



**ALTENBURGER**

ELECTRONIC GMBH

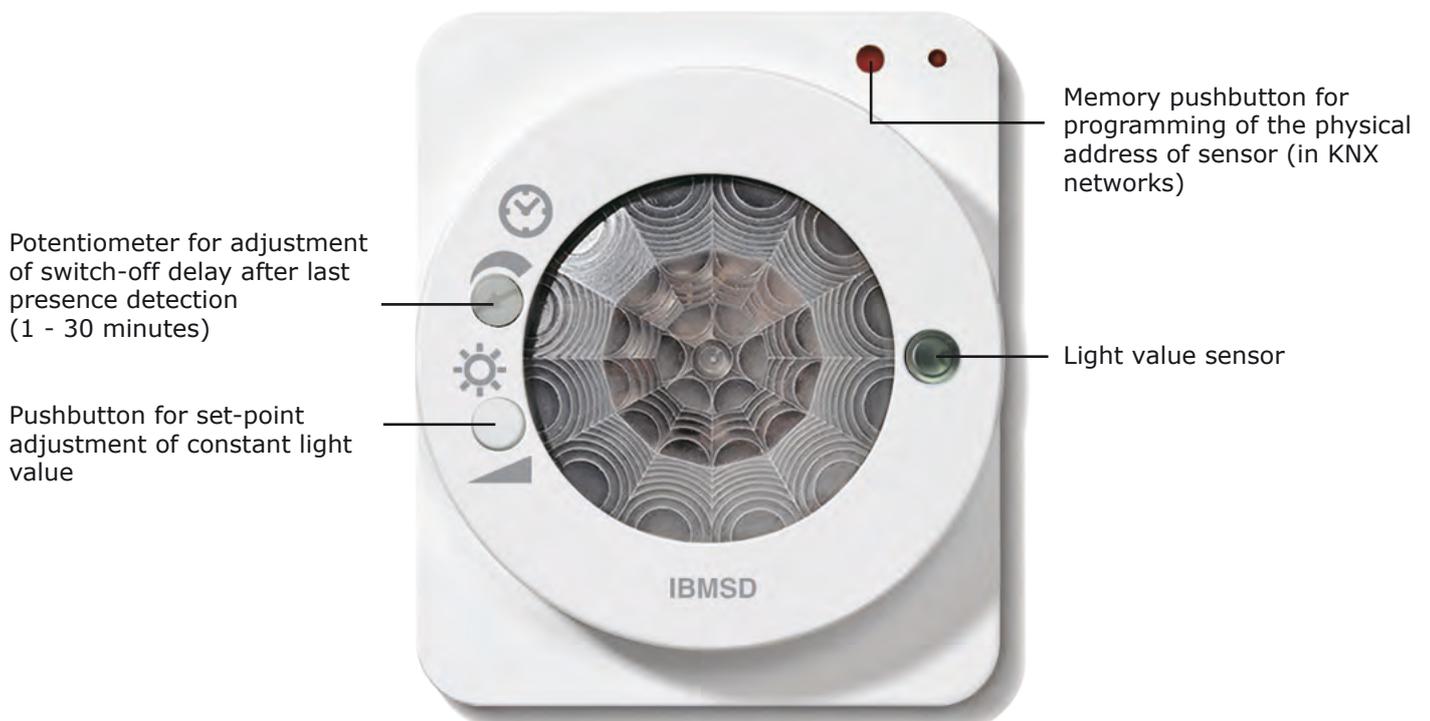
# ALTENBURGER

## Multi-Sensor-Dimmer (MSD)

Presence and daylight dependent constant light controls for building automation

Suitable for LED lamps, incandescent lamps, high-voltage and low-voltage halogen lamps with electronic or wire-wound transformers, each in connection with ALTENBURGER load dimmers ALTOQUICK (DIN-rail mounting, up to 2 kW) or TH (back-plate mounting, pluggable design, up to 8 kW).

Furthermore for transformers and electronic ballasts with 1 - 10 volt interface and for DALI and KNX networks.



# Product survey of ALTENBURGER Multi-Sensor-Dimmers for building automation

**ALTENBURGER Multi-Sensor-Dimmers ensure a maximum of safety, lighting comfort, energy saving and enhancement of lamp life cycle. They are suitable for all kinds of lamps in combination with electronic ballasts with 1 - 10 volt interface, KNX networks, DALI ballasts in connection with ALTENBURGER DALI Dim-Converter-Controls, type DC NV, as well as with ALTENBURGER load dimmers.**

**For non dimmable illuminations Multi-Sensor-Switches of type MS or MS-LRS are suitable.**

**ALTENBURGER Multi-Sensor-Dimmers are characterized by the following properties:**

- 0 - 10/1 - 10 volt output for the control of ALTENBURGER load dimmers, LEDs, low-voltage and high-voltage halogen lamps, incandescent lamps, furthermore for the control of electronic ballasts with 1 - 10 volt interface, DALI ballasts and transformers with 1 - 10 volt interface.
- Pushbutton control with the functions: on/off, brighter/darker and set-point adjustment.
- Daylight dependent lighting control (constant light control).
- Powerful switching output with up to 5 A for MSD-types and up to 10 A for MS-type.
- Possibility for deactivation of presence detection.
- All Multi-Sensor-Dimmers and Switches can be combined with ALTENBURGER load dimmers.
- The Multi-Sensor-Dimmers and Switches have a mounting plate with terminals to be wired in advance. The function part is plugged onto the mounting plate before commissioning (see page 51).



## **MSD Multi-Sensor-Dimmer**

Constant light controller with presence detection and set-point adjustment at the device or by an external pushbutton.

### **Product features:**

- Detection area: 360° with 7 m in diameter at a mounting height of 2.5 - 3 m, detection cone 100°.
- The switching function can be also applied for the control of non-dimmable illuminations or for other devices (i.e. fans).
- Presence detection can be deactivated.
- Connection of an external pushbutton control for switching and dimming with the functions: on/off, brighter/darker and set-point adjustment.

**see page 6**



## **MSD-T Multi-Sensor-Dimmer with external set-point adjustment and manual pushbutton control**

Constant light controller with presence detection and external pushbutton control.

### **Product features:**

- Adjustment of constant light value by an external pushbutton. The external pushbutton also performs the lighting control functions: on/off, brighter/darker and set-point adjustment.
- Adjustment of switch-off delay after last presence detection directly at the device (1 - 30 minutes).
- Keeps its set-points even after switch-off and will regain it after restart by anew presence detection.
- Automatic presence detection can be deactivated.

**see page 11**

All figures show the faces of the sensors with the respective adjustment possibilities for the different functions. The faces of veiling mounted and recessed sensor types are identical (see page 33).



### **MSL** Multi-Sensor-Dimmer with preselectable maximum/minimum limitation and switching function

The MSL works daylight and presence dependent. It controls the illumination from a preselectable upper light value (with presence detection) to a lower light level (without presence detection). After renewed presence detection the MSL returns to upper light level. Alternatively the MSL can be applied for presence dependent switching of the illumination or other devices (e.g. fans).

#### **Product features:**

- The maximum-pushbutton at the MSL adjusts the upper light value, which shall be approached if presence is detected.
- The minimum-button adjusts the lower light level, which shall not be exceeded if no presence is detected.
- Via an external switch, presence detection can be deactivated, so that illumination, even if no presence is detected, will not go to the minimum.

see page 15



### **MS-LRS** Multi-Sensor-Light Value Control Switch

For daylight and presence dependent switching.

#### **Product features:**

- Easy retrofitting of existing illuminations without any further components.
- The MS-LRS works completely automatic.
- The adjustments of daylight dependent thresholds for switching on/off are directly at the MS-LRS or can be set via an external potentiometer.
- The MS-LRS can be switched on/off via an external pushbutton.

see page 20



### **MS** Multi-Switch

For daylight and presence dependent switching.

#### **Product features:**

- Presence and daylight dependent switching of illumination.
- The MS can operate exclusively in presence dependent mode.
- The MS can operate exclusively in daylight dependent mode.
- The switch-off delay after presence detection can be adjusted from 1 - 60 minutes.
- The end of switch-off delay will be indicated 30 seconds beforehand by integrated LED.
- With the integrated Switching-Threshold-Automatic the MS determines by itself the daylight dependent switch-on/off values considering the applied hysteresis.
- Switching capacity of up to 10 A,
- The detection area of the MS is 9 m in diameter with an angle of 360° at mounting height of 2.5 - 3.0 meter. For extension of coverage up to six MS can be switched in parallel.

see page 24



## IR-MSD Multi-Sensor-Dimmer with infrared (IR)-remote control and integrated scenecontroller

The IR-MSD is a constant light control with presence detection, which allows programming and operation directly at the IR-MSD or via an infrared (IR) hand-held remote controller with integrated scene selection.

### Product features:

Basic features as with the MSD adjustable constant light levels, switch-off delay, automatic and semi-automatic mode with activation and deactivation of presence detection directly at the IR-MSD or by external pushbutton.

see page 29



## IR-TM Infrared (IR) Handheld remote controller

### Product features:

- Programming and selection of three static and three dynamic lighting scenes with the infrared (IR) handheld remote controller.
- Manual lighting control of each circuit with programmer and control push-buttons with the functions: brighter/darker and on/off.
- Programming of three circuits with common constant light level and if desired their light levels by individual control (with the functions for each circuit: brighter/darker and on/off) by one or more commercial pushbuttons.
- For extension of the detection area up to 6 IR-MSD for each lighting circuit can operate in parallel.

see page 30



## IBMSD Multi-Sensor-Dimmer for KNX networks

The IB MSD serves as a constant light control with presence detection and programming of set-points directly at the IB MSD or by an external KNX operator unit.

### Product features:

- Via a voltage free contact and the 1 - 10 volt interface, dimmable electronic ballasts, transformers or load dimmers can be presence and daylight dependent dimmed and switched.

### KNX projects comprise the following features:

- Switching on/off of illumination.
- Dimming of illumination.
- Adjusting and saving of set-points for constant light control.
- Activation and deactivation of constant light control,
- Activation and deactivation of presence dependent control mode,
- Additional switching contact (on/off) for HVAC,
- Additional temporal programmable presence dependent switch contact (on/off) for external devices (e.g. HVAC).

see page 37



4-Tasten-EIB/KNX- Programmier-Tableau mit manueller Bedienung

## IBMSC NV KNX Multi-Sensor-Controller

KNX Multi-Sensor-Controller with connection possibility of up to 6 sensors for presence detection and constant light control.

Suitable sensors see page 48.

see page 42





**AQAD-S Constant-Light-Controller**

Daylight dependent control with automatic switching on and off of electronic ballasts and transformers with 1 - 10 volt interface as well as of load dimmers with 0 - 10 volt interface.

**Product features:**

The AQAD-S directly controls up to 100 electronic ballasts or electronic transformers with 1 - 10 volt interface or three **ALTENBURGER** load dimmers with 0 - 10 volt interface of a total power consumption of 8 kW. The switching output has a capacity of 10 A.

see page 42



**IB-LWS3 Daylight dependent KNX 3-Channle-Light-Value-Control-Switch**

see page 43



**LWS3 Conventional daylight dependent 3-Channle-Light-Value-Control-Switch**

**LWS1 Conventional daylight dependent 1-Channle-Light-Value-Control-Switch**

see page 43



**DC NV DALI Dim Converter Control**

- Converter 1 - 10 volt/0 - 10 volt, analog to DALI.
- 1-switch-dim function.
- 2-switch-dim function.
- With Multi-Sensor control.

see page 44



**MK Mini-Constanter**

Daylight dependent compact constant light controller for installation into lighting fixtures with fluorescent lamps or low-voltage halogen lamps with dimmable electronic ballasts or electronic transformers with 1 - 10 volt interface.

see page 47



**KMSS Multi-Sensor-Dimmer for installation into lighting fixtures including Multi-Sensors**

The KMSS with Multi-Sensor operates in dependence of daylight and presence detection.

see page 47

# MSD

## Multi-Sensor-Dimmer

**Type:** MSD  
**Order-No.:** 50.13.500

Constant light controller with presence detection and set-point adjustment at the device.

The MSD has a passive control output of 50 mA for the control up to 50 electronic ballasts or transformers with 1-10 volt interface (the main power supply is provided by the ballasts or transformers) or 3 mA for up to three AL-TENBURGER Load-Dimmers (independent of output power). If electronic ballasts, transformers or load-dimmer should be controlled together the control output can be loaded with up to 50 mA passive or 3 mA active.

The switch output could be charged with up to 5 A resistive loads. If higher switching capacities are required relays have to be applied.

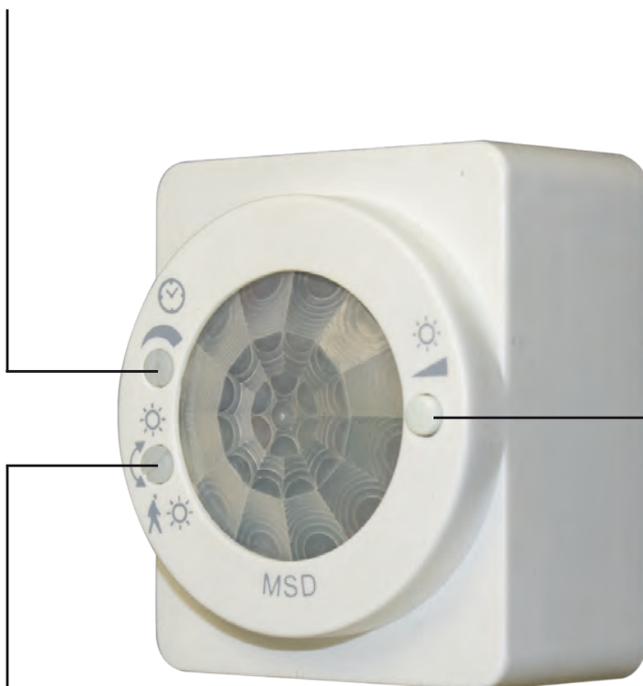
The MSD is a constant light controller with presence detection in one. Both in constant light control and in presence detection mode, the MSD provides for a smooth lighting control. When entering the room the illumination will be dimmed up slidingly to the set-point. If no longer presence is recognized lighting dims to approx. 1 % after a presettable day time of 1 - 30 minutes and finally off after approx. 10 minutes.

### Characteristics of the MSD

With the set-point pushbutton at the MSD or an external pushbutton the desired brightness, which shall be kept constant, can be set.

If ambient light exceeds the constant light value, illumination will be switched off after an adjustable switch-off time. Once ambient light falls below the constant light value, illumination will be re-switched and dimmed accordingly to the set-point.

Adjustable switch-off delay for presence detection (1 - 30 minutes).



Surface mounting design, dimensions (WxHxD): 58.5 x 70.5 x 41 mm (see page 50).

Presence detection: activation and deactivation of presence detection or selection of automatic and semi-automatic mode.

Ceiling recessed design, flat configuration, dimensions of square shape: 95 x 95 mm (illustration without mounting crawls).

**Type:** MSD/Q  
**Order-No.:** 50.13.500Q



Set-point pushbutton for adjustment of the desired constant light level (brightness).

Ceiling recessed design, flat configuration, dimensions of round shape: Ø 95 mm (illustration without mounting crawls).

**Typ:** MSD/R  
**Order-No.:** 50.13.500R



## Presence detection

### Automatic mode:

If presence is no longer detected, the MSD dims the illumination after an adjustable delay slowly down and switches it off after 10 minutes. If detection area is re-entered, illumination switches on again, provided the daylight level falls below the set light level to be kept constant.

### Semi-automatic mode:

Like the automatic mode, however when the illumination was switched off because no presence was detected, it will not re-switch on after anew presence is recognized. The illumination has to be switched on again at an external pushbutton.

### Deactivation of presence detection:

In this mode the MSD works only as a constant light control. The illumination will be kept on even if no presence is detected, provided the ambient light did not exceed the set threshold.

## Selection of functions

Three options can be selected with a switch on the backside of the MSD:

### Functional Option 1:

Possibility of a selection between 2 modes of operation: constant light control and presence detection. Additionally an external switch can be connected to the MSD to activate or deactivate presence detection.

### Functional Option 2:

Constant light control in automatic mode with the device sided possibility to change between presence detection and non-presence detection mode. Additionally a pushbutton interface for lighting control can be connected to the MSD. Functions are: brighter/darker, on/off, adjustment of the set-point for the light level to be kept constant. The external control functions brighter/darker and adjustment of set-point can be selectively turned on and off with an additional dip-switch at the MSD.

### Functional Option 3:

Constant light control in semi-automatic mode with the possibility to change between presence detection and non-presence detection mode.

Constant light control with the selection between presence detection in the automatic and semi automatic mode. Additionally a setting of a light level to be kept constant and a manual control (brighter/darker, on/off) can be performed with external pushbutton.

## Range of recognition and its extension

The presence detection has a detection angle of 360° and a cone angle of approximately 100°. The MSD covers an area of approximately 7 meter in diameter at a ceiling height of 2.5 - 3.0 meter.

If larger areas are to be monitored, up to 6 MSD can be combined in parallel. In this case the presence detection controls the total coverage as soon as one MSD recognize presences.

## Design, mounting, connection

Mounting plate with terminals and functions part are strictly separated. While the terminal plate is wired in advance and mounted to the ceiling the function part is plugged onto the mounting plate only before commissioning.

The MSD in lamp clip-on design can be mounted into louver luminaries with at least 60 mm louver distance. It can be fitted to fluorescent tubes with 16 mm diameter (T5 lamps), as well as to fluorescent tubes with 26 mm diameter (T8 lamps). With the cable it can be connected directly to a lamp group.

## Installation

The MSD should be mounted such that its lens points to the person to be monitored (e.g. workplace or desk). It should be fixed in the near of the controlled lighting group and should not be influenced by other light sources like the exposure of incoming daylight (e.g. if mounted in neighborhood of windows), ambient light (e.g. others controlled or not controlled lighting groups in the neighborhood of the device) or should not be affected by other sensor controls in range of sensor. The ambient light should be detected indirectly. Furthermore it has to be taken care that artificial has sufficient access to the sensors. The MSD may not be mounted in the shadow of artificial light (e.g. mounting over suspended lamps). The MSD should be mounted if possible so that the control pushbuttons for set-point adjustment are at the side of the window.

Thus the sensor with its lens is directed into the room. No person should stand directly under the sensor in the moment of set point adjustment, because the measured brightness value can be falsified.

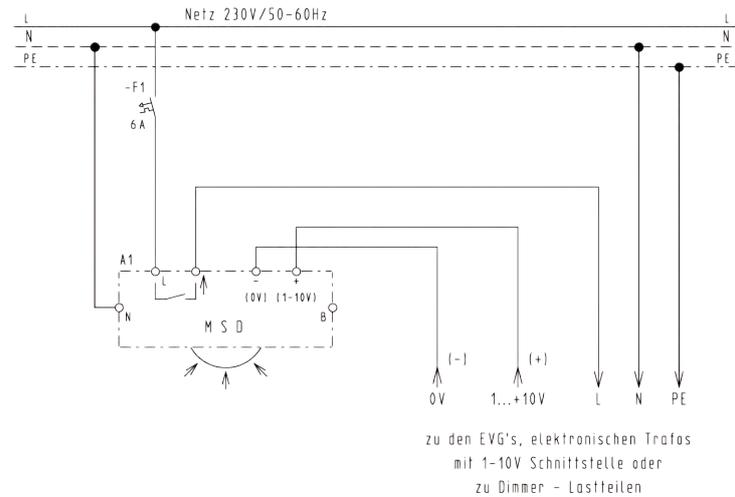
The lens of the MSD is designed for a ceiling height of between 2.5 - 3.0 m. The sensitivity of the presence detection depends on the mounting height and will decrease with increasing ceiling height.

Mounting in an area with draft (e.g. in front of ventilation) or thermal radiant sources (e.g. laser printers, fax machines) has to be avoided.

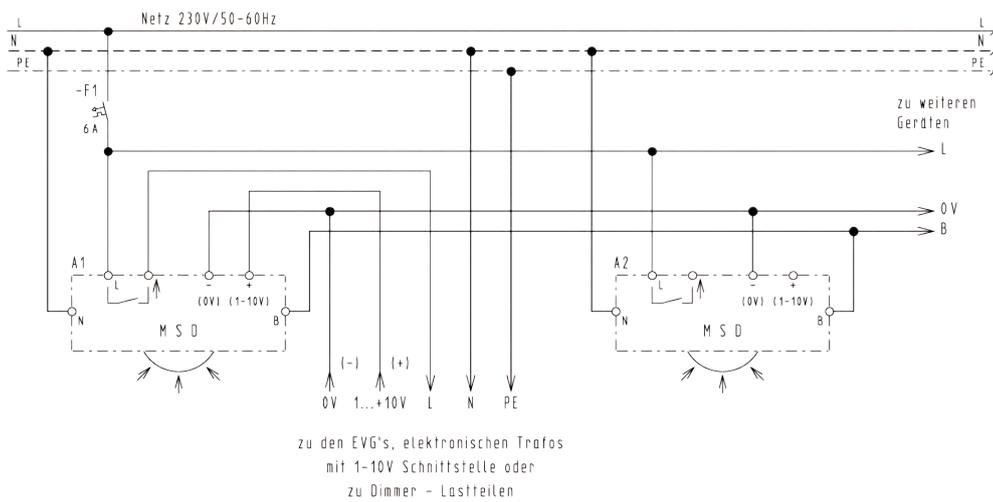
Technical data	
device description, order-no.	Multi-Sensor-Dimmer, type MSD, order-no. 50.13.500 Multi-Sensor-Dimmer (with 1.5 m UV-resistant cable), type MSD/k, order-no. 50.13.501
operating voltage	230 volt AC, 50/60 Hz (DC not allowed, may destroy the device)
fuse protection	extern 5 A
power input	approx. 2 W
operating temperature	0 - 50°C
adjustable light value	approx. 15 - 1500 Lx (directly at the device)
detection angle/ cone angle,	360°/100°
mounting height	2.5 to 3 m
supply and load connection	L, N, activated L (↑)
control terminals	+/- (0 - 10 volt of ballast or transformer) B (parallel in of presence detector) base insulation compliance with IEC 664 (10/92), no protective low voltage
terminal assignment	see wiring diagram <b>wrong connection can lead to possible functional failure or destruction</b>
load capacity output	5 A, resistive loads      30 pcs.* single electronic ballasts, 14/18 W, 20 pcs.* twin electronic ballast, 14/18 W, 30 pcs.* single electronic ballasts, 28/36 W, 20 pcs.* twin electronic ballast, 28,36 W, 20 pcs.* single electronic ballasts, 35/58 W 10 pcs.* twin electronic ballast, 35/58 W
fade time of control output	approx. 10 - 30 seconds (depends on the control difference, approx. 30 seconds from maximum to minimum)
final switch-off delay	10 minutes
initial switch-off delay	adjustable from 1 - 30 minutes
Master/slave-mode	for the extension of detection area, to one master MSD up to 5 slave MSD can be assigned
protection class, protection type	protective insulation II, IP20
max. length of cable	100 meter, control cable, 0.5 mm <sup>2</sup> , mains supply cable 1.5 mm <sup>2</sup>
terminal block	terminal screws for solid wire or litz wire cables, 0.3 - 1.5 mm <sup>2</sup> or with pre-assembled UV-resistant 1.5 mm <sup>2</sup> cable
construction	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louver lamp fixtures
degree of contamination	2 (dry non-conductive, in compliance with IEC 664 (10/92))
dimensions, weight	WxHxD = 58.5 x 70.5 x 42 mm, approx. 150 g
conformation	CE
* Anzahl der anschließbaren EVG bei 15 m langer Zuleitung mit 1,5 mm <sup>2</sup> vom Verteiler zum Gerät und weiteren 20 m bis zur Mitte des Verbraucherkreises (Impedanz ca. 800 mΩ). Bei größerem Leitungsquerschnitt bzw. kürzerer Leitung reduziert sich die zulässige Last (z.B. bei einer Impedanz von 400 mΩ um 20 %).	

## Wiring diagrams

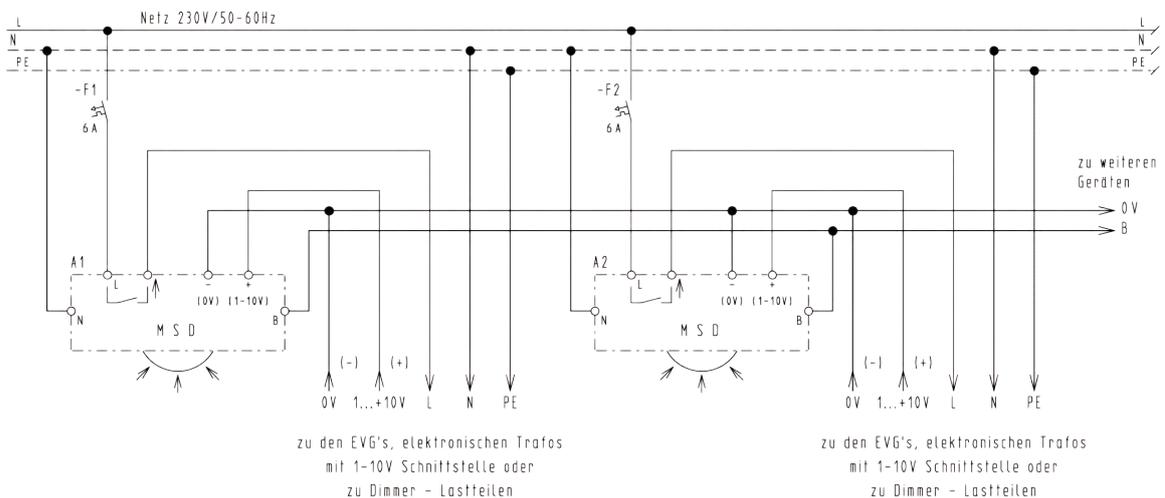
### MSD as an individual device for controlling and switching of one area.



### One MSD for controlling and switching together with additional devices for presence detection of large areas.

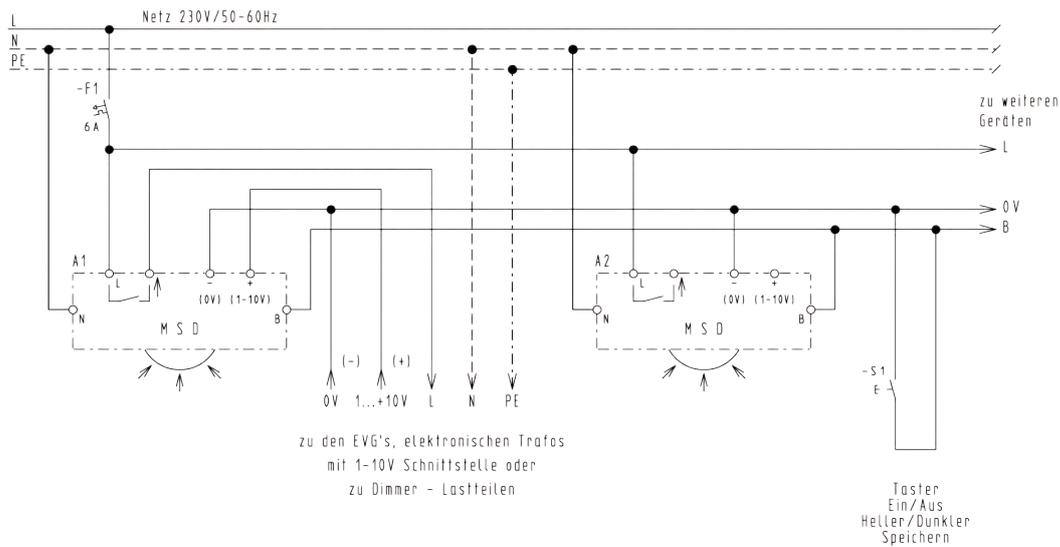


### Several MSD with common presence detection, the daylight control applies out for each area separately.

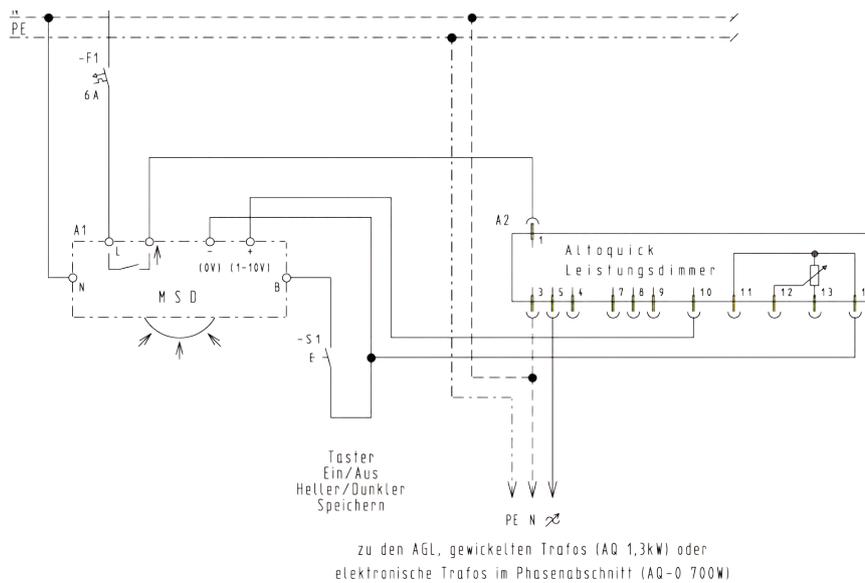


## Wiring diagrams

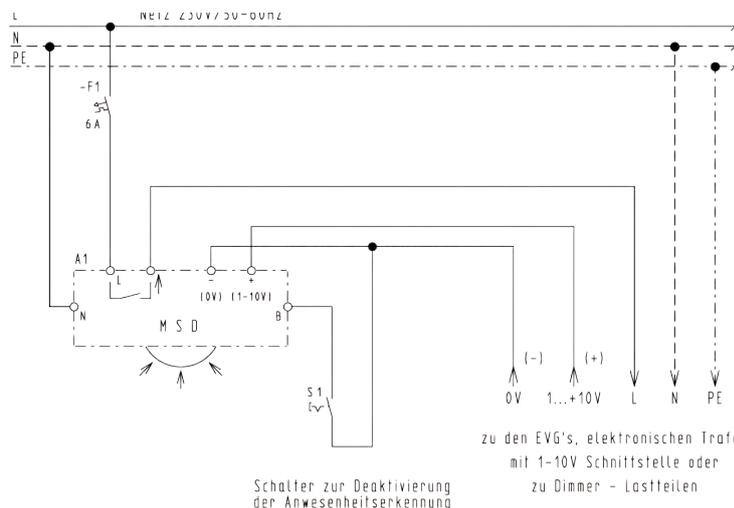
**One MSD with external pushbutton for controlling and switching of large areas as well as with additional devices for extended presence detection.**



**MSD with external pushbutton for controlling and switching of one area in combination with ALTENBURGER Load-dimmers.**



**MSD as single device with external switch for activation and deactivation of presence detection.**



Error and technical alternations reserved.

## MSD-T

**Type:** MSD-T  
**Order-No.:** 50.13.520

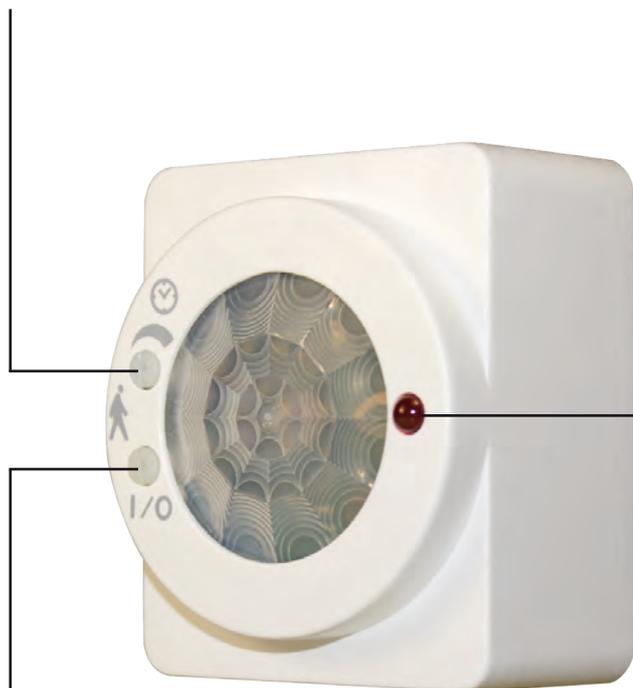
## Multi-Sensor-Dimmer

Constant light controller with presence detection. Setting of the constant light value and manual lighting control with an external pushbutton.

The MSD-T is an easy-handable and easy programmable Multi-Sensor-Dimmer.

It has the same functional as the Multi-Sensor-Dimmer MSD. The programming and adjustment of the constant light value and the manual dimming function (brighter/darker, on/off) are carried out with one or more external pushbutton.

Adjustable switch-off delay for presence detection (1 - 30 minutes).



LED (flashes during storing).

Surface mounting design, dimensions (WxHxD): 58.5 x 70.5 x 41 mm (see page 50).

Presence detection: activate or deactivate semi automatic mode (see page 12).

Pushbutton for setting of the light level to be kept constant and for manual lighting control with the functions: on/off, brighter/darker.



Ceiling recessed design, square shape, 95 x 95 mm.



**Type:** MSD-T/Q  
**Order-No.:** 50.13.520Q

Ceiling recessed design, round shape, Ø 95 mm.



**Type:** MSD-T/R  
**Order-No.:** 50.13.520R

## The pushbutton has following functions:

short press of key	on
continuously pressing of key	illumination is dimmed brighter/darker.
stop press of key	illumination keeps the current light value
double press of key	The chosen light value will be stored as new constant light level.
short press of key	off
repeated short press of key	Switch-on of illumination, the illumination will be dimmed at the last chosen light value and will be in manual mode (brighter/darker, on/off).  By double-pressing of key the MSD-T returns to automatic mode (constant light control).

## The MSD-T controls:

1. Fluorescent lamps, compact fluorescent lamps and low-voltage halogen lamps with electronic ballasts or transformers with 1 - 10 volt interface. The interface load is max. 100 mA and allows the control of more than 100 electronic ballasts.
2. Incandescent lamps, high-voltage halogen lamps, low-voltage halogen lamps with wire-wound transformers in combination with leading-edge controlled dimmers and low-voltage halogen lamps with electronic ballasts in combination with lagging-edge controlled dimmers. The interface provides 3 mA so that up to three ALTENBURGER Load-Dimmers of any load may be operated in leading-edge or lagging-edge control mode. Depending of the connected power, an additional relay or contractor may be used for switching on/off.
3. LEDs in connection with suitable electronic ballasts or transformers and high power LEDs of 230 V apply

## Characteristics

### Automatic operation)

- Illumination switches on when presence is detected and it is dimmed at the last stored constant light level.
- The MSD-T works in constant light control mode. In case of sufficient daylight, the device dims the illumination to a minimum value and switches it off after set delay has expired. With decreasing daylight, illumination will be immediately turned on again if presence is detected.
- If no presence is detected, the MSD-T slowly dims down the illumination within an adjustable period of 1 - 30 minutes and switches it off after an adjustable delay of 10 minutes.
- If the MSD-T will be dimmed brighter or darker and no new constant light value was stored (double-press of pushbutton), the device changes to the manual control mode. After switching on and off (manually or by presence detection) the MSD-T returns to the constant light control mode, starting with the stored constant light value.

### Operation in the semi-automatic mode

- With a switch at the backside of the MSD-T a semi-automatic mode can be selected.
- In semi-automatic mode, the illumination is not switched on by presence detection. It can only be switched on manually via pushbutton. Other procedures are carried out automatically.
- If the illumination has been switched off due to sufficient daylight, it is however, switched on automatically again if presence is detected or daylight levels decrease

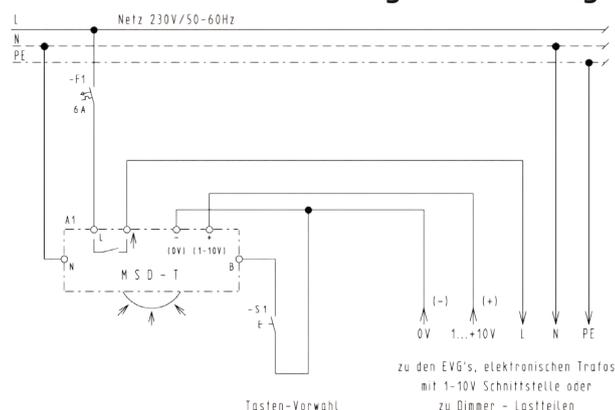
### Power failure or interruption of supply through a pushbutton

- After power on lighting goes into the previously adjusted constant light level.

Technical data	
device description, order-no.	Multi-Sensor-Dimmer, type MSD-T, order-no. 50.13.520 Multi-Sensor-Dimmer, type MSD-T/k, order-no. 50.13.521 (with 1.5 m UV-resistant cable)
operating voltage	230 volt AC, 50/60 Hz (DC not allowed, may destroy the device)
fuse protection	extern 6 A
power input	approx. 1 W
operating temperature	0 - 50 °C
adjustable light value	approx. 15 - 1500 Lx (at the device)
detection angle/cone angle	360°/100°
mounting height	2.5 - 3 m
supply and load connection	L, N, activated L (↑)
control terminals	+/- (0 - 10 volt of ballast or transformer), B (parallel connection of presence detector), base insulation compliance with IEC 664 (10/92), no protective low voltage T (pushbutton for set-point adjustment, dimming brighter/darker and switching on/off) as well as for connection to presence detectors, base insulation compliance with IEC 664 (10/92), no protective low voltage
terminal assignment	see wiring diagram <b>wrong connection can lead to possible functional failure or destruction</b>
load capacity control output:	100 mA (for approx. 100 electronic ballasts or transformers, see manufacturers specifications) 3 mA active for connection of up to 3 ALTENBURGER Load-Dimmer of any load
load capacity output	5 A, resistive loads 30 pcs.* single electronic ballasts, 14/18 W, 20 pcs.* twin electronic ballast, 14/18 W. 30 pcs.* single electronic ballasts, 28/36 W, 20 pcs.* twin electronic ballast, 28,36 W. 20 pcs.* single electronic ballasts, 35/58 W, 10 pcs.* twin electronic ballast, 35/58 W
fade time of control output	approx. 10 - 30 seconds (depends on the control difference, approx. 30 seconds from maximum to minimum)
final switch-off delay	10 minutes
initial switch-off delay	adjustable from 5 - 30 minutes
Master/slave-mode	for the extension of detection area, up to 5 slave MSDs can be assigned to one master MSD
protection class, protection type	protective insulation II, IP20
max. length of cable	100 meter, control cable, 0.5 mm <sup>2</sup> , mains supply cable 1.5 mm <sup>2</sup>
terminal blocks	terminal screws for solid wire or litz wire cables, 0.3 - 1.5 mm <sup>2</sup> or with pre-assembled UV-resistant 1.5 mm <sup>2</sup> cable
construction	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louvers lamp fixtures
degree of contamination	2 (dry non-conductive, in compliance with IEC 664, 10/92)
dimensions, weight	(WxHxD) = 58.5 x 70.5 x 42 mm, approx. 150 g
conformation	CE, EMC fulfilled in compliance with EN 61547 (04/96), low voltage in compliance with EN 60669-2-1 (02/97)

\* Number of electronic ballasts to be connected in case of a 1.5 mm<sup>2</sup> cable with a length of 15 m from distribution board to the device and a further 20 m to the center of the lighting circuits (impedance approx. 800 mΩ). If the cable section is larger or if the cable is shorter, the permissible load is reduced (e.g. in case of impedance off 400 mΩ by 20 %).

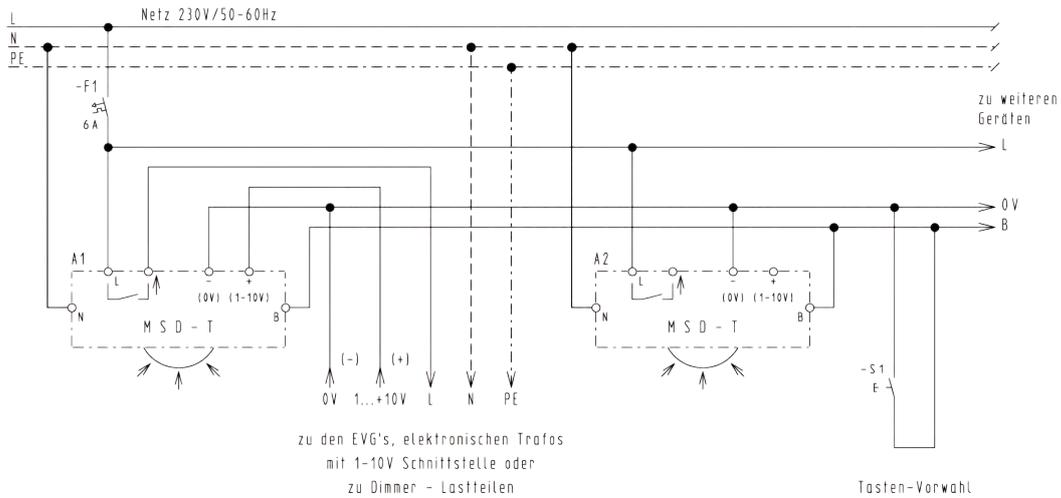
### Wiring diagram: MSD-T as individual device for controlling and switching of one area



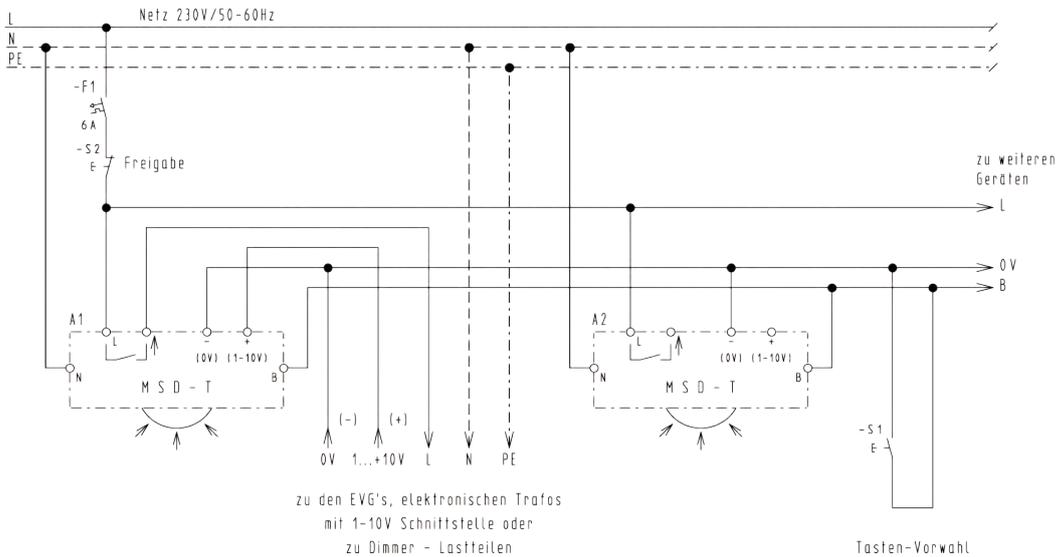
Error and technical alternations reserved.

## Wiring diagrams MSD-T

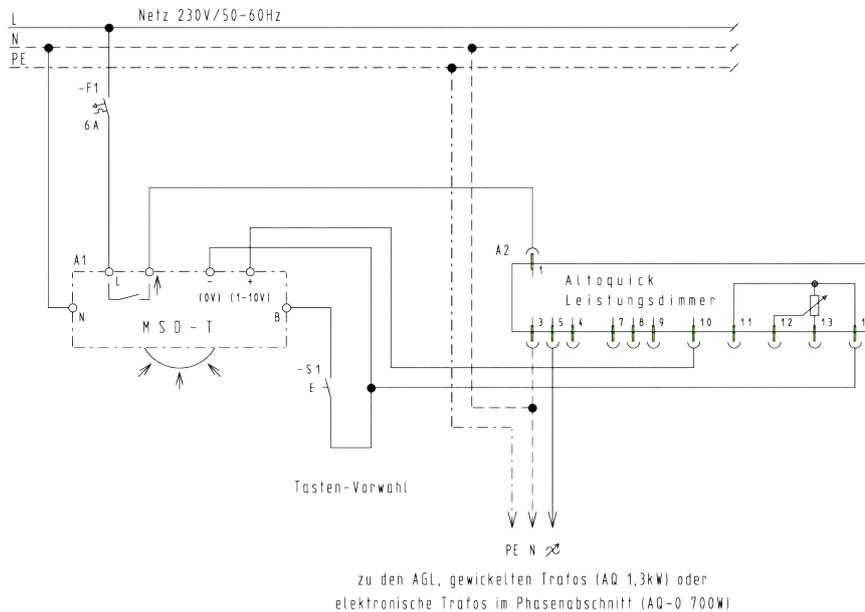
### MSD-T for controlling and switching of larger areas with additional devices for presence detection and set-point adjustment with pushbutton.



### Several MSD-T with common presence detection, and constant light control and switching.



### MSD-T as individual device for controlling and switching of one area in combination with load dimmers.



# MSL

## Multi-Sensor-Dimmer

**Type:** MSL  
**Order-No.:** 50.13.510

with adjustable minimum/maximum light level limitation and extended switching and dimming functions (options)

The MSL is a daylight and presence dependent Multi-Sensor, at which minimum and maximum constant light values, which may not be exceeded or fallen below, can be adjusted.

The device primarily serves for safety in corridors, stairways, restrooms, logistic and production areas and in traffic zones

In hospitals and nursing homes, it makes work easier and reduces the risk of accidents.

In chill-out rooms, i.e. nursery schools/kinder gardens, it prevents anxiety and unrest if there is little or too much light.

The protection of private areas is a priority task. Acquisition costs and energy consumption are low, effectivity is high.

Adjustment button for upper light level (maximum) with presence detection (15 - 1500 Lx).



Surface mounting design, dimensions (WxHxD): 58.5 x 70.5 x 41 mm (see page 50).

Adjustment button for lower light level (minimum) without presence detection (5 - 1500 Lx).

Ceiling recessed mounting design, flat configuration, dimensions of square shape: 95 x 95 mm (illustration without mounting crawls)



**Type:** MSL/Q  
**Order-No.:** 50.13.510Q

Switch-off delay after presence detection (1 - 30 minutes).

Ceiling recessed mounting design, flat configuration, dimensions of round shape: Ø 95 mm (illustration without mounting crawls)



**Type:** MSL/R  
**Order-No.:** 50.13.510R

The MSL has a detection area of 360° with a cone angle of 100°. It covers an area of approximately 7 meter in diameter at a mounting height of 2.5 - 3 m. For the extension of detection area up to 6 MSL can be connected in parallel mode.

## Functionality of the MSL

With a selector switch at the backside of the MSL different functions can be selected. Factory-made the MSL is adjusted to mode '0'.

### Light-Level-Reduction:

The light-level-reduction dims at presence detection to an upper light level. If no presence is detected, illumination will be reduced to an adjustable lower light level after expiry of delay time. After renewed presence detection illumination will be increased to upper light level.



- 0** Optional deactivation of presence detection at an external switch.



- 1** Optional operation with an external pushbutton interface with the functions: brighter/darker, on/off.

### Presence dependent lighting control:

The presence dependent lighting control dims at presence detection to an upper light level. If no presence is detected, illumination will be reduced after expiry of a delay time and will switch off after 10 minutes. After renewed presence detection illumination will be switch on at the previously set light value.



- 2** Optional deactivation of presence detection at an external switch.



- 3** Optional operation with an external pushbutton interface with the functions: brighter/darker, on/off.

### Daylight dependent light-level-reduction:

The daylight dependent control goes at presence detection to the adjusted upper light level. If no presence is detected, illumination will be reduced after expiry of an adjustable delay time to an adjustable lower light level. After renewed presence detection illumination will be dimmed up to the upper light level. If sufficient daylight is available illumination will be reduced and will switch off after 10 minutes, even if presence is detected.



- 4** Optional deactivation of presence detection at an external switch.



- 5** Optional operation with an external pushbutton interface with the functions: brighter/darker, on/off.

### Presence dependent switching on and off (motion detection):



- 6** With the integrated relay a load can be switched on presence dependent. The relay stays switched on as long as motion is recognized. If no more motion is recognized, the relay switches off after the expiring of the delay time.

### Extension of range of detection:

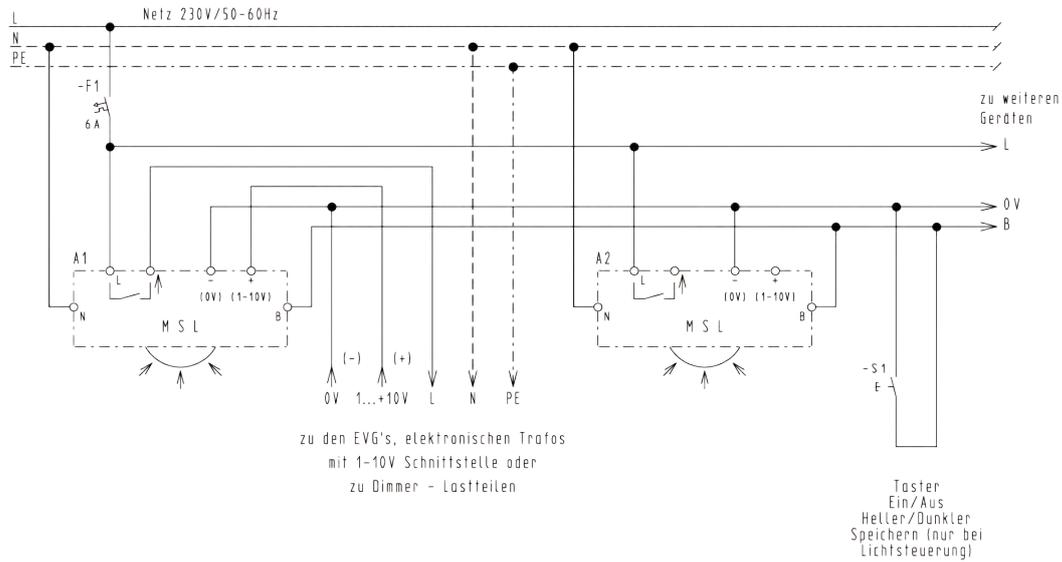


- F** If the device shall be used only for extension of presence detection, adjustment 'F' has to be selected. The device itself has no other function.

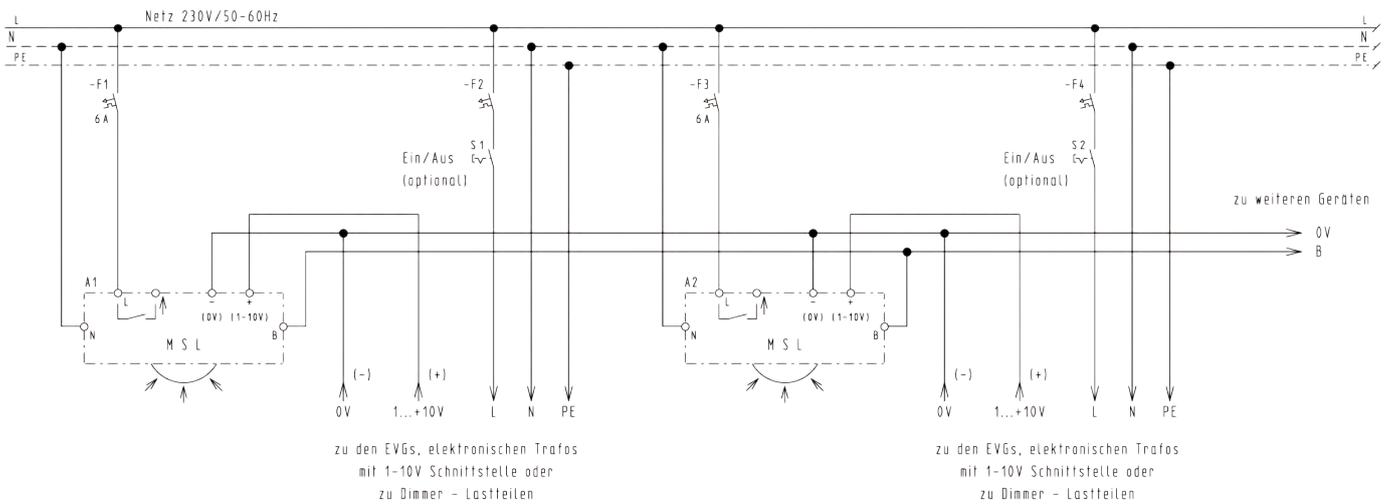
Technical data	
device description, order-no.	Multi-Sensor-Component, type MSL, order-no. 50.13.510 Multi-Sensor-Component, type MSL/k, order-no. 50.13.511 (with 1.5 m UV-resistant cable)
operating voltage	230 volt AC, 50/60 Hz (DC not allowed, may destroy the device)
fuse protection	extern 6 A
power input	approx. 1 W
operating temperature	0 - 50 °C
adjustable light value	approx. 15 - 1500 Lx (at the device)
adjustable minimum light value	approx. 5 - 1500 Lx (at the device)
adjustable maximum light value	approx. 15 - 1500 Lx (at the device)
detection angle/cone angle	360°/100°
mounting height	2.5 - 3 m
supply and load connection	L, N, activated L (↑)
control terminals	+/- (0 - 10 volt of ballast or transformer), B (parallel connection of presence detector), base insulation compliance with IEC 664 (10/92), no protective low voltage
terminal assignment	see wiring diagram <b>wrong connection can lead to possible functional failure or destruction</b>
Belastbarkeit Schaltausgang	5 A, resistive loads      30 pcs.* single electronic ballasts, 14/18 W, 20 pcs.* twin electronic ballast, 14/18 W. 30 pcs.* single electronic ballasts, 28/36 W, 20 pcs.* twin electronic ballast, 28,36 W. 20 pcs.* single electronic ballasts, 35/58 W 10 pcs.* twin electronic ballast, 35/58 W
fade time of control output	approx. 10 - 30 seconds (depends on the control difference, approx. 30 seconds from maximum to minimum)
final switch-off delay	10 minutes
initial switch-off delay	adjustable from 1 - 30 minutes
Master/slave-mode	for the extension of detection area, up to 5 slave MSLs can be assigned to one master MSL
protection class, protection type	protective insulation II, IP20
max. length of cable	100 meter, control cable, 0.5 mm <sup>2</sup> , mains supply cable 1.5 mm <sup>2</sup>
terminal blocks	terminal screws for solid wire or litz wire cables, 0.3 - 1.5 mm <sup>2</sup> or with pre-assembled UV-resistant 1.5 mm <sup>2</sup> cable
construction	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louvers lamp fixtures
degree of contamination	2 (dry non-conductive, in compliance with IEC 664, 10/92)
dimensions, weight	(WxHxD) = 58.5 x 70.5 x 42 mm, approx. 150 g
conformation	CE, EMC fulfilled in compliance with EN 61547 (04/96), low voltage in compliance with EN 60669-2-1 (02/97)
* Number of electronic ballasts to be connected in case of a 1.5 mm <sup>2</sup> cable with a length of 15 m from distribution board to the device and a further 20 m to the center of the lighting circuits (impedance approx. 800 mΩ). If the cable section is larger or if the cable is shorter, the permissible load is reduced (e.g. in case of impedance off 400 mΩ by 20 %).	

## Wiring diagrams MSL

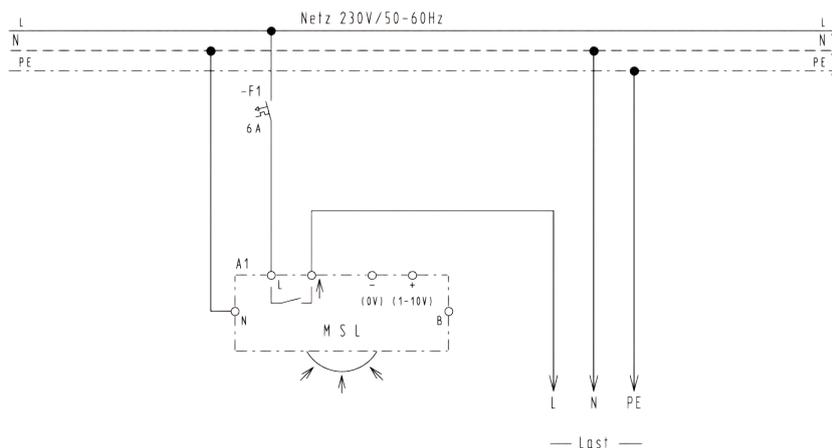
**MSL with max./min. limitation of light levels, daylight dependent control, as an option with pushbutton for the manual control.**



**Several MSL with common presence detection, each MSL works within its detection area as a light value reducer for itself.**

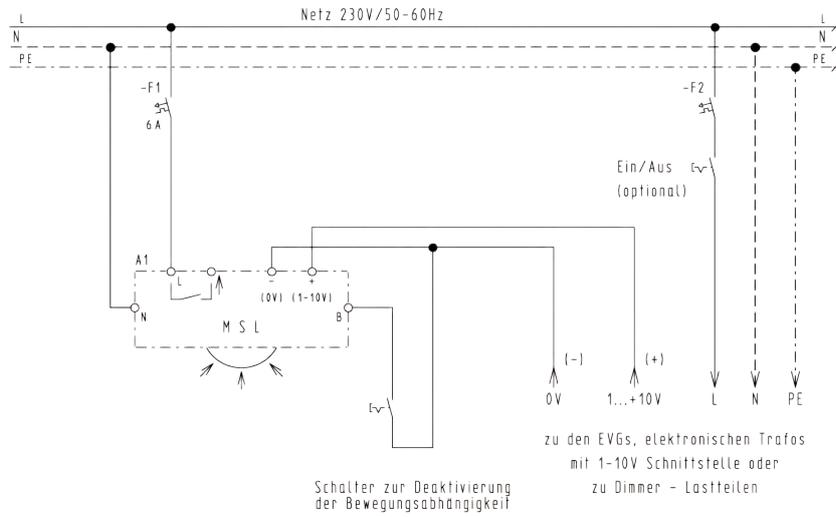


**One MSL for presence detected switching of a non-dimmed load.**

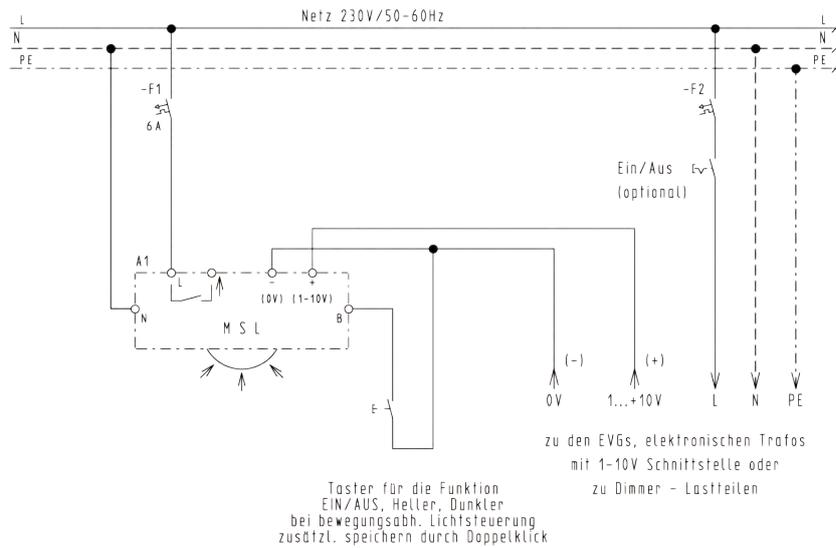


## Wiring diagrams MSL

**One MSL as an individual device for light level reduction. Optionally with a switch for activating and deactivating of presence detection.**



**One MSL as an individual device for light level reduction, for daylight dependent or presence dependent lighting control. Optionally with external pushbutton control.**



# MS-LRS

## Multi-Sensor Light-Value-Control-Switch

**Type:** MS-LRS  
**Order-No.:** 50.13.530

Light-Value-Control-Switch with presence detection and set-point adjustment at the device or with an external potentiometer.

The MS-LRS detection switches the illumination on and off in dependence of ambient light and presence. Its application is preferable in rooms, in which the illumination should not or cannot be dimmed.

Adjustable switch-off delay after presence detection (1 - 30 minutes).



Surface mounting design, dimensions (WxHxD): 58.5 x 70.5 x 41 mm (see page 50)

The LED indicates if the switch value has exceeded or fallen below the set light level.

If manual switching on/off is made the LED flashes (each 2 seconds).

Fast blinking indicates that the working area is exceeded. In this case, the adjusted switch value has to be reduced at the device or at the potentiometer.

Adjustable switch-on light value (30 - 500 lx) at the device.

Potentiometer with integrated on/off switch.

**Type:** DPUT  
**Order-No.:** 51.01.022



Ceiling recessed mounting design, flat configuration, dimensions of square shape: 95 x 95 mm (illustration without mounting claws)



**Type:** MS-LRS/Q  
**Order-No.:** 50.13.530Q

Ceiling recessed mounting design, flat configuration, dimensions of round shape: Ø 95 mm (illustration without mounting claws)



**Type:** MS-LRS/R  
**Order-No.:** 50.13.530R

## Characteristics of the MS-LRS

### Functions

A light value at which the lighting is to be switched on can be set directly on the MS-LRS or externally with a potentiometer. If this value is not reached, the LED flashes. Lighting is switched on immediately if a presence is detected. If sufficient daylight is available the LED switches off once a switching hysteresis of 12.5% has been exceeded. If this value is exceeded for a delayed switching off time of 5 minutes, the lighting is switched off.

During these switching processes, the device determines the proportion of artificial light in the room and takes this into consideration so that after the lighting has been switched off, the room is still sufficiently bright and the lighting is not switched on again immediately. If no persons are present in the room, the device switches the lighting off after the delay period, which is adjustable, has expired. If a person moves into the area of detection, the lighting is switched on immediately again if artificial lighting is required.

### External switching value setting

As an alternative to setting the value at which the lighting is switched on at the device itself, this value can also be set using a potentiometer (22 k $\Omega$ ) or via a 1 - 10 volt control voltage. To do this, the switch-on brightness on the device must be set to maximum (turn right to the stop). When setting different values (on the device and potentiometer), the smallest value is valid.

### Switching On / Off manually

If a pushbutton is connected to the MS-LRS, this can be used to switch the lighting on and off manually. This is indicated by the LED blinking briefly. Manual switching mode remains in force until no presence is detected (adjustable delay) or until it is cancelled by pressing the push-button for longer than 3 seconds. The light level setting and switching ON/OFF can be combined in one potentiometer with integrated ON/OFF pushbutton.

### Area of detection and extension of presence recognition

Presence detection covers an angle of approx. 100°. It surveys an area of approx. 7 m in diameter in a room 3 m high. If larger areas with uniform daylight conditions are to be surveyed jointly, several devices may be connected to each other. Each of the devices can control an area individually (manual switching On/Off is not possible).

Switching can also be controlled from just one device. It is sufficient if one of the devices detects the presence.

### Design, mounting and connection

The MS-LRS is available in two mounting possibilities:

- Surface mounting and
- ceiling recessed mounting.

For both designs the mounting part is separated from the function part.

The mounting part will be wired up and screwed to the ceiling. Afterwards the function part is plugged onto the mounting part (without tools).

For the ceiling recessed design, the mounting part will be also wired fist. Afterwards the function part is plugged onto the mounting part and fixed to the ceiling with the claws.

Diameter of assembly opening:  $\varnothing$  90 mm.

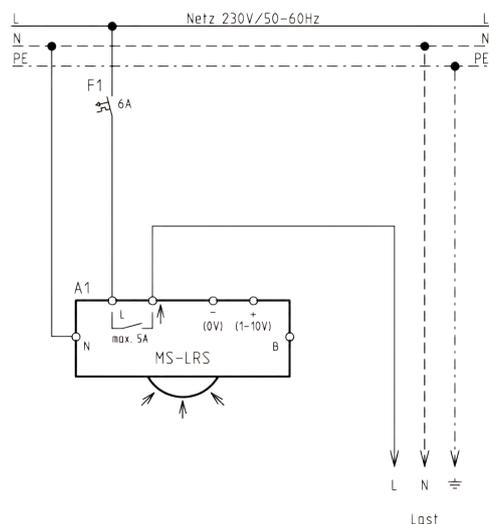
### Installation notes

The MS-LRS should be mounted within the area where the illumination has to be controlled. Brightness has to be measured always indirectly. A direct access of sunlight or artificial light has to be avoided.

The lens of the sensor is designed for ceiling heights of 2.5 - 3 meters. In rooms with higher ceilings the coverage of the sensor increases, the sensitivity decreases. When installing the device it should be mounted such that the LED shows to the window. In this way sensor will be pointed into the rooms.

Technical data	
device description, order-no.	Multi-Sensor light value control switch type MS-LRS, order-no. 50.13.530 Multi-Sensor light value control switch (with 1.5 m UV-resistant cable) type MS-LRS/k, order-no. 50.13.531
operating voltage	230 volt AC, 50/60 Hz (DC not allowed, may destroy the device)
fuse protection	extern 6 A
power input	approx. 1 W
operating temperature	0 - 50 °C
adjustable light value	30 - 1500 Lx (at the device)
adjustable switch-off value	50 - 1000 Lx (at the device)
detection angle/cone angle	360°/100°
mounting height	2.5 - 3 m
supply and load connection	L, N, activated L (↑)
control terminals	+/- (0 - 10 volt of ballast or transformer), B (parallel connection of presence detector), base insulation compliance with IEC 664 (10/92), no protective low voltage
terminal assignment	see wiring diagram <b>wrong connection can lead to possible functional failure or destruction</b>
Belastbarkeit Schaltausgang	5 A, resistive loads      30 pcs.* single electronic ballasts, 14/18 W, 20 pcs.* twin electronic ballast, 14/18 W. 30 pcs.* single electronic ballasts, 28/36 W, 20 pcs.* twin electronic ballast, 28,36 W. 20 pcs.* single electronic ballasts, 35/58 W 10 pcs.* twin electronic ballast, 35/58 W
final switch-off delay	5 minutes (after adjusted light value has been permanently exceeded)
initial switch-off delay	adjustable from 1 - 30 minutes
Master/slave-mode	for the extension of detection area, to one master MS-LRS tp to 5 slave MS-LRS can be assigned
protection class, protection type	protective insulation II, IP20
max. length of cable	100 meter, control cable, 0.5 mm <sup>2</sup> , mains supply cable 1.5 mm <sup>2</sup>
terminal blocks	terminal screws for solid wire or litz wire cables, 0.3 - 1.5 mm <sup>2</sup> or with pre-assembled UV-resistant 1.5 mm <sup>2</sup> cable
construction	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louvers lamp fixtures
degree of contamination	2 (dry non-conductive, in compliance with IEC 664, 10/92)
dimensions, weight	(WxHxD) = 58.5 x 70.5 x 42 mm, approx. 150 g
conformation	CE, EMC fulfilled in compliance with EN 61547 (04/96), low voltage in compliance with EN 60669-2-1 (02/97)
* Number of electronic ballasts to be connected in case of a 1.5 mm <sup>2</sup> cable with a length of 15 m from distribution board to the device and a further 20 m to the center of the lighting circuits (impedance approx. 800 mΩ). If the cable section is larger or if the cable is shorter, the permissible load is reduced (e.g. in case of impedance off 400 mΩ by 20 %).	

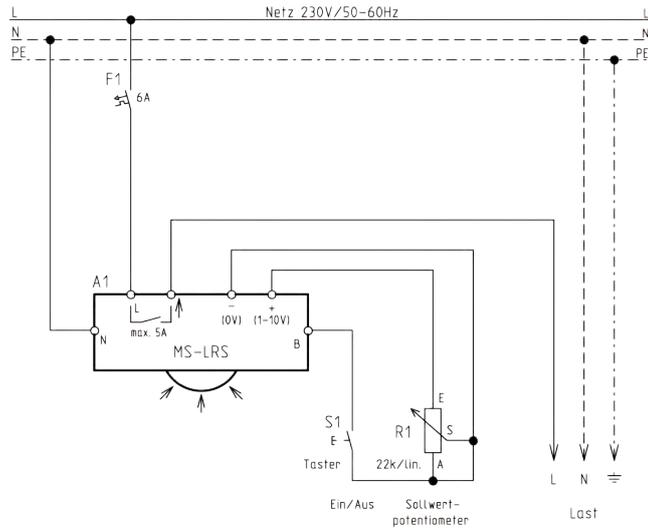
### Wiring diagram of MS-LRS: MS-LRS as individual device to switch light in an area.



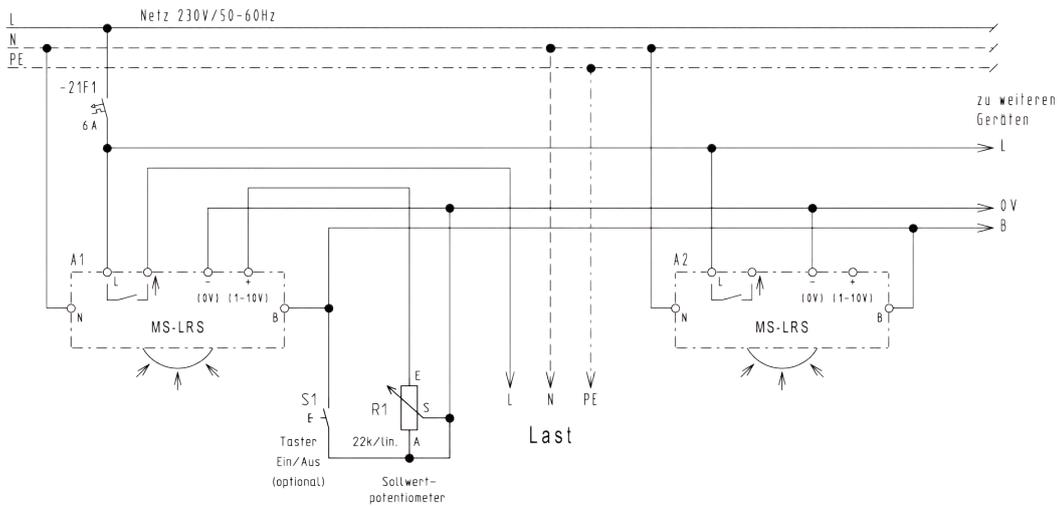
Error and technical alternations reserved.

## Wiring diagrams MS-LRS

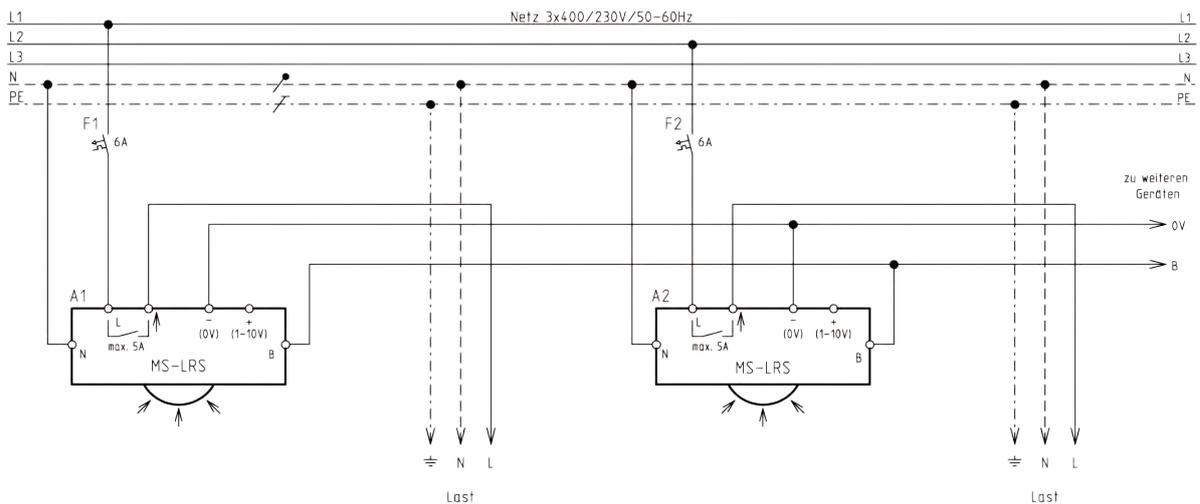
**MS-LRS as individual device with external preset potentiometer and pushbutton for manual switching on/off.**



**MS-LRS to switch a large area with additional devices to enlarge coverage.**



**Several MS-LRS with common detection, each one works separately as light value control switch in its area.**



Error and technical alternations reserved.

**Type:** MS  
**Order-No.:** 50.13.535

The Multi-Switch can:

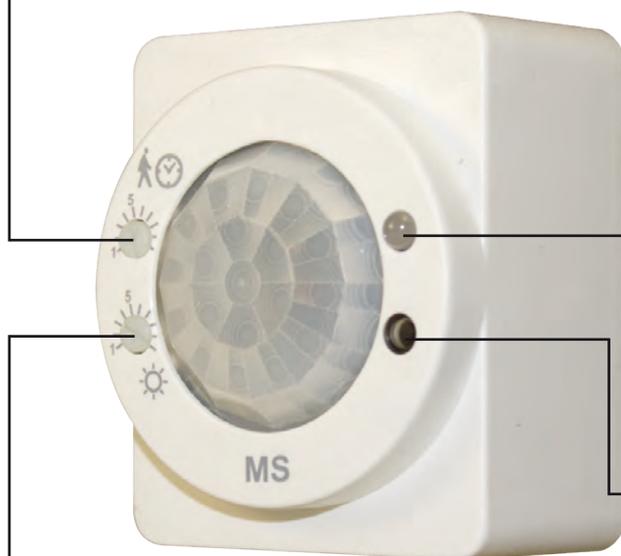
- switch illumination presence and daylight dependent,
- switch illumination only presence dependent,
- switch illumination only daylight dependent,
- vary the switch-off delay after presence detection from 1 - 60 minutes,
- indicate the end of switch-off delay 30 seconds beforehand,
- adjust a daylight dependent switch-on light value from 30 - 500 Lx.
- With the integrated automatic Switching-Threshold the Multi-Switch can determine the daylight dependent switch-on/off value considers the applied hysteresis.
- The Multi-Switch has a switching capacity of 10 A.
- The detection area of the Multi-Switch is 360° with 9 meter in diameter at a ceiling height of 2.5 to 3 meter. For extension of the range of motion detection up to 6 Multi-Switch can be switched in parallel.

Adjustable  
switch-off delay of  
presence detection  
(1 - 30 minutes)

Ceiling recessed design,  
flat configuration,  
dimensions of square shape:  
95 x 95 mm  
(illustration without moun-  
ting crawls)



**Type:** MS/Q  
**Order-No.:** 50.13.535Q

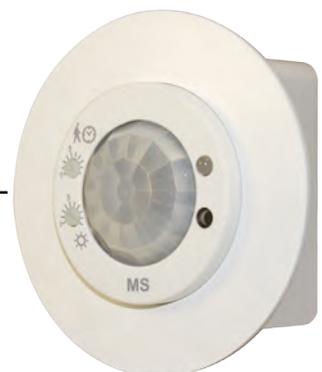


LED (green/orange)  
for status indication:  
- switching state  
- presence detection  
- over-range

Light value sensor

Surface mounting design,  
dimensions (WxHxD):  
58.5 x 70.5 x 41 mm  
(see page 50)

Ceiling recessed mounting  
design, flat configuration,  
dimensions of round shape:  
Ø 95 mm  
(illustration without moun-  
ting crawls)



**Type:** MS/R  
**Order-No.:** 50.13.535R

Adjustable  
switch-on light value  
(30 - 500 Lx)

The Multi-Switch will be delivered with the following optional settings.

- Adjustment of the switch-off delay after presence detection: 1 - 60 minutes, leftstop position of potentiometer is test mode (10 seconds).
- Selectable switch-on brightness at the device, 30 - 500 Lx, rightstop position is Switch-Automatic-Threshold-Mode (self-alignment). In this mode the Multi-Switch switches daylight dependent on and off under determination of hysteresis.
- LED (green/orange) for status indication:
  - switching state: orange = on  
green = off
  - presence detection: blinking (green/orange)
  - over-range: short blinking (orange)  
[reduce switch-on light value (2) if LED blinks shortly,  
check mounting and light conditions]
  - light value sensor

### **DIP-switches at the backside of the Multi-Switch enable the following functions as option:**

- DIP-switch 1: presence detection
- DIP-switch 2: detection of brightness (light)
- DIP-switch 3: switch-off signal
- DIP-switch 4: semiautomatic mode (pushbutton)

on = feature is enable  
off = feature is disable

The switch-off signal (3) is only available, if presence detection is enabled.

Semiautomatic mode is not enabled, if the Multi-Switch is configured as slave.

In semiautomatic mode the illumination can only be switched on by an external pushbutton.

### **Slave mode**

If DIP-switch 1 and 2 are disabled, the Multi-Switch is configured as slave. The slave mode is suitable for enlargement of coverage. The relay (switching contact) does not switch; the LED is off and blinks green if presence is detected.

### **Semiautomatic mode**

If DIP-switch 4 is enabled, the Multi-Switch is configured in semiautomatic mode. In semiautomatic mode, the illumination can be only switched on by an external pushbutton (make contact). After automatic switch-off of illumination, it will not switch on by anew presence detection.

As described before, after switching on of illumination by pushbutton, the Multi-Switch works according the selected settings. If daylight detection is enabled, the Multi-Switch will switch off illumination after 5 minutes if ambient light exceeds the adjusted set-point. If presence detection is enabled, the Multi-Switch will switch off illumination after expiring of an adjustable switch-off delay without any presence. With the external pushbutton illumination can switch on and off manually.

### **Note:**

As long as the pushbutton on input „B“ is pressed (see wiring diagrams), presences detection is disabled.

**LED-operating state**      The two-colored LED (orange/green) indicates the following operating states:

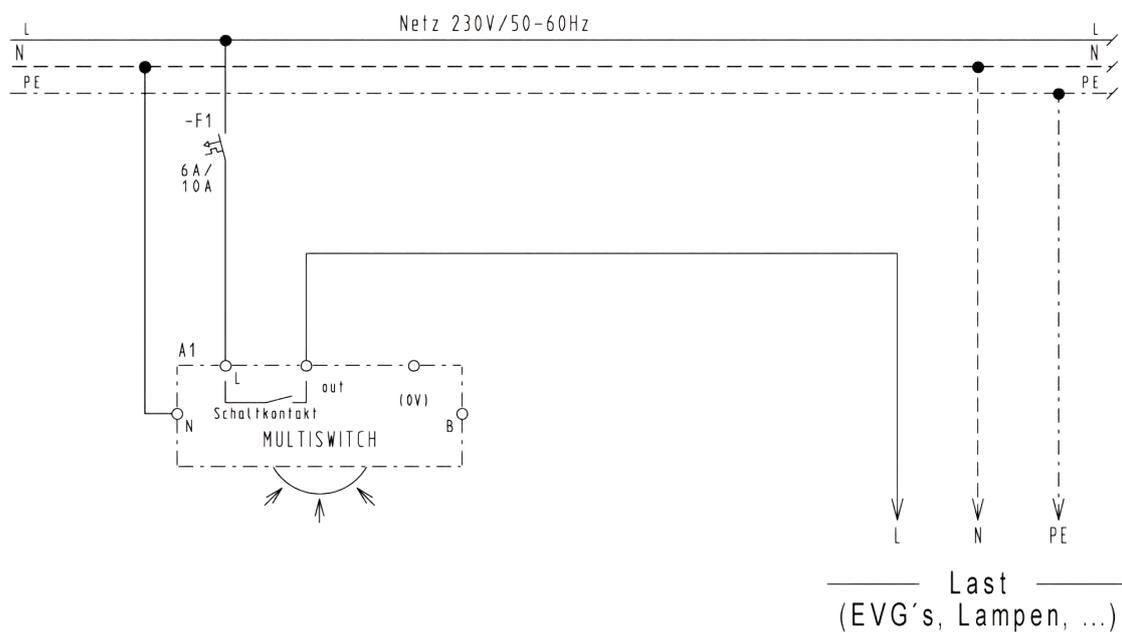
- orange: switching contact is on
- green: switching contact is off  
(switch-off delay is expired, brightness is too high or device was switched off by pushbutton)
- blinking orange: switching contact is on and presence is detected
- green blinking: switching contact is off and presence is detected  
(brightness is to high, slave mode is enabled or device was switched off by pushbutton)
- off (black) switching contact is off, no presence is detected  
(slave mode is enabled or no presence can be detected)
- blinking orange shortly switching contact is on, the working area of MS is exceeded  
(the switch off light value was chosen too high, it can be reduced with the potentiometer at the front of the MS, check and if necessary adjust lighting conditions at mounting location)

Technical data	
device description, order-no.	Multi-Switch type MS order-no. 50.13.535
operating voltage	230 volt AC, 50/60 Hz, DC not allowed, may destroy the device
fuse protection	extern 6 A/extern 10 A external protection, circuit breaker, (L/(L), [switching contact] together)
power input	approx. 0.7 W in off-mode approx. 1.0 W in on-mode device without load at switching output/switching contact (at 230 volt AC, 50 Hz)
operating temperature	0 - 50°C
protection class	protective insulation II
protection type	IP20
degree of contamination	2 (dry non-conductive)
terminal blocks	terminal screws 0.34 to 1.5 mm <sup>2</sup> , rigid or flexible cables
stripping length	6 mm
max. length of cable	100 meter, The cable length may vary according to the used circuit breaker!
power supply	1,5 mm <sup>2</sup> L/N, (L)
control connections	0.34 to 1.5 mm <sup>2</sup> (B/0 volt), output for presence detection/input for pushbutton, device combination, external pushbutton (base insulation)
switching output, switching contact	1.5 mm <sup>2</sup> , switching contact (internal relay, make contact to L, supply voltage), functional switching (on/off), contact hole (no secure separation of contact), base insulation to the control terminals
load capacity output	max. 10 A AC/250 volt AC (restive loads) max. 5 A AC, incandescent lamps max. 5 A AC, inductive loads with $\cos \varphi = 0.4$ max. 5 A AC, electronic ballasts, load 30 pce.* single electronic ballasts, 1 pc. lamp 18 W 20 pce.* twin electronic ballasts, 2 pce. lamps 18 W 30 pce.* single electronic ballasts, 1 pc. lamp 36 W 20 pce.* twin electronic ballasts, 2 pce. lamps 20 W 20 pce.* single electronic ballasts, 1 pc. lamp 58 W 10 pce.* twin electronic ballasts, 2 pce. lamps 58 W
Mounting height	2.5 to 3.0 meter
coverage of presence detection	approx. 9 meter in diameter at a mounting height of 3 meter
adjustable switch-off delays	step-switching, 9 steps: 1, 3, 5, 10, 15, 20, 30, 45, 60 minutes position 1 (leftmost position) means test mode (10 seconds)
Master/slave-mode	for the enlargement of detection area, up to six MS can be connected in parallel mode
adjustable switch-on light value	30 to 500 lux (directly at the device) step-switching, 9 steps: 30, 60, 100, 150, 200, 400, 500 lux position 10 (rightmost position) means Switching-Threshold-Automatic
switching hysteresis	approx. 15 %
switch-off delay	5 minutes (if ambient light exceeds switch-off light level permanently)
housing/design/mounting	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louvre lamp fixtures
dimensions (WxHxD), weight	58.5x70.5x47 mm, approx. 150 g, (see dimensionsdrawing/dimensions)
conformation	CE
terminal assignment	see labeled base plate or wiring diagrams

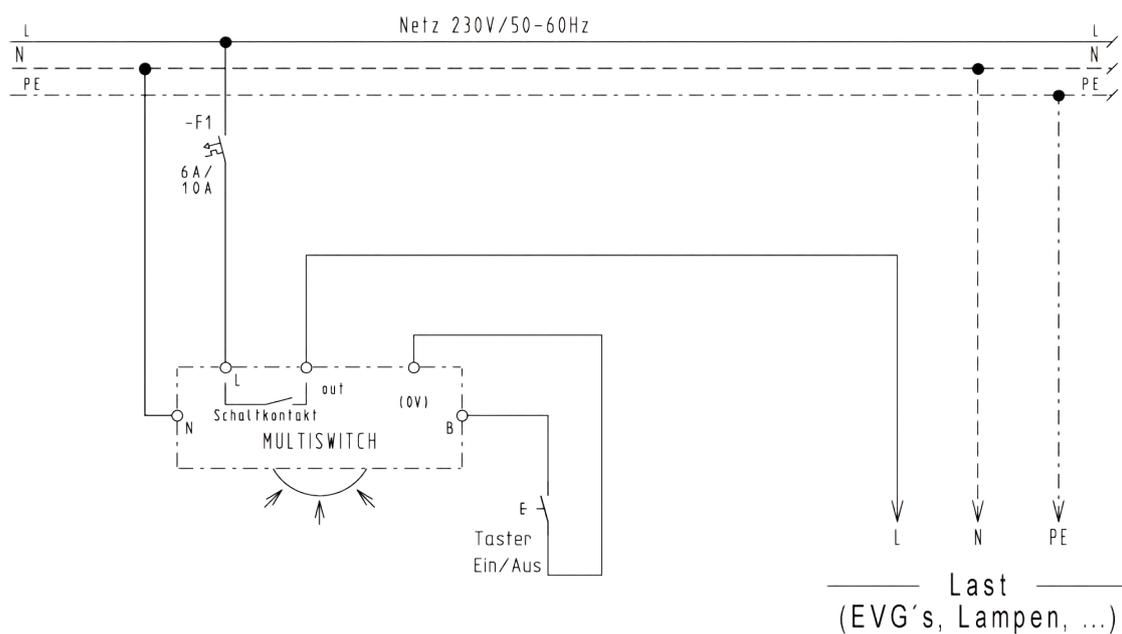
\* Number of electronic ballasts to be connected in case of a 1.5 mm<sup>2</sup> cable with a length of 15 m from distribution board to the device and a further 20 m to the center of the lighting circuits (impedance approx. 800 mΩ). If the cable section is larger or if the cable is shorter, the permissible load is reduced (e.g. in case of impedance off 400 mΩ by 20 %).

## Wiring diagrams

### 1. Multiswitch as an individual device for lighting and presence dependent switching

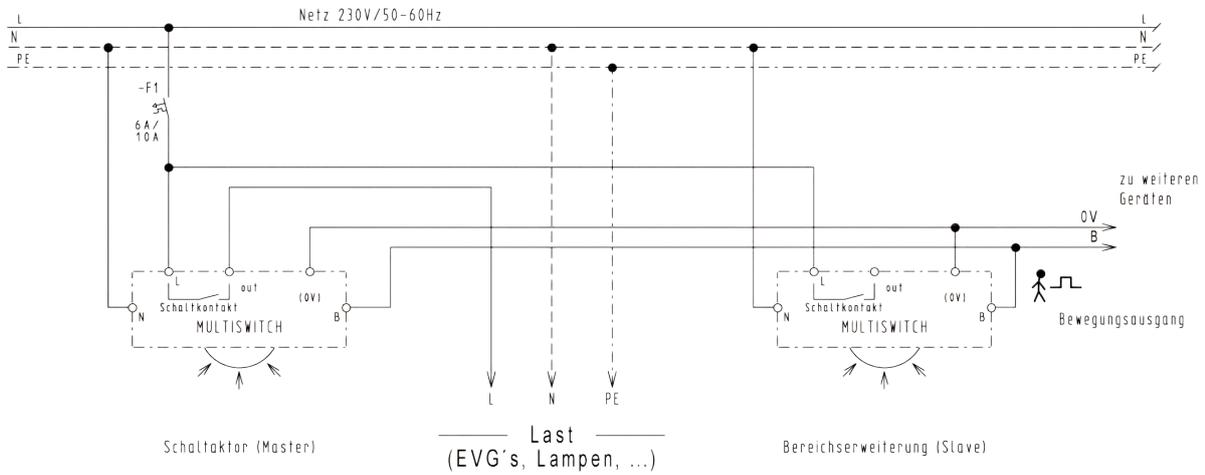


### 2. Multiswitch as an individual device with pushbutton control in semiautomatic mode

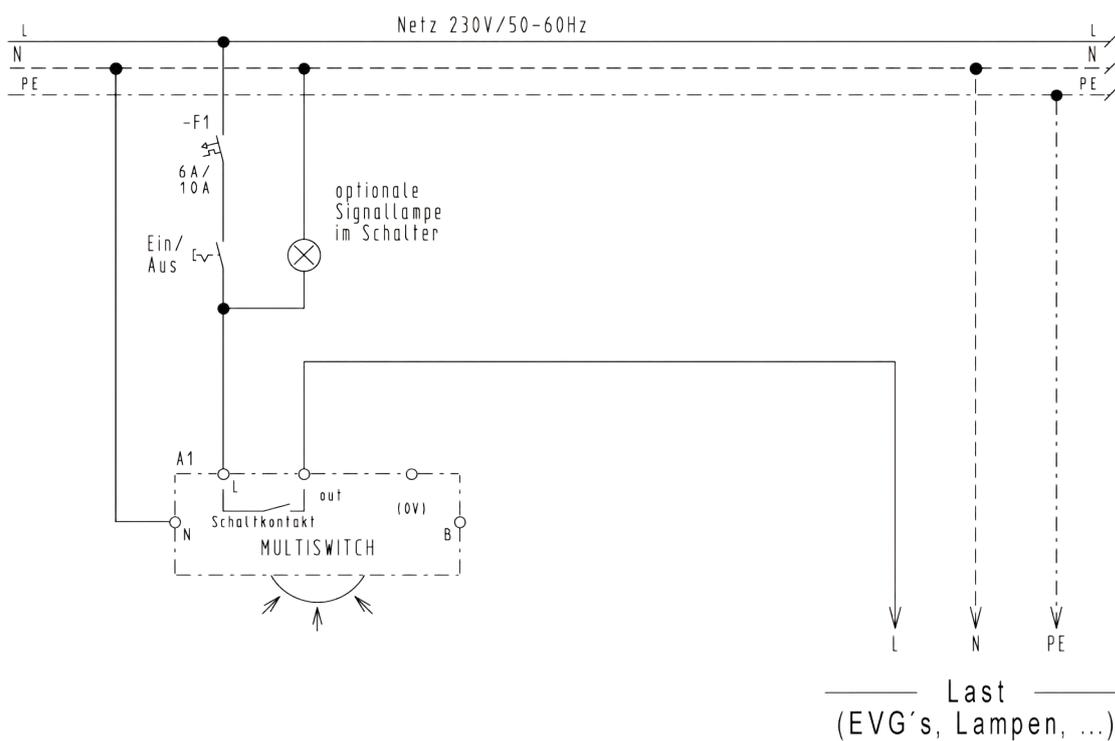


## Wiring diagrams

### 3. Multiswitch for lighting- and presences dependent switching and enlargement of coverage (master/slave)



### 4. Multiswitch as an individual device for light dependent switching in combination with a control switch



# IR-MSD

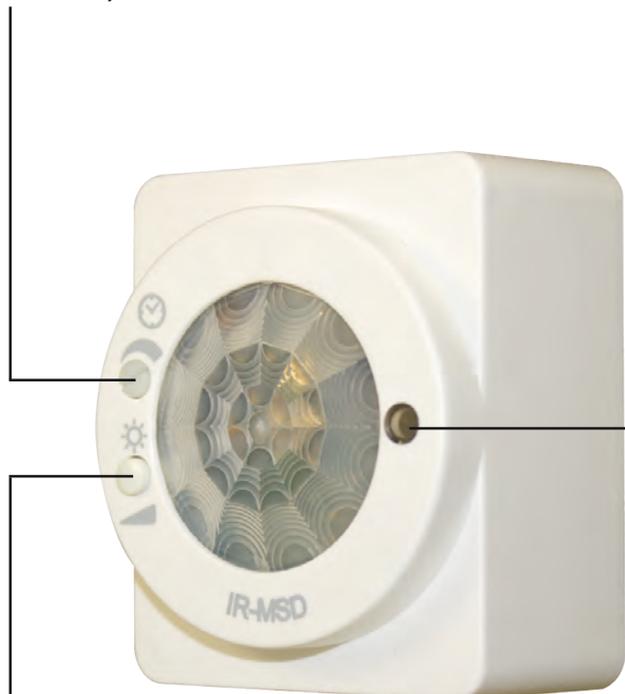
## Multi-Sensor-Dimmer

Mit IR-Programmierung und -Bedienung

**Type:** IR-MSD  
**Order-No.:** 50.13.540

The IR-MSD is a daylight dependent working constant light controller with presence detection, which allows individual programming and selection of 3 static and 3 dynamic lighting scenes as well as the manual control of the foregoing scenes.

Potentiometer for adjustment of switch-off delay (1 - 30 minutes).



Lichtwertaufnahme

Surface mounting design, dimensions (WxHxD): 58.5 x 70.5 x 41 mm (see page 50)

Pushbutton for setting of constant light value.

Set pushbutton for dimming, switching and programming.



Infrared (IR) handheld transmitter



**Type:** IR-TM  
**Order-No.:** 50.13.544

Ceiling recessed mounting design, flat configuration, dimensions of square shape: 95 x 95 mm (illustration without mounting crawls)



**Type:** IR-MSD/Q  
**Order-No.:** 50.13.540Q

Ceiling recessed mounting design, flat configuration, dimensions of round shape:  $\varnothing$  95 mm (illustration without mounting crawls)



**Type:** IR-MSD/R  
**Order-No.:** 50.13.540R

## The IR-MSD offers the following possibilities:

- Individual dimming of up to 3 lighting circuits with one infrared (IR) handheld remote control with the functions: brighter/darker and on/off.
- Common dimming of the lighting circuits (master mode).
- Daylight and presence dependent dimming of individual or all lighting circuits (Multi-Sensor-Mode).
- Establishing of 3 lighting scenes with 3 lighting circuits, operating independent of daylight and presence detection (static scenes).
- Establishing of 3 additional lighting scenes, operating daylight and presence dependent (dynamic scenes).



One or more pushbuttons (commercially available) for manual control (brighter/darker, on/off) as well as for the adjustment of constant light values.

## Controlling and daylight dependent programming of individual lighting circuits with external pushbuttons:

### Optionally:

Short press of key:	On
Continuous press of key:	Illumination is dimmed brighter or darker.
Stop press of key:	Illumination keeps the current light value.
Double press of key:	The chosen light value will be stored as a new constant light value.
Short press of key:	Off
Repeated short press of key:	Re-starting of illumination. The illumination will be dimmed to the last set light value and will be in the manual mode (brighter/darker and on/off). By double-pressing of key the IR-MSD returns to automatic mode (constant light control).

In the same way, each connected circuit will be controlled and programmed by its own pushbutton.

Adjustment of 3 static light levels for each circuit and assignment to one of 3 scenes with the handheld infrared (IR) remote control. If necessary retrieval of up to 3 scenes with the infrared (IR) control.

'Static' means: The currently chosen or retrieved light level, is kept independently of daylight, but is controlled dependent of presence detection.

Adjustment of 3 dynamic light values for each circuit and assignment to one of 3 scenes with the handheld infrared (IR) remote control. If necessary retrieval of up to 3 scenes with the infrared (IR) control.

'Dynamic' means: The currently selected light value and, consequently, the lighting scenes, are controlled presence and daylight dependent. The currently chosen scene is only active, if presence is detected and daylight falls below the adjusted set-point. The light level, which was chosen by the handheld remote control for each circuit, is the new set-point for the dynamic scene.



### Programming and selection of dynamic lighting scenes

Programming:

1. Adjustment of desired light levels of scenes 1, 2 or 3 by long press of keys ▲ or ▼.
2. Press key of the desired dynamic scene, at which the respectively selected light levels shall be stored as scene. With keystroke, the storing process of scene is completed.
3. Repeat of step 1 and 2 for programming of the dynamic scenes 2 and 3.



Retrieval:

As required, the retrieval is carried out with one of the 3 'dynamic scenes' storing-keys.

### Programming and selection of static lighting scenes

Programming:

Again, adjustment of the desired light-values is carried out with keys 1 to 3. Following storage of scenes with scene-keys 4, 5 and 6 (static scenes).

Retrieval:

The retrieval is carried out with one of the 3 'static scenes' keys.

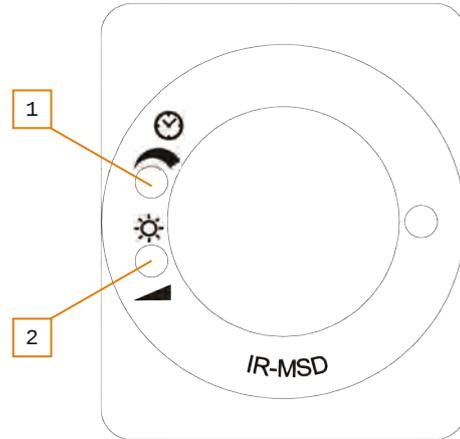


## Characteristics of Multi-Sensor IR-MSD

The IR-MSD has a detection area of 360° for presence detection with a diameter of 7 m at a mounting height of 3 m. Up to 6 sensors can be combined in parallel mode for extension of coverage.

On the front side of the sensor the following settings can be made:

1. Potentiometer for the adjustment of switch-off delay time after presence detection. The delay time can be varied between 1 - 30 minutes. After expiring of the delay, illumination is first dimmed to approximately 1 % and is switched off after further 5 minutes. The switch-off delay can only be adjusted at the IR-MSD.
2. Set-point button for adjustment of constant light levels for dynamic scene. The programming can also be carried out with external pushbuttons or by an infrared (IR) remote control.



## Presetting:

- Lead time:** Time from the ON switching of the lighting (manually, daylight- or presence dependent) up to the achievement of the set light level: 1 sec.
- Fade time:** Time range from pressing a scene key up to the required light levels: 5 secs.
- Delay time:** Light level reduction from the end of the set delay time to 1 %: 10 min.
- Switching OFF delay time:** Time from the light level reduction of 1 % to switch OFF: 10 min.

## Options:

At the back of the IR-MSD are 8 dip switches the following functions can be performed:

Dip switch Pos 1:  
Locking of the setting of constant light levels with external pushbuttons.

Dip switch Pos 2:  
Locking of the dim function of external pushbuttons.

Dip switch Pos 3:  
Setting of a semi automatic control (after a switch OFF due to a too high daylight level or after end of presence detection lighting can only manually be switched ON again).

Dip switch Pos 4:  
Deactivation of the function presence detection.

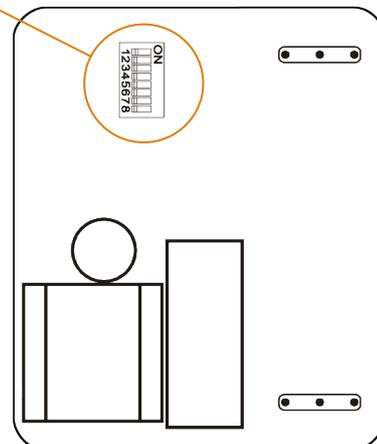
Dip switch Pos 5:  
Deactivation of the daylight dependent control.

Dip switch Pos 6:  
Setting of a minimum light level which is always maintained, also if no presence is recognized.

Dip switch Pos 7+8:  
With these positions it can be decided which lighting circuits shall be selected for a programming with an external pushbutton (ex works circuit 1 is selected).

Optional: all 3 circuits can be deactivated from programming with an external pushbutton.

Back of the IR-MSD control



## Montage und Verdrahtung des IR-MSD

Wie alle Geräte der MSD-Serie (Aufbau- wie Einbauform) besteht auch der IR-MSD aus zwei Komponenten:

- Der Montageplatte mit den Anschlußklemmen.
- Dem Funktionsteil, das nach der Montage und der Verdrahtung lediglich auf die Montageplatte aufgesteckt wird.

### Decken-Aufbaumontage

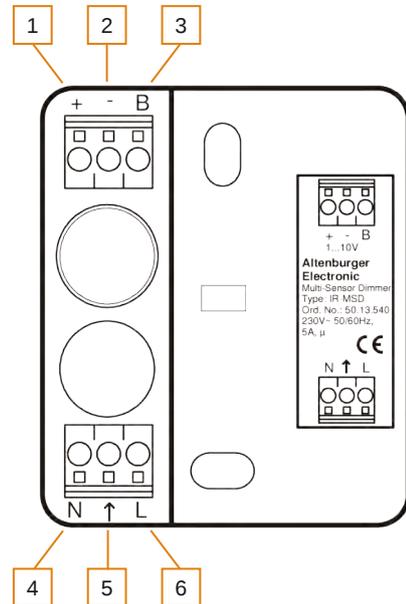
Die Montageplatte wird an die Decke angedübelt und mit den Klemmen verdrahtet.

### Decken-Einbaumontage

Die Montageplatte wird verdrahtet, das Funktionsteil auf die Montageplatte aufgesteckt und das Gesamtgerät mit den Befestigungskralen montiert.

### Terminals

1. 1-10V for electronic ballasts or transformers or 0-10V for ALTENBURGER load dimmers.
2. Earth (0V)
3. Terminals for the coupling with additional sensors and for the connection of an external pushbutton (optional).
4. Neutral
5. Switch contact (phase, not voltage-free)
6. phase



### Installation instructions:

- The multi-sensor dimmer should be mounted such that it is directed to the person to be recognized (e.g. to a working place). It should be placed close to a lamp fixture to be controlled and should have no direct exposure to daylight (window). Other light sources or an impact through adjacent control circuits should be avoided. The room brightness should always be acquired indirectly. Furthermore it has to be observed that sufficient artificial light can be acquired by the sensor. Particularly no shadow or reflecting artificial light should have access to the sensor (not to be mounted directly above hanging, reflecting lamps)
- During the set point adjustment nobody should be close beneath the sensor.

- The optical lense is designed for ceiling heights between 2,50 and 3 m. In rooms with higher ceilings the density of recognition of the presence sensor is reduced.
- The mounting in an area with an impact of aircons, ventilators or heaters must be avoided.

## Technical data

### IR-MSD

Designation, Order-No	Multi-Sensor-Dimmer, type IR-MSD, Order-No. 50.13.540 Multi-Sensor-Dimmer, type IR-MSD/k, Order-No. 50.13.541 (with 1,5 m UV-resistive cable)
Supply Voltage	230V~ 50/60 Hz; DC not permitted (destruction)
Protection	external 6A
Power input	approx. 2W
Operating temperature	0°C+50°C
Settable Light level	approx. 15-1500 Lx (direct at the sensor)
Range of detection, Mounting height	360°, 2,5 - 3 m (optimal height for presence detection)
Supply and load terminals	L,N, switched L (↑)
Control terminals	+,- (1...10V of electronic ballasts or transformers) B (parallel connection of presence detection) Base isolation according to IEC 664 (10/92), No safety extra low-voltage
Rating Control outlet	100mA (approx. 100 electronic ballasts or transformers) 3mA active for Altenburger load dimmers (max.3 dimmers)
Terminals	see wiring diagrams Fault connection can result in malfunction or destruction
Load capacity of the switch outlet:	5A resistive load 30 ballasts 18W, 20 twin ballasts 18W 30 ballasts 36W, 20 twin ballasts lampig 36W 20 ballasts 58W, 10 twin ballasts lampig 58W
Parallel switching	max. 6 IR-MSDs (for the extension of the range of detection)
Protective class, type	II (protective isolation), IP 20
Max. wiring Length	100m (control wires 0,5 mm <sup>2</sup> , load and supply wires 1,5 mm <sup>2</sup> )
Wire connections	screw terminals for solid wire or litz wires 0,3 – 1,5 mm <sup>2</sup>
Housing	plastic housing for the mounting at ceilings or raster lamps
Contamination degree	2 (dry non conductive, accord. to IEC 664, 10/92)
Dimensions, weight	WxHxD = 58,5 x 70,5 x 42 mm, approx. 150 g
Designation	CE

\*wiring of electronic ballasts or transformers with 15 m wire, 1,5 mm<sup>2</sup> from the distribution board to the IR-MSD and further 20 m to the midst of the lamp circuits (impedance approx. 800 mΩ). With higher wire sections or shorter distances the maximum load is reduced (e.g. at an impedance of 400 mΩ by 20%) because the inrush current increases with a reduction of the wire length.

### IR-Transmitter

IR-Transmitter, order-nr.	50.13.545
Supply customary	9V battery block
Operating temperature	0°C+40°C
Protective class, type	III (safety extra low-voltage), IP 30
Dimensions, Weight	WxHxD = 70 x 146 x 24 mm, approx. 110 g (without battery)
Designation	CE

# IR-MSD Multi-Sensor-Dimmer

with the suitability for programming and selection of fixed-value and sensor dependent light levels.



Infrared (IR) transmitter for manual lighting control as well as for programming and selection of daylight dependent constant light values.



Pushbutton interface for manual lighting control, for programming and for selection of daylight dependent constant light values as well as for static and dynamic lighting scenes.

Pushbuttons for the manual dimming control and for the programming of a daylight dependent constant light level.



ALTOQUICK Load dimmers 1,3 KW up to 2 KW for DIN rail systems



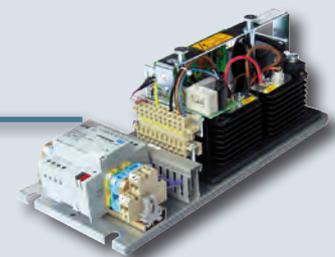
Daylight- and presence dependent IR-multi-sensor dimmer (IR-MSD)



Electronic ballasts or transformers with 1-10V interface.



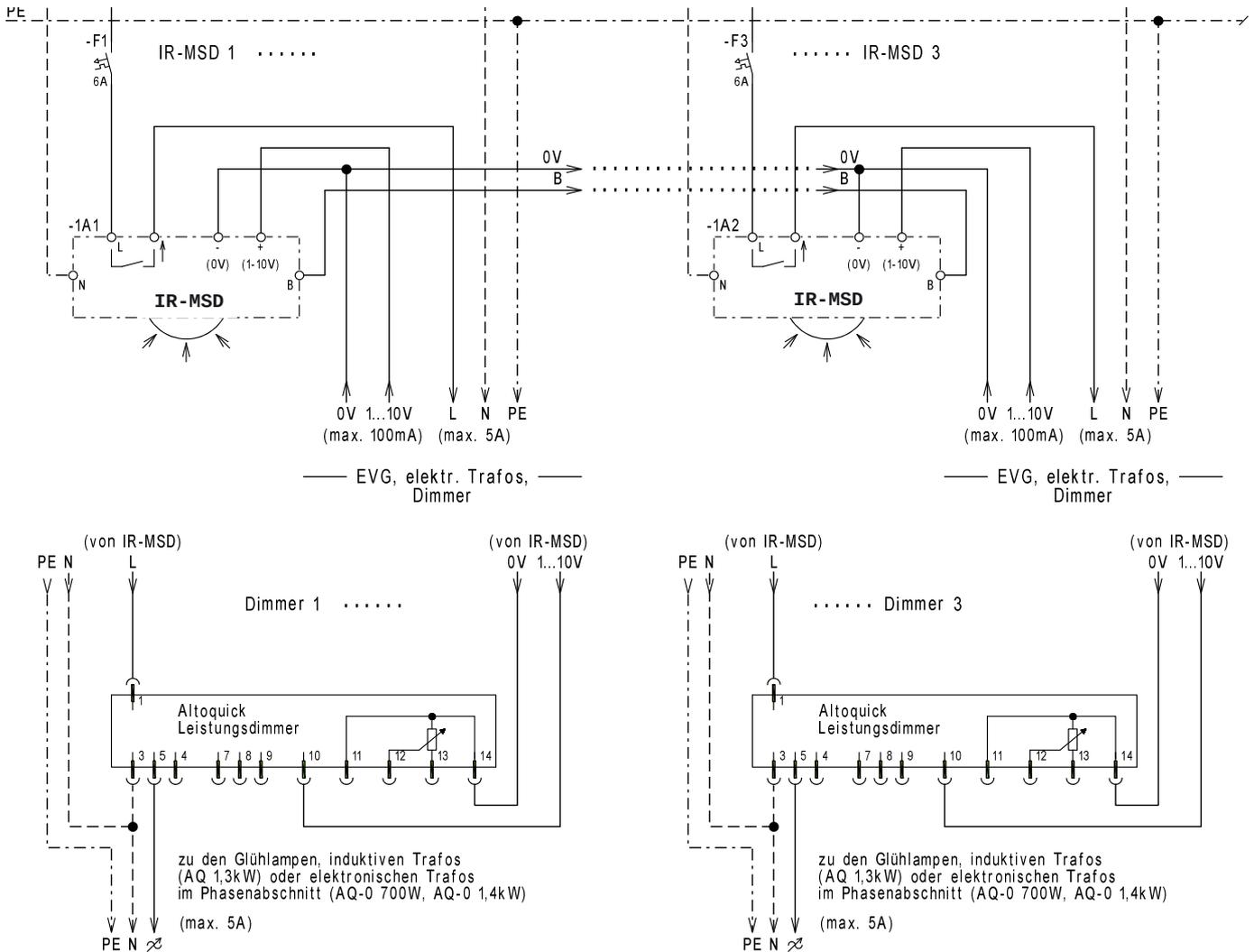
Sensors for light circuits (up to 3 circuits) or for the extension of the range of presence detection (up to 6)



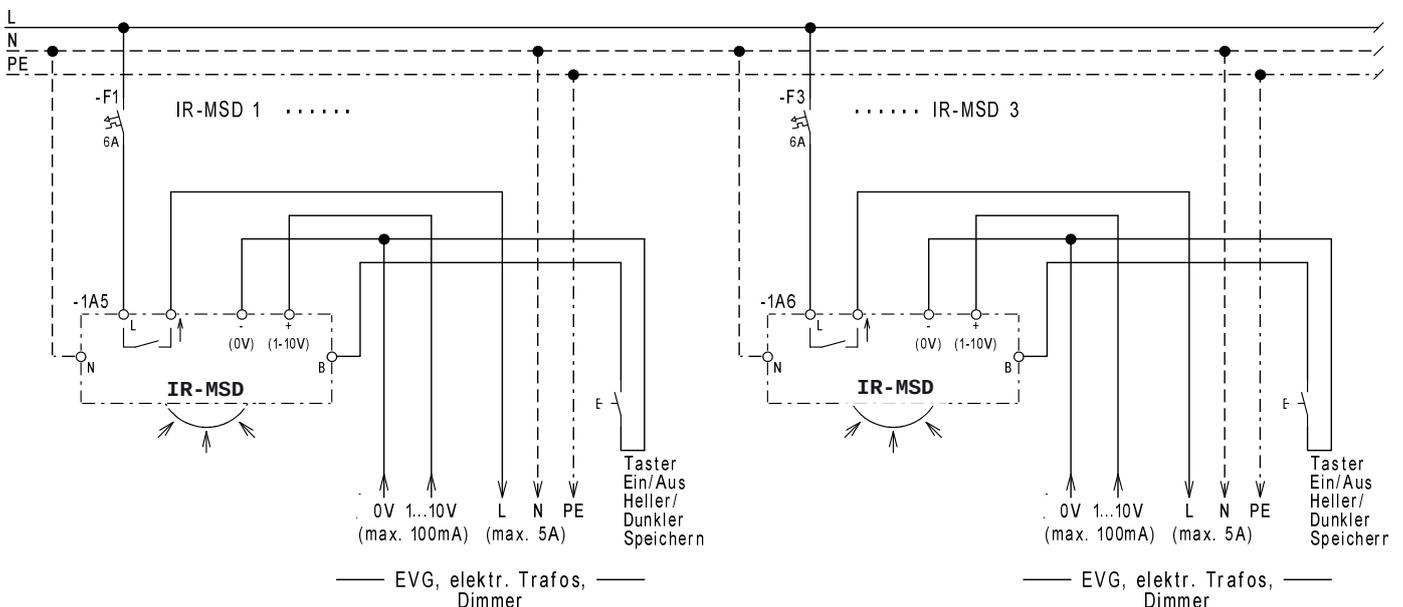
Plug in dimmers for the backplate mounting with load capacities up to 8 KW, type TH.

## Wiring diagrams for the IR-MSD

Static-dynamic lighting control with several parallel switched Multi-Sensors for an extension of the range of presence detection.



## ALTOTWIN - Static-dynamic lighting controls in combination with external pushbuttons.



## IBMSD

**Type:** IBMSD  
**Order-No.:** 80.14.800

## KNX Multi-Sensor-Dimmer

The IB MSD is a KNX Multi-Sensor-Dimmer for the daylight dependent lighting control and presence detection. The light level to be kept constant can be set via the ETS or directly at the sensor (memory button).

In buildings, equipped with KNX networks, dimmers as a constant light controller with presence detection represent a substantial contribution for building automation. In connection with external KNX switch actuators additional switch functions (i.e. HVAC) can be included.

### Range and mode of operation

The Multi-Sensor-Dimmer IB MSD controls illumination daylight and motion dependent. While presence is detected the IB MSD keeps illumination constant at the set light value.

It will be added only as much artificial light to daylight, as it is necessary to achieve the previously adjusted set-point.

If no presence is detected, illumination does not switch on or it will dimmed within an adjustable delay time (1 - 30 minutes) to 1 % and switches off after an additional delay of approximately 10 minutes.

Supplementary switching functions (i.e. HVAC) in connection with switching actuators can be controlled presence dependent via KNX telegrams.

Potentiometer for the adjustment of a delay time after presence detection (1 - 30 minutes).

Ceiling recessed design, flat configuration, dimensions of square shape: 95 x 95 mm (illustration without mounting claws).



**Type:** IBMSD/Q  
**Order-No.:** 80.14.800Q

Memory button for programming of physical address of the sensor (in KNX networks).

Light value sensor



Surface mounting design, dimensions (WxHxD): 58,5 x 70,5 x 41 mm (see page 50).

Ceiling recessed design, flat configuration, dimensions of round shape: Ø 95 mm (illustration without mounting claws).



**Type:** IBMSD/R  
**Order-No.:** 80.14.800R

Pushbutton for the adjustment of a constant light value.

## IBMSD

### Die KNX-Projektierung kann mit diesen Funktionen erfolgen:

- Beleuchtungsschaltung EIN/AUS
- Beleuchtung Dimmen
- Sollwert für die Lichtkonstanthaltung vergeben und speichern
- Konstantlichtregelung aktivieren und deaktivieren
- Bewegungsabhängigkeit EIN/AUS
- Zusatzfunktion für HKL EIN/AUS
- Ein weiterer, zeitlich projektierbarer, bewegungsabhängiger EIN/AUS-Befehl für externe Schaltfunktionen (HKL)

Der Erkennungsbereich umfasst 7 m Ø bei einer Raumhöhe von 2,5 - 3 m. Zur Erweiterung des Erkennungsbereichs können bis zu 64 IBMSD über einen Bus kombiniert werden.



4-Tasten-EIB/KNX- Programmier-  
Tableau mit manueller Bedienung

**Es besteht die Möglichkeit der Programmierung des konstant zu haltenden Lichtwertes in Verbindung mit der manuellen Lichtregelung über ein 4-Tasten-EIB-Tableau.**

### Automatik-Betrieb (Speichern)

Über das nebenstehende 4-Tasten-Tableau erfolgt die Programmierung wie folgt:

1. Nach Betätigung der Taste 'AUTOMATIK/MANUELL' leuchtet die LED an der Taste 'STORE' auf, wenn der AUTOMATIK-Modus getastet wurde.
2. Mit den Tasten 'HELLER' und 'DUNKLER' kann der gewünschte, konstant zu haltende Lichtwert ausgewählt werden.
3. Der gewählte Lichtwert wird über die Taste 'STORE' abgespeichert. Leuchtet die Taste 'STORE' nicht auf, befindet sich das Gerät im manuellen Modus. Die Beleuchtung kann mit ▲ und ▼ manuell gedimmt werden.

### Manueller Betrieb

Drücken der Taste 'Man/Auto'. Die Regelung befindet sich im manuellen Modus, wenn die LED der Taste STORE nicht aufleuchtet.

Taste Hell ▲: Beleuchtung schaltet ein und wird heller.

Taste Dunkel ▼ : Beleuchtung wird dunkler und schaltet ab.

Die gleichen Funktionen können über ein Touch Panel ausgeführt werden.

### Lighting control

The IB MSD sensor measures continuously the reflected brightness at the device and compares it with the set-point. If necessary the illumination is dimmed up or down. Light levels to be kept constant can be set at the IB MSD between 25 to 750 Lx.

This corresponds with a maximum value of approx. 1500 Lx, independent of reflection value, room geometry, mounting of sensors (i.e. at workplaces). A direct access of light (i.e. sunlight or spotlights) onto the sensor has to be avoided.

### Set-point adjustments

These are the possibilities for set-point adjustments:

- As a parameter within the ETS software,
- via the object 'set-point brightness' and object 'save set-point',
- with the memory button at the device. The desired constant light value is dimmed at the adjustment button. 10 seconds after release of the button the adjusted light value is stored.

### Sensitivity of presence detection/interference protection

Sensitivity of presence detection can be adjusted in three steps (lower, middle and high sensitivity) as a parameter setting ('Sensitivity of motions-sensor') within the ETS-Software. Additionally to suppress false detections the minimum impulse length of measured motion impulse can be determined. If false detection occurs, the impulse

length can be extended. An increase of impulse lengths increase the sensitivity, separate values of switch-on and switch-off are adjustable.

## IBMSD

### Installation

The IB MSD should be mounted within the area where the illumination has to be controlled. Brightness has to be measured always indirectly. A direct access of sunlight or artificial light has to be avoided.

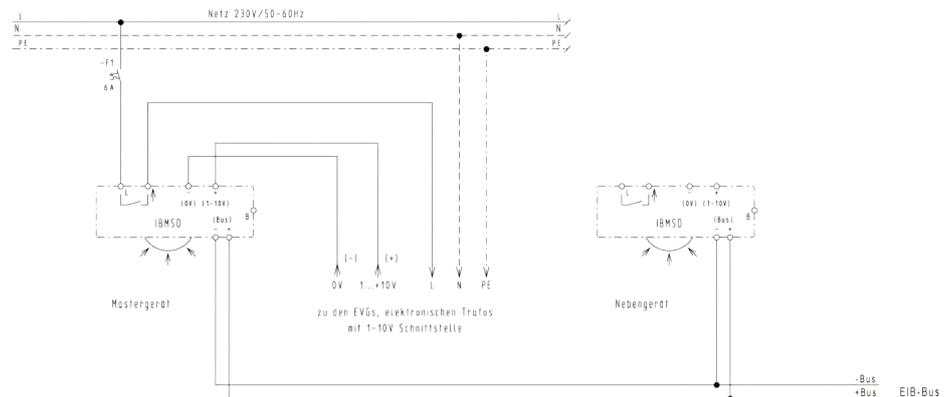
The lens of the sensor is designed for ceiling heights of 2.5 - 3 meter. In rooms with higher ceilings the coverage of the sensors increases, the sensitivity decreases. When installing the device it should be mounted such that the LED shows to the window. In this way sensors will be pointed into the rooms.

Technical data	
device description, order-no.	KNX Multi-Sensor-Dimmer type IB MSD, order-no. 80.14.800
operating temperature	0 - 50°C
adjustable light value	approx. 25 - 750 Lx (at the device, corresponds with approx. 50 - 1500 Lx at work plane)
detection cone, mounting height	approx. 100° (light value sensor and motion detector), 2.5 - 3 m
load terminals	switching contact input (↑), switching contact output (↓)
control terminals	+/- (1 - 10 V of electronic ballasts or transformer), base insulation according to IEV 664 (10/92), no safety extra-low voltage allowed
capacity of control terminals	50 mA (passive of electronic ballast) corresponds with approx. 50 electronic ballast or transformers (see manufactures specifications)
terminal assignment	see wiring diagram <b>In case of wrong connection malfunction or destruction possible.</b>
power supply/ load terminals	L, N, switched (↑)
load capacity output	5 A, resistive load 30 pcs.* single electronic ballasts, 14/18 W, 20 pcs.* twin electronic ballast, 14/18 W. 30 pcs.* single electronic ballasts, 28/36 W, 20 pcs.* twin electronic ballast, 28,36 W. 20 pcs.* single electronic ballasts, 35/58 W, 10 pcs.* twin electronic ballast, 35/58 W
fuse protection	extern 6 A
protection class/type	protective insulation II, IP 20
max. length of cable	100 m (control cable 0.5 mm <sup>2</sup> , load-/supply cable 1.5 mm <sup>2</sup> )
terminal blocks	terminal screws for single- and fine-wired cables 0.3 - 1.5 mm <sup>2</sup>
KNX terminals	Bus +/-
Supply KNX	24 V DC (+6 V/-4 V), KNX power supply
power input	< 250 mW
construction	plastic housing for ceiling surface, ceiling recessed mounting or for installation into louver lamp fixtures
degree of contamination	2 (dry non-conductive, in compliance with IEC 664 (10/92))
dimensions, weight	WxHxD = 58.5x70.5x42 mm, approx. 150 g
conformation	CE, KNX

\* Number of electronic ballasts to be connected in case of a 1.5 mm<sup>2</sup> cable with a length of 15 m from distribution board to the device and a further 20 m to the center of the lighting circuits (impedance approx. 800 mΩ). If the cable section is larger or if the cable is shorter, the permissible load is reduced (e.g. in case of impedance off 400 mΩ by 20 %).

### Wiring diagrams

**One IB MSD for controlling and switching of large areas with additional devices for presence detection.**



## Application description

### Multi Sensor Dimmer EIB-KNX Type: IBMSD, Order-Mo.: 80.14.800

Product family: Lighting/Product type: Special components

Number of addresses: 30  
Number of assignments: 30

### Object description

object-no.	object-name	object-funcion	object-type
0	Lighting ON/OFF	switching	1 bit
1	Lighting dimming	dimming	4 bit
2	Lighting value setting	set value	1 byte
3	Setpoint room brightness	setpoint pretend	1 byte
4	Setpoint storage	setpoint storage	1 bit
5	Control active	activate/deactivate of control	1 bit
6	Movement	triggering movement	1 bit
7	Movement lighting	presence dependence ON/OFF	1 bit
8	HVAC ON/OFF	switching	1 bit
9	Movement HVAC	presence dependence HVAC	1 bit

### Parametrizing:

Parameter name:	Parameter adjustment:	Parameter description:
<b>ON/OFF</b>		
Switch ON value	setting to the ETS switch ON value <b>no changing at download</b>	Determines if the possibly manually stored switch ON value at the downloading is kept or if it shall be replaced by the ETS-value
Reaction if bus-voltage fails or returns	switches OFF / remains OFF <b>relay unchanged / switches ON</b> switches OFF / switches ON	Enables the adjustment of the IBMSD after bus-voltage failure or return.
Status indication	<b>no sending of status indication</b> sending of status indication	Determines if during the switching status back indication shall be sent to the bus.
<b>Dimming and set value</b>		
Maximum output [5...255]	5,6,7,.....253,254, <b>255</b>	Adjustment of the maximum brightness which shall be achieved.
Minimum output [0...250]	<b>0</b> ,1,2,.....248,249,250	Adjustment of the minimum brightness which shall be achieved.
Speed of the dimmer process (0..100%) [in seconds]	1,2,3,4,5,6,7, <b>8</b> ,9,....253, 254, 255	Speed of the dimmer process during the dimming with object no.1 for the complete dimming range.
fade time with value setting 0-100% (input value x 4 [in seconds])	0,1, <b>2</b> ,3,.....253,254,255	Speed of the fade time to a value with object no.2 for the complete dimmer range.
read out value to the bus	<b>no sending of status indication</b> sending of status indication	To be adjusted if the control shall be switched OFF after the achievement during the dimming process.
at minimum	switching OFF <b>not switching OFF</b>	To be adjusted if the module shall switch OFF after the achievement of the brightness minimum during the dimming process.

## Parametrizing:

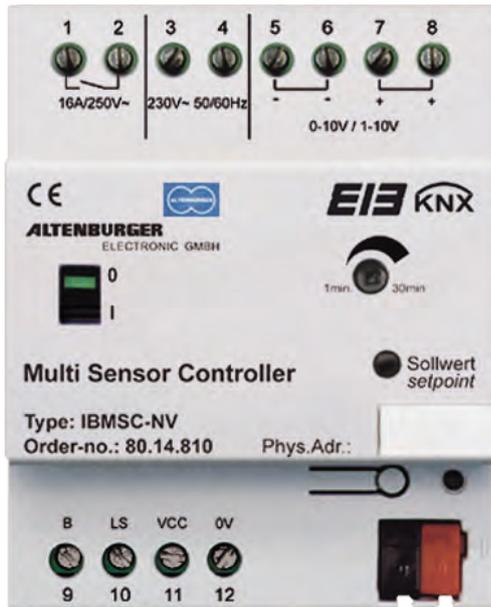
Parameter name:	Parameter adjustment:	Parameter description:
<b>Lighting control</b>		
After bus-voltage return	lighting status as before the busvoltage failure <b>lighting control active</b> lighting status ON/OFF active	To be adjusted if the module after a bus-voltage failure or after no movement was recognized shall work in the automatic mode or in the ON/OFF mode.
Light dependent switch off delay time [in minutes]	1,2,3,...8,9, <b>10</b> ,11,...253,254,255	Time unless switch off after the lighting control has achieved the minimum.
Speed of control (0-100%) (input value x 4 [in seconds])	10,11,12,...21, <b>22</b> ,23,..,253,254,255	Speed at which daylight changings shall be compensated by the artificial lighting.
Room brightness in the control mode	to be set on ETS-room brightness value <b>not to be changed during the download</b>	Determines if the possibly manually stored set value shall be maintained during the downloading or if it shall be changed through the ETS value.
Function set button	<b>enable</b> disable	To set button at the module can be set out of function.
Switch OFF delay time [minutes]	1,2,3,4,...8,9, <b>10</b> ,11,...253,254,255	Time unless final switch OFF after the lighting has been dimmed down within a set delay time to minimum.
Presence dependence after bus-voltage recovery	as before bus-voltage failure <b>active</b> inactive	Determines if the lighting control after a bus-voltage failure shall work in dependence of motion detection or not.
Heating, ventilation, air conditioning & Movement Presence dependence after bus-voltage recovery	as before bus-voltage failure active	Determines if aircon, heating, ventilation control shall work after a bus-voltage failure in dependence of motion or not.
HVAC ON delay time	in seconds in minutes	Determines if the adjustable switch ON delay time shall be in seconds or in minutes.
HVAC ON delay time [0-255 seconds] [0-30 minutes]	0,1,2,3,.....9,10,11,.....253,254,255 0,1,2,3,.....8,9,10,11,12,.....28,29,30	Determines how long motion shall be detected unless aircon, heating or ventilation shall be switch on.
HVAC recovery time [2-220 minutes]	2,3,4,.....8,9,10,11,.....253,254,255	Determines the time unless an OFF telegram shall be sent after no motion is recognized.
<b>Sensitivity presence sensor</b>		
Sensitivity presence detection	high sensitivity <b>mean sensitivity (standard)</b> reduced sensitivity	The sensitivity of the motion sensoric can be adjusted in 3 steps.
Motion impulse range during retriggering [minimum x times 12ms]	1,2,3... <b>5</b> ,6,.....253,254,255	Determines the minimum time range for a moving impulse before a following movement shall activate the detection (lighting is already switched ON).
Motion impulse time range at new movement [minimum x times 12ms]	1,2,3,.....13, <b>14</b> ,15,.....253,254,255	Determines the minimum time range for a moving impulse before a following movement shall activate the detection.(follow-up time was already running down).
Fade out of disturbance after relais switch OFF [x 12ms]	1,2,3,....., <b>40</b> ,41,....253,254,255	During the set time range no movement will be recognized by the sensor after the internal relay switched OFF.

## IBMSC-NV

## KNX Multi-Sensor-Controller

**Type:** IBMSC-NV  
**Order-No.:** 80.14.810

KNX Multi-Sensor-Controller with the possibility to connect up to 6 sensors for presence detection and constant light control.



### Product features:

- The installation of lighting with 1 - 10 volt interface or with load dimmers can be done from control cabinet.
- For extension of coverage the device can be wired with up to 6 Multi-Sensors. Suitable types of Multi-Sensors are: LS/d, LBd/k, LBS/d, LBS/de (see page 48).
- One of the functions, daylight dependent or presence dependent control, can be deactivated individually.
- The electronic control is located in the Multi-Sensor-Controller, it will be controlled by the external sensors.
- Switch capacity of the controller is 16 A.
- The detection area can be additionally expanded through the connection of IB MSD via the KNX bus, up to 64 IB MSD can be connected.

## AQAD-S

## AQAD-S Lichtkonstanthalter

**Type:** AQAD-S  
**Order-No.:** 50.14.116

Daylight dependent control for automatic switching on and off of electronic ballasts or transformers with 1 - 10 volt interface as well as for up to 3 load dimmer with 0 - 10 volt interface.



### Produktmerkmale:

The AQAD-S controls up to 100 electronic ballasts or transformers with 1 - 10 volt interface or 3 ALTENBURGER load dimmers with an individual capacity of up to 8 kW via its 0 - 10 volt interface. Its switching capacity is 10 A.

The constant light value can be adjusted at an external potentiometer, type DPUT-S, or at the internal potentiometer.

The device works in connection with the light value sensor of type LF/w/D.

### Application:

Sport halls/gymnasiums, fitness/wellness areas, cafeterias/canteens, break halls and garden plants.

### Accessories:

- Light value sensor, type: LF/w/D  
Light value sensor, swiveling, IP55  
The LF/w/D works in connection with the before mentioned IB-LWS3 and AQAD-S.
- Protective cage for light value sensor, type LF/w/D  
impact resistant light value sensor, type LF/w/D with protective cage, type SK.



**Type:** LF/w/D  
**Order-No.:** 51.21.010

**Type:** SK  
**Order-No.:** 51.21.090

## IB-LWS3

Type: IB-LWS3  
Order-No.: 80.14.016

## IB-LWS3

Daylight dependent working KNX 3-channel light-control-switch, suitable for all kinds of lamps.



### Product features:

The IB-LWS3 serves for daylight dependent switching of up to three lighting circuits. The constant light values are adjustable for each lighting circuit between 20 to 2000 Lx as well as between 200 to 20000 Lx.

With the ETS-Software is decided whether the KNS telegrams are to be send after the adjusted light values were exceeded or fallen below.

Suitable light value sensor: type LF/w/D (see page 42).

## LWS3

Type: LWS3  
Order-No.: 50.14.016

## LWS3

Daylight dependent working 3-channel light-control-switch, suitable for all kinds of lamps.



### Product features:

#### Operation range:

With a slide switch the operation range can be adjusted from 10 - 1000 Lx alternatively form 200 - 20000 Lx.

#### Adjustment of switch value:

For three circuits the respective switch values are individually and continuously adjustable. With the potentiometers of switch value 1, 2 and 3, the switch values can be adjusted. The hysteresis for restart is 10 %. If the ambient light becomes darker the 10 % of the adjusted light value, illumination switches on.

#### Output Indikator:

The LEDs on the device show the expected state switching of lighting. Once the LED is on, illumination is switched on or will be switched off after delay time.

#### Delay times:

The switch-on and switch-off delays are individually adjustable between 2 seconds and 20 minutes at the respective potentiometers.

#### Switching output:

The LWS3 has a switch capacity of maximal 3x 10 A/250 V. With the potential free contact all kind off lamps can be controlled directly or can be switched for power amplification via relays or contactors.

#### Applications:

Großraumbüros, Lagerhallen, Fabriken, Sport- und Schwimmhallen, Mensen und Pausenhallen, Rathäuser, Kliniken, Außenbereiche der verschiedensten Art.

## LWS1

Type: LWS1  
Order-No.: 50.14.011

## LWS1

Daylight dependent working 1-channel light-control-switch, suitable for all kinds of lamps.



Ähnlich dem vorgenannten LWS3, jedoch für einen Lichtkreis.

Geeigneter Sensor: Typ LF/w/D (siehe Seite 42)

## DC NV

Type: DC NV  
Order-No.: 85.01.002

## DALI Dim/Converter-Control

The DN NV offers with its 6 selector switches (see ALTENBURGER brochure DALI Digital-Lighting-Controls) inter alia Multi-Sensor functions.

### DALI Dim/Converter Control DC NV



- Converter 1 - 10 V / 0 - 10 V analog → DALI,
- 1-pushbutton switch-dim-function,
- 2-pushbutton switch-dim-function,
- daylight and presence dependent Multi-Sensor-functionality.

### Multi-Sensors for constant light control and presence detection



- The DALI Dim/Converter-Control automatically recognizes the connected Multi-Sensors and controls the lighting in dependence of the daylight and presence,
- up to 6 sensors can be connected.

**Suitable sensors are: see all on page 48 described sensors.**

The adjustment of constant light value is made either with single or double pushbutton, which also can be used for manual lighting control.



### 1-pushbutton switch-dim-function

- off/on, brighter/darker,
- Constant light level adjustment through double click.
- The adjusted light level is also the switch-on value.



### 2-pushbutton switch-dim-function

- off/on, brighter/darker,
- Constant light value adjustment through simultaneously and continuously pressing both pushbuttons.
- The adjusted light level is also the switch-on value.

## DC NV DALI Dim/Converter-Control

### Conversions

While the DALI Converter (digital → analog 1 – 10 volt/0 - 10 volt) transfers the DALI-signals into analog signals, the DALI Dim/Converter Control transforms the analog signals into digital signals.

This offers the following possibilities:

- ON/OFF switching of DALI ballasts with analog control voltages
- Dimming with potentiometers
- Operation with ALTENBURGER-control modules with multiple pushbutton panels (e.g. setting of up to 6 light levels, Brighter, Darker, ON, OFF – see ALTENBURGER catalogue ALTOQUICK (AQ) -dimming controls).
- Combination with Multi-Sensors for the daylight dependent control and presence detection.

### Messages

#### Operation

The green LED signalizes readiness for operation, the yellow LED indicates DALI-signals.

#### DALI-Faults

If DALI ballasts are not connected or DALI-wires are interrupted, the red LED flashes twice. The double flash continues unless the fault is removed.

#### DALI short circuit

In case of a short circuit on DALI-connections the red LED flashes three times. This is repeated unless the fault is removed.

### Sensors

The sensors automatically are being identified. If lighting sensors are connected, lighting operates in dependence of the daylight. If motion sensors are connected lighting operates in dependence of presence detection. Without sensors lighting is controlled manually with the different functions.

For the extension of areas or for the increasing of sensitivities up to 6 sensors can be connected in parallel. If several light sensors are connected a mean value of all sensors is computed. By using several motion sensors the area of detection is extended or the sensitivity increases.

The DALI Dim/Converter Control can be operated with light or motion sensors individually or with multi-sensors, combining light and motion in one. The sensors are connected to the terminals [LS] and [B].

If the module shall return to a manual control mode it must first being set voltage free, the sensors have to be disconnected and power ON has to be restored without sensors.

## Technical Data DALI Dim/Converter Control (DC NV)

Designation	: DALI Dim/Converter Control NV
Type	: DC NV
Order-No.	: 85.01.002
Power supply	: 110V-240V AC 50/60Hz, 110V-240V DC
Own consumption	: approx. 0,7 - 5,8W, depending on the load
Protection	: external 16A
Ambient temperature	: max. 45°C
Protective class	: II (protective isolation)
Protective type	: IP20
Contamination degree	: 2 (dry, non-conductive)
Delay time setting	: adjustable between 1 and 30 minutes. After this time the light level is reduced to 1-2 % and finally switches OFF after approx. 10 min.
DALI - interface	: according to DALI-specification, interface poled Power supply for max. 100 DALI ballasts, approx. 200mA/13V DC (Uo approx. 15V DC) - Ik<250mA DC, max. 22,5V DC - electronic current limitation,
pushbutton inputs	: 2 pushbutton inputs (<6V DC) (normally open contact) Terminal T1/T2
Analog Control input	: voltage input (analog 0-10V/DC) Terminal AS
Terminal 5 (1-10V)	: internal power supply (approx. 450 µA) for the bridge at 1..10V interface (for operations in systems with 1...10V interface, potentiometers for another manual control an external bridge from terminal 6 to terminal 5 has to be made)
Sensor inputs	: 1 Light input (analog <5V DC), 1 motion input (<5V DC) Terminal LS/B
Sensor supply	: approx. 10V/18mA DC (supply for the sensors) Terminal Vcc
Sensors	: max. 6 sensors in parallel (see sensors and manual)

DALI-interfaces and control inputs (pushbutton inputs /sensoric/analog signals) have no basic isolation, no protective low-voltage

Indicators at the module	: 3x LEDs, indicating the working conditions of the module, 1x selector switch for the different functions
Controls	: 1x Trimmer/Potentiometer for the setting of the delay time (1-30 min.)
1x pushbutton	: optional
Terminals	: Screw terminals for solid and litz wires with sleeve (0,25-5,0mm <sup>2</sup> )
Supply	: L, N Terminal No. (1/2)
Control inputs	: T2, T1, AS Terminal No. (3, 4, 5, 6)
DALI-interface	: DA+ DA- Terminal No. (8, 7)
Sensors	: B, LS, Vcc Terminal No. (9, 10, 11)
0V (DA-)	: 0V Terminal No. (7, 12) (0V and DA are internally connected)
Wire length	: max. 100m

- DALI-wires max. 300m with 1,5mm<sup>2</sup> or accord. to Table (distance of controller to DALI ballasts, -converter)

Wire section in mm <sup>2</sup>	2x0,5	2x0,75	2x1,0	2x1,5
Wire length (distance) in m	100	150	200	300

- DALI- and supply wires must be separated from the control wires (not in one cable) -

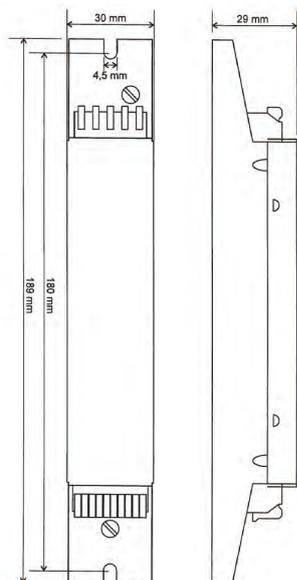
Wiring	: The respectively requirements for installations (wiring, isolation, protection/ minimum sections) have to be observed.
Housing	: Isolation housing for DIN rail systems
Dimensions	: WxHxD=72x90x64mm
Weight	: approx. 200g
Designation	: CE, DALI
wiring	: according to wiring diagrams and print at the module

Except to the supply terminals no supply potentials may be connected to the module. All potentials for the control and operation may have a basis isolation.

## Multi-Sensoren für den Leuchteinbau



Type                    KMSS  
Order-No.:            50.13.321



**MULTI-SENSOR CONTROL KMSS** with combined light- and presence detector LBS/e suitable for an insertion into light fittings (see page 48)

The KMSS can also be operated without presence detection, just as a constant light control. In this case the artificial light changes in dependence of the daylight portion and correspondingly switches ON and OFF.

### Characteristics:

- The KMSS provides an 1-10 V interface for electronic ballasts for fluorescent lamps or electronic transformers for lowvoltage halogen lamps as well as for Altenburger phase-controlled or phase-interval controlled dimmers. It performs a constant light control and a presence detection with an integrated automatic switch off function.
- Energy savings: 70% and more
- Increases the life span of all types of dimmable lamps.
- Short payback periods
- Slim design for the insertion into light fixtures.
- Set point adjustment with a pushbutton
- Optional: dimming control through pushbuttons
- Selection of functions: with a selector switch
- The combination of several KMSS extends the range of acquisition. In this case a mean value of the brightness at the different sensors is formed.
- A maximum of 100 ballasts or transformers can be controlled
- A maximum of 30 electronic ballasts or transformers can be switched (please refer to the technical data).
- Service off duty hours (semi-automatic operation - switch ON function to be made just manually)

### Applications:

Floor, wall and ceiling lamps, furniture with integrated lamps, lumious walls and ceilings, under-floor and staircase lighting, swimming pool lighting.



Type                    MK/1L  
Order-No.:            50.13.400

### Mini-Constanter

Daylight-dependent, compact constant light control for the fitting into light fixtures with fluorescent lamps, low-voltage halogen lamps or LED lamps with dimmable electronic ballasts or transformers with 1-10 V interface.

### Characteristics of type MK/1L:

- simple connection to the lamp: just 2 wires at the output of the electronic ballast or transformer.
- No additional voltage supply required
- Suitable for the control of up to 100 single or twin electronic ballasts or 100 electronic transformers with 1-10V interface.



Type                    MK/LSK  
Order-No.:            50.13.411

### Characteristics of the type MK/LSK

Mini-Constanter with stainless steel clamp for fluorescent tubes with a diameter of 26 mm or compact fluorescent lamps, including 60 cm connecting cable.

### Applications:

Lighting installations of all kind with dimmable electronic ballasts or transformers with 1-10 V interface.

### Multi-Sensor-Dimmer

in combination with EIB/KNX and DALI-Controllers



**Type** LBS/d  
Order-No.: 51.21.031  
ceiling mounted

### Daylight-dependent sensor

in connection with EIB/KNX and DALI DC NV controllers



**Type** LS/d  
Order-No.: 51.21.032  
ceiling mounted

### Multi-Sensors

for the EIB/KNX and DALI-Controllers, accommodated in swivelling downlight housings (up to 6 sensors per controller).



**Type** LB/dk  
Order-No.: 51.21.039  
Ceiling-recessed housing



**Type** LBS/d/Q  
Order-No.: 51.21.031Q  
Ceiling-recessed housing with square coverplate



**Type** LS/d/Q  
Order-No.: 51.21.032Q  
Ceiling-recessed housing with square coverplate



**Type** LBS/d/R  
Order-No.: 51.21.031R  
Ceiling-recessed housing with round coverplate



**Type** LS/d/R  
Order-No.: 51.21.032R  
Ceiling-recessed housing with round coverplate

### LBS/e

Multi-Sensor for the fixation in light fittings or ceilings



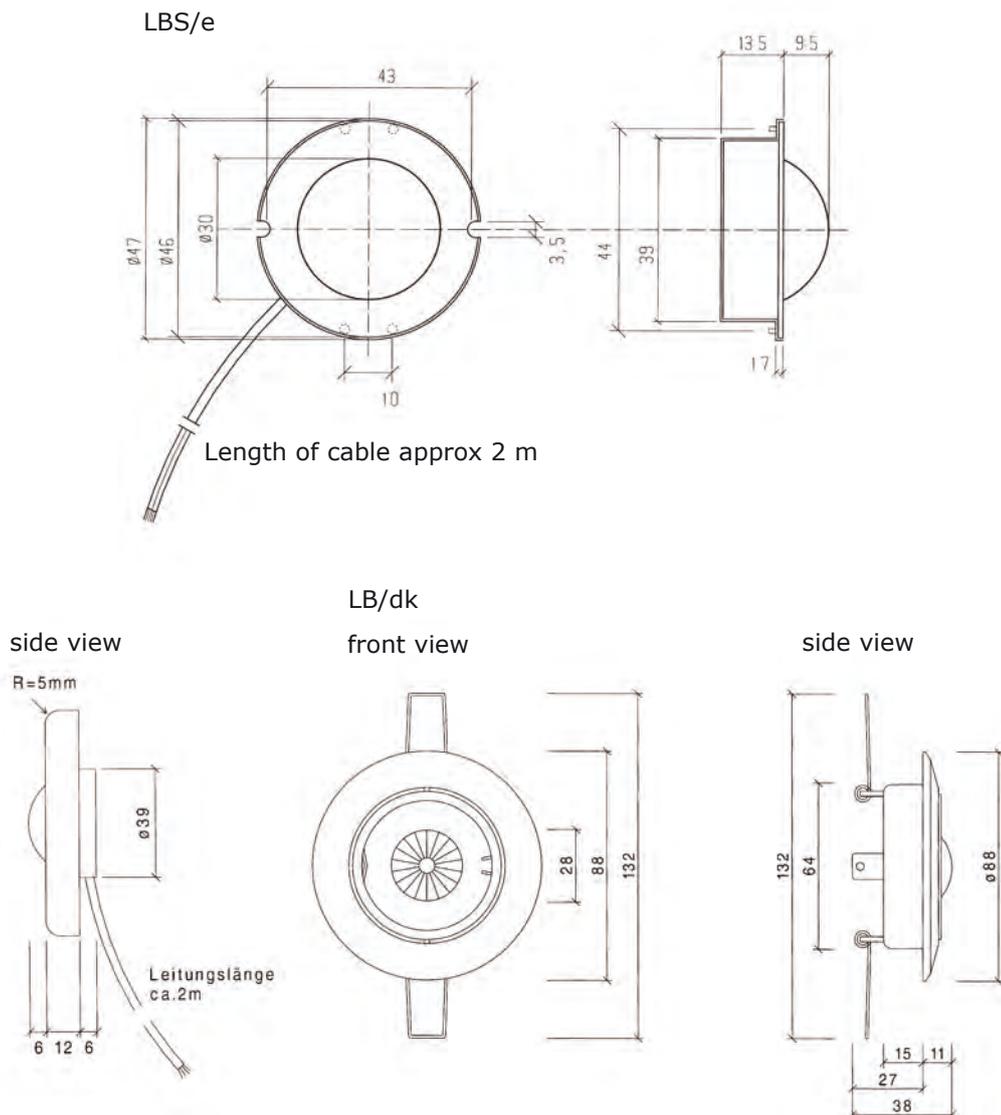
**Type** LBS/e  
Order-No.: 51.21.030

(Multi-)Sensors in connection with the multi-sensor control type KMSS (see page 47) for the fitting into light fixtures.

## Technical data

Description of device	: light- and presence sensor LBS/e
Order-No.	: 50.21.030
Power supply	: 5V DC (From the multi-sensor dimmer KMSS)
Power consumption	: approx. 5 mW
Operating temperature	: 0°C.....+50°C
light level working range	: approx.. 20-1000 Lux (jointly with the Multi-sensor control KMSS)
Terminals	: green (+5V), yellow (light signal), brown (0V), white (signal for the presence detection) Base isolation according to IEC 664 (10/92), no protective low-voltage
Connections	: Please refer to wiring diagram of the KMSS In case of errorness connection, non-functioning or destruction possible
Parallel connection of sensors	: max. 3 light-/presence sensors
Protective class, protective system	: II (protective insulation), : IP 20
Max. length of cables	: 100 m (2 m connected with the sensor)
Contamination level	: 2 (dry, non-conductive-, according to IEC 664, 10/92)
Weight	: 60 gr
CE-requirement	: EMC complied with according to EN 61547 (04/96), low-voltage according to EN 60928 (03/96)

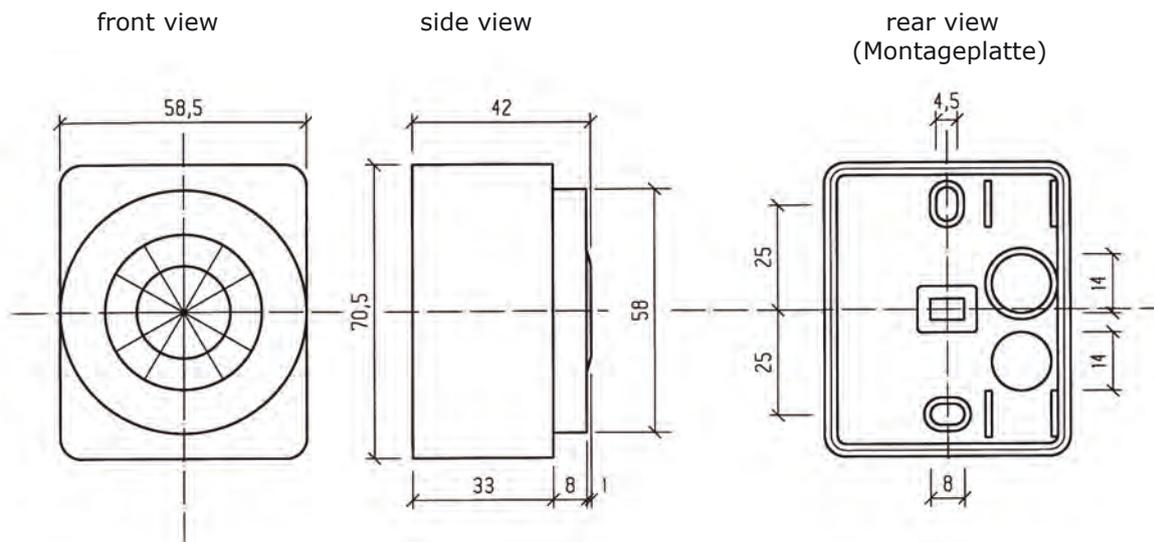
## Dimensional Drawing:



## Multi-Sensors / motion detectors, ceiling-mounted types



### Dimensions



**Multi-Sensors / motion detectors, ceiling-recessed types**

**(die Abdeckungen sind als Sonderausführung in beliebiger Form, Farbe und Größe verfügbar.)**



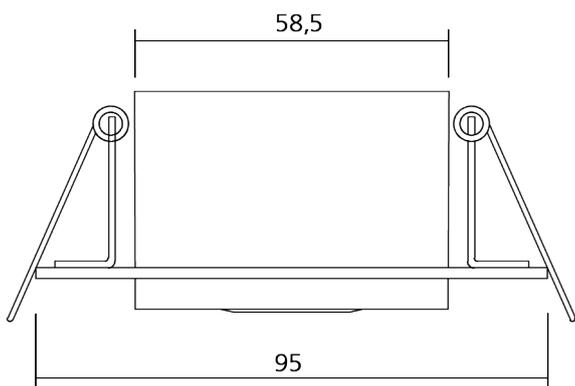
ceiling-recessed design square (95 x 95 mm)



ceiling-recessed design round(95 mm Ø)

**All sensors are comprising 2 components:**

- Mounting plate with terminals**  
 This terminal plate can be wired in advance. The ceiling-mounted type is then screwed to the ceiling.
- Function part**  
 The function part is snapped onto the wired terminal plate. The ceiling recessed sensor is fitted to the ceiling with the crawls at the sensor.



ceiling-recessed design, side view with spring action

Diameter of the hole = 90 mm

Also the sensors in the ceiling-recessed version are comprising one terminal plate and separately the function part.



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