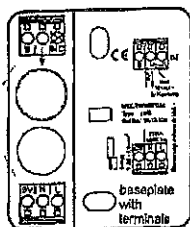
## Functions of the Multi-Switch (MS)

The MS comprises:

A socket with the terminals

Function part to be clicked onto the socket

**MS socket with:**



Terminals

-Power: L/N

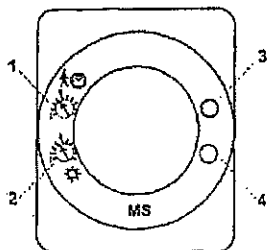
-Switch contact -->

-B/Pushbutton, 0 V

Coupling

Pushbutton

**Function part, front view:**



1=setting of the delay time after the end of motion detection  
(1-60 min)

Left stop = test modus (10 secs.)

2= setting of the brightness

(30 – 300 lux) for the switch function

BRIGHT/STOP= threshold automatic

3=LED (green/orange)

Orange=ON

Green =OFF

Motion sensing:

blinking (orange/green):

Quick blinking orange:

- Switch ON brightness (2) to be reduced

- Checking the assembly / light conditions.

4=light sensor

## Recognition of the brightness – switch ON brightness – threshold automatic

The recognition of the brightness is activated with the dip switch 2. If it is active the switch contact will be closed and the lighting is switched ON as soon as the brightness falls below the set switch ON value. Lighting however switches ON only if also motion is recognized. If the switch OFF value (brightness) permanently is exceeded the switch contact switches OFF as soon as the fixed delay time of 5 min. is exceeded.

**The switch ON brightness** (Switch ON value) can be set at the step potentiometer as follows:

Pos. 1 – 9: 30,60,90,120,150,180,210,240,300 lux

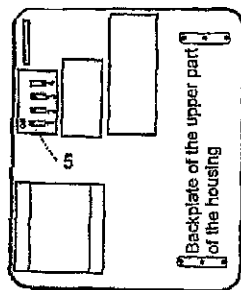
Pos: 10: threshold value automatic (bright/stop)

The switch OFF value is a result of the set potentiometer value, the natural light portion and the hysteresis within the positions 1 to 9. The artificial light portion is computed by the multi-switch. The switch ON value is a potentiometer value.

With the potentiometer setting 10 the threshold value automatic (self-adjustment) is selected. The MS switches the lighting in this position OFF as soon as the highest possible switch OFF value is achieved and automatically switches ON again as soon as the daylight portion falls below the threshold value (under consideration of the hysteresis). The highest possible switch OFF value is identical with the highest possible light value. Intermediate values below the maximum brightness can not be selected in potentiometer position 10.

During the modifications of settings at the potentiometer the switch OFF delay time is reduced from 1 min. to 10 sec. Changings in the potentiometer adjustment should only be made gradually. After each step it should be observed if the selected value is identical with the desired value. If the orange LED blinks the working range is exceeded. In this case a cut off is not possible. The brightness value at the potentiometer has to be reduced and to be adjusted to the lighting conditions. During the adjustments it has to be observed that the lighting conditions at the sensor are not influenced through motions.

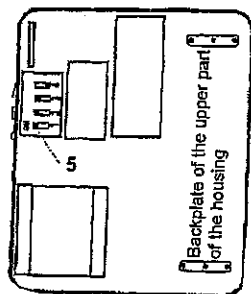
**Back of the function part with:**



5=Dip switch for the functions selection –  
 -recognition of motion  
 -Brightness sensing  
 -semi-automatic/pushbutton (no automatic switch ON). This has to be made manually.

### **Function description dip switch 5**

(please also refer to function table page 7)



For all dip switches the following applies:

Left stop = ON: the respective function is activated (released)

Right stop = OFF: the respective function is deactivated (locked)

The following functions can be activated with the dip switch and can be released or deactivated (locked):

- Pos. 1: motion detection
- Pos. 2: recognition of the brightness
- Pos. 3: signalling of the switch OFF state: after activation with the dip switch 30 sec. before the delay time expires a short ON/OFF switching of the lighting is signalized. This function can only be activated if also the motion detection is activated.
- Pos. 4: semi-automatic: as soon as the set light level is exceeded through the daylight lighting switches OFF. If the set light level is fallen below lighting switches ON again not automatically. It has manually to be switched ON with the pushbutton.

### **Extension of the area of detection:**

If the dip switches 1 and 2 are deactivated the multi-switch is in the mode of extension of the area of detection (slave mode). As switch contact just the relay in the master module works, all connected individual sensors are following. At motion detection the green LED blinks.

The semi-automatic mode however can not be realized with an extension of the range of recognition with several sensors (see page 5).

After it has been switched ON the multi-switch operates in accordance with the released functions. If the brightness sensing is activated lighting automatically switches OFF after 5 min. if the brightness exceeds the maximum light level. If the motion sensing is activated lighting automatically switches OFF if after the set delay time no motion is recognized. With an external pushbutton lighting can be switched ON or OFF manually.

Note: as long as the pushbutton at the input 'B' is pressed motion can not be recognized.

#### **LED indications:**

The bi-coloured LED (orange/green) indicates the following operating states:

- orange
- green

Switch contact is **ON**  
 Switch contact is **OFF**  
 (delay time run down, lighting too bright or pushbutton being switched off)

- orange blinking
- green blinking

Switch contact with **ON** and **motion** is just **recognized**  
 Switch contact is **OFF** and **motion** is just **recognized**  
 (too bright, slave mode or switched OFF with pushbutton)

- off (dark)

Switch contact is **OFF**, **no motion** to be **recognized**  
 (sensor is in the slave mode, motion is not recognized)

- orange quick blinking

Switch contact is **ON**, **range of recognition** is **exceeded** (the switch OFF value is too high. The brightness has to be reduced with the potentiometer, the lighting conditions at the place of recognition have to be checked and if necessary to be adjusted!).

Table of functioning: DIP switch – functions- LED-display – condition after power ON (return of supply voltage)

Configuration with the DIP switches 1 to 4:				Functions:						
Dip-switch 1 Motion recognition	Dip-switch 2 Brightness recognition	Dip-switch 3 Switch OFF signaling	Dip-switch 4 Semi- automatic	Motion dependence (switching)	Brightness dependence (switching)	Switch OFF Signaling (switching)	External pushbutton (switching)	LED display (signaling)	Switch contact after power ON (after supply ON)	specification
Off	Off	X	X	-	-	-	-	Just motion Others OFF	Off (always off)	Slave mode (extension)
Off	On	X	Off	-	On/off	-	-	ON/OFF Overstepping	ON	Brightness dependent switching
On	Off	off	off	On/off	-	-	-	ON/OFF Motion	ON	Motion-dependent switching
On	Off	on	off	On/off	-	yes	-	ON/OFF Motion	ON	Motion dependent switching with switch off signaling
On	On	off	off	On/off	On/off	-	-	ON/OFF Motion Overstepping	ON	Brightness and motion dependent switching
On	On	on	off	On/off	On/off	yes	-	ON/OFF Motion Overstepping	ON	Brightness and motion dependent switching with switch off signaling
Off	On	X	on	-	Just off	-	On/off	ON/OFF Overstepping	OFF	Brightness dependent switching (OFF) with semi-automatic
On	Off	off	on	Just off	-	-	On/off	ON/OFF Motion	OFF	Motion dependent switching (OFF) with semi-automatic
On	Off	on	on	Just off	-	yes	On/off	ON/OFF Motion overstepping	OFF	Motion dependent switching (OFF) with switch off signaling and semi-automatic
On	On	off	on	Just off	Just off	-	On/off	ON/OFF Motion overstepping	OFF	Brightness and motion dependent switching (OFF) with semi-automatic
On	On	on	on	Just off	Just off	yes	On/off	ON/OFF Motion overstepping	OFF	Brightness and motion dependent switching with switch off signaling and semi-automatic

X=any (ON/OFF, normally off)

- = no function (no)

### Design / Mounting / Wiring

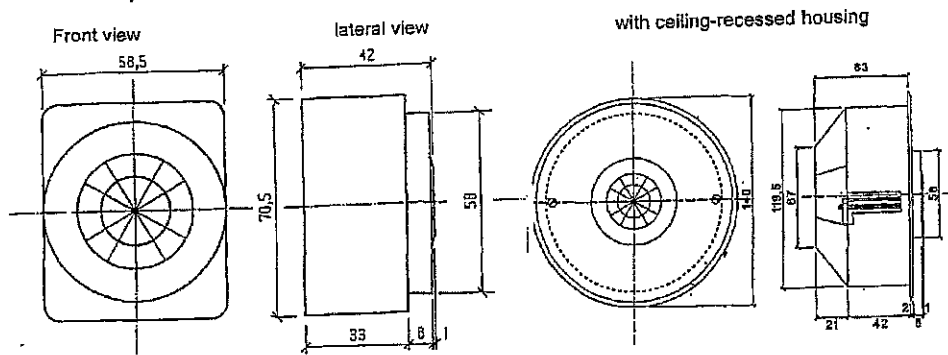
The multi-switch offers 3 mounting modes:

#### **Ceiling-mounted assembly:**

The baseplate is wired and fixed to the ceiling. The function part is just clipped onto the baseplate.

#### **Ceiling-recessed assembly:**

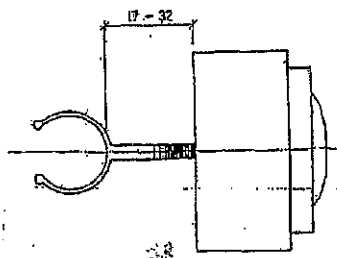
The MS is wired with the terminals at the baseplate and both are mounted to a ceiling-recessed housing and finally covered with the plate.



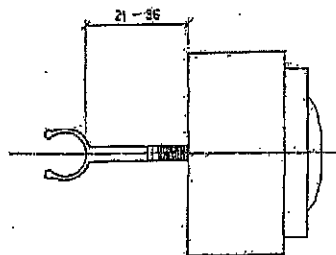
#### **Fixation at fluorescent lamp tubes with clips**

With the attached clips the multi-switch can be fitted to min. 60 mm lamp rasters or they can be spring-clipped to lamp tubes (T8/T5).

with clip for 26 mm  
fluorescent lamp tubes



with clip for 16 mm  
fluorescent lamp tubes

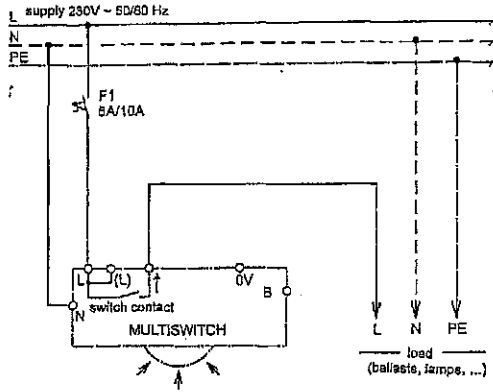


Please observe that the minimum distance between clip and lamp socket is 80 mm.

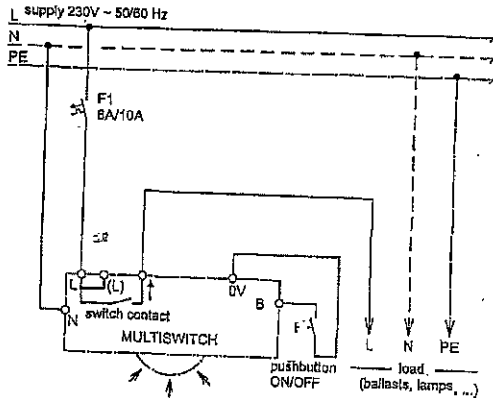


## Wiring diagrams

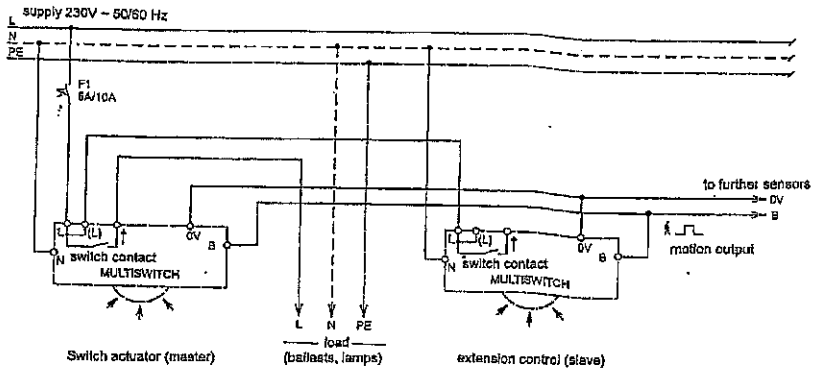
### 1. Wiring of an individual multi-switch



### 2. Multi-switch as individual module with pushbutton operating in the semi-automatic mode



### 3. Multi-Switch with the extension of presence detection through master / slave controls



### 4. Multi-Switch as individual control for the daylight dependent switching with manual ON/OFF switch

