



System Manual | 05.04.2023

# Busch-Presence detector



1	<a href="#">Overview</a>	4
1.1	<a href="#">Design lines</a>	4
1.2	<a href="#">Basic principles</a>	4
2	<a href="#">Overview of product range</a>	5
2.1	<a href="#">Applications</a>	5
2.2	<a href="#">Device overview</a>	6
2.2.1	<a href="#">Device types</a>	6
2.2.2	<a href="#">Monoblock devices</a>	8
2.2.3	<a href="#">ABB flexTronics®</a>	
2.2.4	<a href="#">Mounting possibilities</a>	13
2.2.5	<a href="#">Monoblock devices</a>	13
2.2.6	<a href="#">ABB flexTronics®</a>	
2.3	<a href="#">Setting options / control</a>	15
2.3.1	<a href="#">Monoblock devices</a>	15
2.3.2	<a href="#">ABB flexTronics®</a>	
3	<a href="#">Device Functions</a>	23
3.1	<a href="#">Overview of functions</a>	23
3.1.1	<a href="#">Monoblock devices</a>	23
3.1.2	<a href="#">ABB flexTronics®</a>	
3.2	<a href="#">Functions</a>	32
3.3	<a href="#">Detection range</a>	40
3.3.1	<a href="#">Monoblock devices</a>	40
3.3.2	<a href="#">ABB flexTronics®</a>	
3.4	<a href="#">Switching capacity</a>	44
3.4.1	<a href="#">Monoblock devices</a>	44
3.4.2	<a href="#">ABB flexTronics®</a>	
3.5	<a href="#">Status indication</a>	50
3.5.1	<a href="#">Monoblock devices</a>	50
3.5.2	<a href="#">ABB flexTronics®</a>	
4	<a href="#">Information about planning and application</a>	53
4.1	<a href="#">Principles of function / principles of operation</a>	53
4.1.1	<a href="#">The difference between motion detectors / presence detectors</a>	53
4.1.2	<a href="#">Principles of function</a>	54
4.1.3	<a href="#">Lens types</a>	56
4.1.4	<a href="#">DALI</a>	
4.1.5	<a href="#">Detection ranges / detection levels</a>	57
4.2	<a href="#">Case studies</a>	61
4.2.1	<a href="#">Overview</a>	62



4.2.8	<a href="#">Daylight-dependent control (constant light control)</a>	88
4.2.9	<a href="#">Corridor</a>	91
4.2.10	<a href="#">Stairwell</a>	95
4.2.11	<a href="#">Gymnasium</a>	98
4.2.12	<a href="#">Private house</a>	100
4.2.13	<a href="#">Office building with basic brightness function</a>	102
4.3	<a href="#">Sources of interference</a>	104
4.3.1	Sources of interference	
4.3.2	<a href="#">Remedy</a>	107
5	<a href="#">Notes</a>	108
6	<a href="#">Index</a>	109



# 1 Overview

## 1.1 Design lines

This system manual serves for the technical planning of the simple to complex installations.

The different design lines (with the respective special colours and shapes of the devices) are not listed in this system manual.

Please obtain the desired current design versions and the corresponding complete article numbers as well as the order numbers from the respective product catalogues or the online catalogue at <https://busch-jaeger-catalogue.com>.

## 1.2 Basic principles

Information about basic functions and principles of operation of the devices are available at Chapter 4 "Information about planning and application" on page 53.





## 2 Overview of product range

### 2.1 Applications

Lighting systems and also heating, air-conditioning and ventilation systems (also referred to as HVAC in the following) can be controlled intelligently, according to need, with presence detectors.

The choice of the right unit depends on the height of the ceiling, the size of the area to be monitored, the installation situation and the type of movement to be detected.

Detection situations in corridors through which people move are totally different to offices in which sometimes only a finger moves across a keyboard. If a person works exclusively at a computer, only minimal movement is to be expected. Here detection by the watchdog needs to be especially fine and precise. In gymnasiums on the other hand, where there is a lot of action, other factors are involved: Here the watchdog must accurately detect movement from a great height and at the same time be protected by a protective basket against damage. In classes and conference rooms a semi-automatic unit will suffice. Here, in case of presentations with a beamer, the lights can be switched off manually via a button or a remote control. Also operation via Bluetooth<sup>®</sup> is possible for the respective device versions.

In addition to the detection situations, the devices are different with regard to the connection technology. Aside from the classic connection in 110 to 240 V networks, device versions for DALI or KNX bus systems are available. KNX devices are dealt with in separate documentation.



## 2.2 Device overview

### 2.2.1 Device types

Two different ranges are available.

- Monoblock devices
- flex devices

Monoblock devices



Fig. 1: Busch-Presence detector: Monoblock device

The sensor and actuator are located in a housing.

The decor frame is additionally available separately if required and makes individual colour design possible.

The Monoblock devices are intended for direct ceiling installation. Surface-mounted solutions are not available for Monoblock devices.



flex presence detector sensors and flush-mounted inserts (ABB flexTronics

®)

Fig. 2: Busch-Presence detector: flex presence detector sensors and flush-mounted inserts

Busch-Presence detector flex devices have a modular design. The presence detector sensor (detection lens) and the insert are isolated from each other.

- The desired function of the mounted device is determined from the combination of the insert and the presence detector sensor used.
- The mounted device is activated with the presence detector sensor.

The interfaces between the presence detector sensor and the inserts are standardised.

- A presence detector sensor can be combined with all inserts.
- One insert can be combined with all presence detector sensors.

In this way, all available inserts and presence detector sensors (detection lenses) of the ABB flexTronics ® devices could be combined with each other in a purely physical manner. This, however, is not always practical.

- For example, not practical is a blind actuator insert in combination with a presence detector sensor.

The decor frame is available separately as an accessory and makes individual colour design possible apart from white and silver.



2.2.2 Monoblock devices

For switching lighting systems that depend on brightness and movement.

For the requirement of controlling a lamp circuit across a large detection range, it is possible to extend the detection range by means of presence detector extension units. The presence detector extension units, in dependence of the devices, transmit the information of detection and brightness to the main unit of the presence detector, which then triggers the appropriate switching process or function.

In addition to the classic setting options via trimmers, the devices offer additional control options. Depending on the version used, control can be implemented via infrared remote control or the ABB Watchdog Remote control app via Bluetooth®.

For devices with a Bluetooth® interface, extended functions can be implemented via the app. These functions, for example, include a presence simulation, a basic lighting function or an anti-glare function. Aside from extensive setting and configuration parameters, the electrician is supported by an error compensation (a PRS that can be switched off and set according to its sensitivity), a visual test mode and the panel light and heating, air conditioning and ventilation function. In addition, the semi-automatic mode can be extended with a comfort function.

The following lens forms are available for the devices:

Compact:  
For smaller offices, WC facilities, etc.

Universal:  
For all popular applications (exception: applications of large heights).

Corridor:  
For applications in corridors and hallways.

Table 1: Lens forms





## Overview of products

The following versions of devices are available:

E-contact	Applications for noiseless switching in the private and for smaller offices, etc.
Relay	For all popular applications
Extension unit	For all popular applications to extend the transmission range.
DALI	For all popular applications with DALI bus system
DALI Extension unit	For all popular applications with DALI bus system to extend the transmission range



The device versions in combination with the lenses result in the following terminal devices:

Function Lens	E-contact	Relay	Extension units	DALI	DALi ext un
With infrared remote control (extension units have no operating function)					
Compact	6817/62-xxx-500	6819/60-xxx-500	6819/68-xxx-500	—	—
Universal	6817/32-xxx-500	6819/30-xxx-500	6819/38-xxx-500	—	6819/38-xxx-500
Corridor	—	6819/50-xxx-500	6819/58-xxx-500	—	6819/58-xxx-500
With Bluetooth <sup>®</sup> function					
Universal, BT	6817/33-xxx-500	6819/31-xxx-500	—	6819/35-xxx-500	—
Universal, BT with sealing ring	6817/93-xxx-500	—	—	—	—
Corridor, BT	—	6819/51-xxx-500	—	6819/55-xxx-500	—

Table 2: Terminal devices

Decor frame (colour kits) for the devices

Decor frame for Compact and Universal:  
6889/30-xxx-500

Decor frame Corridor  
6889/50-xxx-500

Table 3: Peripheral devices



### 2.2.3 ABB flexTronics®

In the following you will find an overview of actuators and sensors for the implementation of lighting control via movement detectors flex.

The brief descriptions of the characteristics provide an initial orientation. For a detailed overview of the characteristics and applications of the devices, see the following items:

- Characteristics (device functions): see chapter 3 "Device Functions" on page 23
- Applications: see chapter 4.2 "Case studies" on page 61

The following actuator versions are available for combining presence detector detector attachments with actuators.

E-contact	Residential applications and old installations in locations where an N-busbar is not available.
64814 U-500	– Noiseless switching of lighting systems
e-contact insert flex, 1-gang	– 2-wire connection (neutral busbar is not required, but can be connected as an option).
64811 U-500	For all popular applications
Relay insert flex, 1-gang	– Switching of lighting systems.
	– 2gang relay insert is required for a heating, air conditioning and ventilation applications.
64821 U-500	– 3-wire connection system (neutral conductor is required).
Relay insert flex, 2-gang	
	For all popular applications
64891 U-500	– Expansion of the detection range.
Sub-insert flex	– Setup of extension operation.
	– 3-wire connection system (neutral conductor is required).
Dimmer	For all popular applications
	– The device is used for switching and/or dimming lighting systems.
64851 U-500	– 2-wire connection system (neutral busbar not required, but can be connected as an option).
LED dimmer insert flex, 1gang	



The following sensor versions are available for combining presence detectors:

Universal	<p>Applications in rooms</p> <ul style="list-style-type: none"> <li>– Switching of lighting systems in dependence of brightness and/or movement.</li> <li>– With switch-off pre-warning.</li> <li>– Suitable for combination with 2gang remote control insert for heating, air conditioning, ventilation applications.</li> <li>– Parameterizable via: IR service remote control 6843.</li> </ul>
64753-xxx Presence detector flex, universal sensor	
Sky	<p>Applications in stairwells</p> <ul style="list-style-type: none"> <li>– Switching of lighting systems in dependence of brightness and/or movement.</li> <li>– Suitable for mounting heights of 4 - 12 metres.</li> <li>– Suitable for combination with 2gang remote control insert for heating, air conditioning, ventilation applications.</li> </ul>
64754-xxx Presence detector flex, Sky sensor	
Corridor	<p>Applications in hallways and corridors</p> <ul style="list-style-type: none"> <li>– Switching of lighting systems in dependence of brightness and/or movement.</li> <li>– Suitable for mounting heights of 2.5 - 3 metres.</li> <li>– With switch-off pre-warning.</li> <li>– Suitable for combination with 2gang remote control insert for heating, air conditioning, ventilation applications.</li> <li>– Parameterizable via: IR service remote control 6843.</li> </ul>
64755-xxx Presence detector flex, corridor sensor	





#### 2.2.4 **Mounting possibilities**

#### 2.2.5 **Monoblock devices**

Ceiling mounting is implemented in a 68 mm borehole via clamp and/or screw fixation. The following mounting situations are possible:

- Suspended ceilings
- Suspended grid ceilings
- In-situ concrete
- Concrete slabs

The devices are not suitable for:

- Flush-mounted boxes
- Surface mounting

Suspended ceilings/suspended grid ceilings

Fig. 3: Mounting situation: suspended ceiling

Mounting is possible at a ceiling thickness of 9 to 25 mm. Detailed information on mounting can be found in the respective operating instructions of the device.

In-situ concrete/concrete slabs

Fig. 4: Mounting situation: concrete slab



#### 2.2.6 **ABB flexTronics** ®

The ceiling mounting of the flush-mounted inserts takes place in a standard flush-mounted box or device box. The surface mounting is possible in combination with the Surface-mounted housing of presence detector 6883-.... :

Surface mounting

1

Fig. 5: Surface mounting ABB flexTronics ®

In combination with the [1] surface-mounted housing 6883-....



2.3      **Setting options / control**

2.3.1    **Monoblock devices**

Depending on the device, the following methods for setting or configuration are available.  
Extension units are not set. The main unit is used for control.

Trimmers

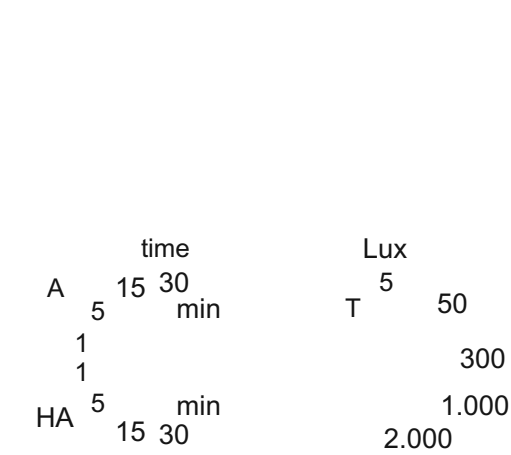


Fig. 6:      Setting via trimmers

The trimmers for setting devices are located below the device cover.

Settings of trimmer right

Setting of brightness-value threshold

The sensor switches the light on only when the measured brightness value is below the value set on the trimmer (5 to 2,000 lux).

When movement is detected, the sensor switches the light on with the set switch-off delay. The switch-off delay is started anew at every detected movement.

Setting of daylight

The brightness sensor is ignored at setting of daylight.

The sensor switches the light on by itself exclusively depending on movement.

Setting of test mode

At setting of test mode the switch-off delay amounts to approx. 5 seconds and the brightness value is set on daylight operation. The detection range can be checked in test mode.

The test LED flashes at every detected movement and the connected load



## Settings of trimmer left

### Setting of switch-off delay (automatic mode)

The switch off delay is adjustable from 1 to 30 minutes or short-time pulse.  
The switch-off delay is started or started anew at every detected movement.  
When the switch-off delay has expired or the natural light is sufficient to light up the room, the light switches off again.

The light is switched on again as soon as the brightness drops below the set value and movement is detected.

### Setting of switch-off delay (semi-automatic mode)

The switch off delay is adjustable from 1 to 30 minutes.

After a brief press on the external push-button (connected to the extension unit input of the flush-mounted insert) the light switches on. The switch-off delay is now started anew at every detected movement. When the switch-off delay has expired or the natural light is sufficient to light up the room, the light switches off.

The light is switched on again with a renewed press of the push-button.

Further behaviour is the same as in automatic mode.

### Setting of short-time operation

When this option is set, the used actuator switches on for one second and off for 9 seconds. This pulsed switching is repeated until movement is detected and the brightness drops below the set value.

To set the short-time operation via the IR remote control, press button IR service remote control 6843.

### Notice

The short-time operation is possible only in connection with automatic mode





Remote control

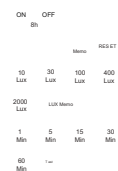


Fig. 7: Setting via remote control

Remote control with 6843 IR service remote control.

App

Fig. 8: Setting via app

Remote control via the smartphone app "ABB Watchdog Remote control".

The smartphone app can be found under:

- <https://www.busch-jaeger.de/service-tools/apps/busch-waechter-remote-control-app/>



Overview of setting methods

6817/62-xxx-500 Compact, e-contact	X	X
6817/32-xxx-500 Universal, e-contact	X	X
6819/60-xxx-500 Compact, Relais	X	X
6819/30-xxx-500 Universal, Relais	X	X
6819/50-xxx-500 Corridor, Relais	X	X
6813-xxx-102-500 Universal sensor	X	X
6817/33-xxx-500 Universal BT, e-contact	X	—
6817/93-xxx-500 Universal BT, e-contact with sealing ring	X	—
6819/31-xxx-500 Universal BT, Relais	X	—
6819/51-xxx-500 Corridor BT, Relais	X	—
6819/38-xxx-500 Universal, extension unit	—	—
6819/68-xxx-500 Compact, extension unit	—	—
6819/58-xxx-500 Corridor, extension unit	—	—
6819/35-xxx-500 Universal BT, DALI	X	—
6819/55-xxx-500 Corridor BT, DALI	X	—
6819/39-xxx-500 Universal, DALI extension unit	—	—

DALI



2.3.2 ABB flexTronics®

Depending on the device attachment, the following methods for setting or configuration are available. Extension unit sensors are not set. The activation is made via the main unit sensors.

Trimmers

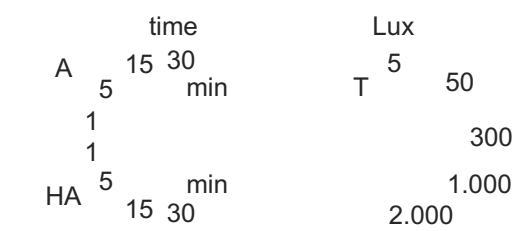


Fig. 9: Setting via trimmers

The trimmers for setting devices are located below the device cover.

Settings of trimmer right

Setting of brightness-value threshold

The sensor switches the light on only when the measured brightness value is below the value set on the trimmer (5 to 2,000 lux).

When movement is detected, the sensor switches the light on with the set switch-off delay. The switch-off delay is started anew at every detected movement.

Setting of daylight

The brightness sensor is ignored at setting of daylight.

The sensor switches the light on by itself exclusively depending on movement.

Setting of test mode

At setting of test mode the switch-off delay amounts to approx. 5 seconds and the brightness value is set on daylight operation. The detection range can be checked in test mode.

The test LED flashes at every detected movement and the connected load switches on for approx. 5 seconds.

To end the test mode, set the desired brightness-value threshold on the device.



## Settings of trimmer left

### Setting of switch-off delay (automatic mode)

The switch off delay is adjustable from 1 to 30 minutes or short-time pulse.  
The switch-off delay is started or started anew at every detected movement.  
When the switch-off delay has expired or the natural light is sufficient to light up the room, the light switches off again.

The light is switched on again as soon as the brightness drops below the set value and movement is detected.

### Setting of switch-off delay (semi-automatic mode)

The switch off delay is adjustable from 1 to 30 minutes.

After a brief press on the external push-button (connected to the extension unit input of the flush-mounted insert) the light switches on. The switch-off delay is now started anew at every detected movement. When the switch-off delay has expired or the natural light is sufficient to light up the room, the light switches off.

The light is switched on again with a renewed press of the push-button.

Further behaviour is the same as in automatic mode.

### Setting of short-time operation

When this option is set, the used actuator switches on for one second and off for 9 seconds. This pulsed switching is repeated until movement is detected and the brightness drops below the set value.

To set the short-time operation via the IR remote control, press button IR service remote control 6843.

### Notice

The short-time operation is possible only in connection with automatic mode





Remote control

ON	OFF		
On	Off		
		Menu	RES-27
10 Lux	30 Lux	100 Lux	400 Lux
2000 Lux	Lux Menu		
1 Min	5 Min	15 Min	30 Min
60 Min	1 hr		

Fig. 10: Setting via remote control

Remote operation with 6843 IR service remote control (not possible with Sky sensors 64754-xxx due to the large mounting height).



Overview of setting methods

Presence detector attachments on the following device inserts:

- 64814 U-500 e-contact insert flex, 1-gang
- 64811 U-500 Relay insert flex, 1 gang
- 64821 U-500 Relay insert flex, 2 gang
- 64851 U-500 LED dimmer insert flex, 1gang

64753-xxx		
Busch-Presence detector	X	X
flex, universal sensor		
64754-xxx		
Busch-Presence detector	X	—
flex, Sky sensor		
64755-xxx		
Busch-Presence detector	X	X
flex, corridor sensor		

Table 5: Overview of main unit setting methods

Overview of setting methods

Presence detector attachments on the following device inserts:

- 64891 U-500 Sub-insert flex

If the device combination is set up as extension unit, there is no setting of brightness-value threshold and switch-off delay on the extension unit sensor.

The switch-off delay and the brightness-value threshold are specified on the main unit. The set values are ignored on the extension unit sensor.



### 3 Device Functions

3.1 Overview of functions

3.1.1 Monoblock devices

6817/62-xxx-500 Compact, e-contact	X	—	—	—	—	—	—	—
6817/32-xxx-500 Universal, e-contact	X	—	—	—	—	—	—	—
6819/60-xxx-500 Compact, Relais	X	—	—	—	—	—	—	—
6819/30-xxx-500 Universal, Relais	X	—	—	—	—	—	—	—
6819/50-xxx-500 Corridor, Relais	X	—	—	—	—	—	—	—
6817/33-xxx-500 Universal BT, e-contact	X	X	X	—	—	—	—	X



Device

6819/31-xxx-500 Universal BT, Relais	X	X	—	—	—	—	—	X
6819/51-xxx-500 Corridor BT, Relais	X	X	—	—	—	—	—	X
6819/38-xxx-500 Universal, extension unit	—	—	—	—	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—	—	—	—	—
6819/35-xxx-500 Universal BT, DALI	X	X	X	X	X	X	X	X
6819/55-xxx-500 Corridor BT, DALI	X	X	X	X	X	X	X	X

<sup>1)</sup> Switch-off function of the DALI operating devices via relay output (POWER-ON level can be set)





6819/39-xxx-500 Universal, DALI extension unit	—	—	—	—	—	—	—	—
6819/59-xxx-500 Corridor, DALI extension unit	—	—	—	—	—	—	—	—

1) Switch-off function of the DALI operating devices via relay output (POWER-ON level can be set)



Device

6817/62-xxx-500 Compact, e-contact	—	—	—	—	—	X	—	X
6817/32-xxx-500 Universal, e-contact	—	—	—	—	—	X	—	X
6819/60-xxx-500 Compact, Relais	—	—	—	—	—	X	—	X
6819/30-xxx-500 Universal, Relais	—	—	—	—	—	X	—	X
6819/50-xxx-500 Corridor, Relais	—	—	—	—	—	X	—	X
6817/33-xxx-500 Universal BT, e- contact	X	X	X	X	X	X	X	X
6817/93-xxx-500 Universal BT, e- contact with sealing ring	X	X	X	X	X	X	X	X
6819/31-xxx-500 Universal BT, Relais	X	X	X	X	X	X	X	X



Device

6819/38-xxx-500 Universal, extension unit	—	—	—	—	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—	—	—	—	—
6819/35-xxx-500 Universal BT, DALI	X	X	X	X	X	X	X	X
6819/55-xxx-500 Corridor BT, DALI	X	X	X	X	X	X	X	X
6819/39-xxx-500 Universal, DALI extension unit	—	—	—	—	—	—	—	—
6819/59-xxx-500 Corridor, DALI extension unit	—	—	—	—	—	—	—	—

2) Generally applicable: the last operation via app, IR remote control or trimmer is valid.



6817/62-xxx-500 Compact, e-contact	X	—	—	—	—
6817/32-xxx-500 Universal, e-contact	X	—	—	—	—
6819/60-xxx-500 Compact, Relais	X	—	—	—	—
6819/30-xxx-500 Universal, Relais	X	—	—	—	—
6819/50-xxx-500 Corridor, Relais	X	—	—	—	—
6817/33-xxx-500 Universal BT, e-contact	X	—	X	—	—
6817/93-xxx-500 Universal BT, e-contact with sealing ring	X	—	X	—	—
6819/31-xxx-500 Universal BT, Relais	X	—	X	—	—
6819/51-xxx-500 Corridor BT, Relais	X	—	X	—	—
6819/38-xxx-500 Universal, extension unit	—	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—	—
6819/35-xxx-500 Universal BT, DALI	X	X	X	X	X
6819/55-xxx-500 Corridor BT, DALI	X	X	X	X	X
6819/39-xxx-500 Universal, DALI extension unit	—	—	—	—	—
6819/59-xxx-500 Corridor, DALI extension unit	—	—	—	—	—

Table 6: Overview of device functions





### 3.1.2 ABB flexTronics®

Overview of functions 64753-xxx presence detector flex, universal sensor

In combination with device insert

Automatic/Semiautomatic	x	x	x	x
Soft phase-in/soft phase-out	x	—	—	x
Daylight-dependent control (constant light control)	—	—	—	x
Short-time pulse for e.g. automatic staircase lighting	x	x	x	—
Test Mode	x	x	x	x
Adjusting the brightness threshold (on the front of the sensor)	x	x	x	x
Adjusting the switch-off delay (on the front of the sensor)	x	x	x	x
Extension of the detection range with extension unit insert flex	x	x	x	x
Test LED	x	x	x	x
Configurable and controllable with remote control (6843)	x	x	x	x
Expandable with an external push-button (2020 US) for switching on/off manually	x	x	x	x
Permanent (8 hours) on/off mode (IR remote control required)	x	x	x	x
Dimming function via additional push-button	—	—	—	x
Switch-off warning for stairwell applications (IR remote control required)	x	x	x	x
PlusWire communication	x	x	x	x

Table 7: Overview of main unit setting methods

\*) Function is adjusted according to the set function of the main unit.



## Overview of functions 64754-xxx presence detector flex, Sky sensor

In combination with device insert

Automatic / Semiautomatic	x	x	x	x
Soft phase-in/soft phase-out	x	—	—	x
Daylight-dependent control (constant light control)	—	—	—	x
Short-time pulse for e.g. automatic staircase lighting	x	x	x	—
Test mode	x	x	x	x
Adjusting the brightness threshold (on the front of the sensor)	x	x	x	x
Adjusting the switch-off delay (on the front of the sensor)	x	x	x	x
Extension of the detection range with extension unit insert flex	x	x	x	x
Test LED	x	x	x	x
Expandable with an external push-button (2020 US) for switching on/off manually	x	x	x	x
Dimming function via additional push-button	—	—	—	x
PlusWire communication	x	x	x	x

Table 8: Overview of main unit setting methods

\*) Function is adjusted according to the set function of the main unit.



## Overview of functions 64755-xxx presence detector flex, corridor sensor

## Device inserts

Automatic / Semiautomatic	x	x	x	x
Soft phase-in/soft phase-out	x	—	—	x
Daylight-dependent control (constant light control)	—	—	—	x
Short-time pulse for e.g. automatic staircase lighting	x	x	x	—
Test mode	x	x	x	x
Adjusting the brightness threshold (on the front of the sensor)	x	x	x	x
Adjusting the switch-off delay (on the front of the sensor)	x	x	x	x
Extension of the detection range with extension unit insert flex	x	x	x	x
Test LED	x	x	x	x
Configurable and controllable with remote control (6843)	x	x	x	x
Expandable with an external push-button (2020 US) for switching on/off manually	x	x	x	x
Permanent (8 hours) on/off mode (IR remote control required)	x	x	x	x
Dimming function via additional push-button	—	—	—	x
Switch-off warning for stairwell applications (IR remote control required)	x	x	x	x
PlusWire communication	x	x	x	x

Table 9: Overview of main unit setting methods

\*) Function is adjusted according to the set function of the main unit.



### 3.2 Functions

#### Notice

The depth of the functions is different for presence detector models, See "Overview of functions" on page 23.

#### Automatic/semi-automatic

- Automatic operation mode (A)
  - The light switches on fully automatically due to detected movements in the surveillance area. The brightness-value threshold must be below its set value.
  - The light is switched off after leaving the room plus a set switch-off delay or when the set brightness threshold is exceeded.
- Semi-automatic operation mode (HA)
  - An extension unit operation is necessary to switch the light on, e.g. via a push-button. The behaviour is then the same as fully automatic.
  - The light is switched off after leaving the room plus a set switch-off delay or when the set brightness threshold is exceeded.
- Short-time pulse operation mode ( )
  - In this operating mode short-time pulses are sent for the duration of detection.
    - The output of the device can be configured as electronic current surge switch to activate a staircase light automaton or door bells, for example. Here, during the "C" phase, the output is switched on periodically for 1 second or dimmed to 100% brightness and then switched off for 9 seconds.

A switch-off delay cannot be set. The short-time pulse is sent as long as movement is detected (always 1 second, then a pause for 9 seconds, etc.).

In the case of DALI devices, the short-time pulse cannot be activated.

#### Notice

Commissioning with an staircase lighting automaton must be made when the staircase lighting is switched off. The internal automatic brightness alignment can only be made correctly when the staircase lighting is switched off.

#### Comfort automatic

- An extension unit operation is necessary to switch the light on when entering a room, e.g. via a push-button. The behaviour is then the same as fully automatic.
- If the brightness drops below the brightness-value threshold when there is presence in a room, the light is switched on automatically. In semi-automatic mode an extension unit operation would in this case be necessary, e.g. via a push-button.
- The light is switched off after a person leaves the room plus a set switch-off delay or when the set brightness threshold is exceeded.





#### Soft phase-in/soft phase-out

- A switch-on and switch-off of lights via a dimming function. The times for the dimming function cycle can be set by the app depending on the device. E-contact Monoblock devices and flex inserts (e-contact and LED dimmers) have a fixed specified time (< 1 second) for the soft phase-in/soft phase-out.

#### Daylight-dependent control (constant light switch in comparison to constant light control)

- Depending on the version, the presence detectors offer various options to ensure that the brightness in the room is maintained at a more pleasant level. There is a difference between the functions of the constant light switch and the constant light control. Both functions ensure that the brightness does not drop below a certain level when persons are in the room. For a detailed description, see "Daylight-dependent control (constant light control)" on page 88.

#### Basic lighting (only available for DALI devices)

- The basic illumination can be used time-controlled or brightness-controlled. The basic lighting, for example, is used as reducing lighting in corridors or stairwells.
  - The basic lighting is timed to run from 8:00 pm to 11:00 pm. If movement is detected in this time, the device switches from the preset basic lighting value to normal light.
  - Alternatively, an ambient light value can be preset; when this value is undershot, the basic lighting will be activated automatically.

#### Night light/anti-glare function (only available for DALI devices)

- When movement is detected, the behaviour of the load output can be adjusted individually. A time window is defined via the app during which the switch-on brightness is reduced. This switch-on brightness can be adjusted between the basic and maximum brightness. The function is, for example, useful when getting up during the night so that one is not dazzled by the sudden brightness of the light that switches on automatically.

#### Dynamic switch-off delay

- The dynamic switch-off delay is activated by app (the switch-off delay must be longer than 10 minutes; otherwise the function is not active). The function is mainly intended for corridors. In case of little movement, not the full switch-off delay of 15 minutes is activated, for example, but only 3 minutes. This makes sense if the corridor is crossed only briefly on the way from one office to the next and the light should not remain switched on for the entire switch-off delay. The movement may be detected for a maximum of 30 seconds.

#### Short-time pulse

- The output of the device can be configured as electronic current surge switch to activate a staircase light automaton or door bells, for example. Here, during the "On" phase, the output is switched on periodically for 1 second or dimmed to 100% brightness and then switched off for 9 seconds. A switch-off delay cannot be set. The short-time pulse is sent as long as movement is detected (always 1 second, then a pause for 9 seconds, etc.). In the case of DALI devices, the short-time pulse cannot be activated.



### Test Mode

- Execution of an activation test. The device switches on at a detected movement for about 2 to 5 seconds, independent of brightness. After that, the device is ready for the next movement detection. The red LED flashes during this time.

#### Notice

Due to the high sensitivity in the internal detection range (directly below the device), the pacing of the detection range is only possible with a distance of more than 2 metres from the device. If you are within this detection range, the device will always detect movement and not switch off.

### PIR – set the individual sensor sensitivity

- Each individual of the 4 passive infrared sensors in total can be switched off via the ABB Watchdog Remote control, for reception limitation or their sensitivity can be limited.

### Update function

- For devices with Bluetooth<sup>®</sup> function, the firmware can be updated via app.

### Energy Monitor (operating time)

- The operating times of the device can be read in the app and displayed in the "Energy Monitor" section of the app. The last 5 years maximum are available for readout. The energy saving potential can be shown in the country currency. The average weekly illumination duration of the connected lamps is used as a reference for the energy saving potential.



Trimmer setting blockage (only Monoblock devices)

- The setting of the device can be blocked by the trimmer through the app. Three setting variants are possible:
  - Trimmer blocked:  
The values can be set only via the app.
  - Limited access:  
Activation takes place via the app. After that, the password can no longer be bypassed by the disconnection of the presence detector. Reactivation is possible only via the following trimmer setting:

		time			Lux	
A	5	15	30	min	T	5
	1					50
	1					300
HA	5	15	30	min		1.000
						2.000

- In the first 2 minutes after activation, set the trimmer for the brightness-value threshold to "Sun" and the trimmer for the operation mode to "Automatic with 30-minute switch-off delay".  
Within these first 2 minutes, the app can access the presence detector without a password.
- Trimmer active:  
The settings can be made through the trimmer and app. In general, the last setting (trimmer or app) is always used.
- Password forgotten/reset password:
  - If the device password is no longer known, it can be reset using the "Reset to factory setting" app function. No device password is set in the factory setting.

**ATTENTION!**  
All individual device settings and saved "Energy Monitor" data are also lost.



#### Presence simulation (only Monoblock devices)

- The user can activate a "Presence simulation" in the app. The presence simulation runs when the user is on holiday, for example. During this time, the light goes on and off as if someone were home.
- There are 3 time ranges:
  - In the evening (starting time up to 11:00 pm)
  - At night (11:00 pm to 6:00 am)
  - In the morning (6:00 am to the set ending time)
- During the three time ranges the lights switch according to normal presence. In the evening the lights switch off 3 times at random. During the night the lights switch on 3 times at random. In the morning the lights switch on brightness dependent.

#### Status of LED functions

- The operating statuses, Bluetooth connection status and detection status can be read in test mode via the LEDs, See "Status indication" on page 50.

#### App control (only Monoblock devices)

- Using the smartphone app "ABB Watchdog Remote control," device settings can be made and device functions executed.

#### Separate switching output (only available for DALI devices)

- An additional relay output. This can be linked as normal with the DALI switching state, i.e. with the presence detection function or independent from it directly via the app. Additional applications are, for example, panel light, heating/air conditioning/ventilation (HVAC) functions or direct switching. By means of the app, a selected function can be assigned to this additional switching output. It is possible, for example, to disconnect the DALI operating devices completely to save additional energy costs (standby consumption).
  - "Deactivate":  
Deactivates the additional switching output (actuator 2).
  - "Disconnect DALI operating devices":  
With this function, it is possible to disconnect the DALI operating devices completely to save additional energy costs (standby consumption).
  - "Synchronised operation":  
With the "Synchronised operation" function, the additional switching contact (actuator 2) is synchronised with the switching status of actuator 1 (e.g., DALI output). This means OFF if actuator 1 is switched off and ON if actuator 1 is switched on and/or has reached any dimming value.





- **"Blackboard light":**  
Additional illumination can be switched on and off separately. E.g. illumination for a blackboard in school classrooms. The additional illumination also switches off automatically together with the ceiling lights.
  - The additional lighting is operated with a separate push-button connected via the 6494-500 Extension unit connection.
  - The additional switching output must be configured as a panel light through the app.
- **"Manual":**  
The additional switch contact (actuator 2) is switched only manually via the app. There is no dependence to actuator 1 (e.g. DALI output).
- **"HVAC":**  
The "HVAC" operation mode (heating, air conditioning and ventilation) enables a pure presence-dependent switching of the additional switch contact (actuator 2). The ambient brightness is not taken into consideration here.  
This function, for example, is used to control a fan motor in WC facilities.

#### Extension unit operation

- An additional operation for on/off switching via a push-button:
  - For Monoblock devices on extension unit input 1C of the presence detector.
  - For ABB flexTronics<sup>®</sup> presence detectors on the extension unit input C1 of the flush-mounted insert used.
  - A manual change of the current switching state can be implemented. The return to automatic mode and/or previously selected operation mode takes place after the room is left plus the set switch-off delay.
  - The lighting is also switched on in semi-automatic mode through the operation of this extension.

#### Continuous ON

- The lighting is switched on. For devices with infrared remote control, the duration amounts to 8 hours. For devices with Bluetooth function, the duration is freely selectable through the smartphone app "ABB Watchdog Remote control".
- To activate this function, press the corresponding button on the IR service remote control 6843.
- A renewed press of the button on the remote control deactivates the continuous light ON function.
- Only Monoblock devices:
  - For the activation of this function, a push-button is connected to channel 1 of the 6494-500 Extension unit connection. In the case of the DALI main unit, the "Continuous Light" function must be activated via the extension push-button.
  - The return to automatic mode and/or previously selected operation mode is implemented through one of the following possibilities:
    - Push-button/extension operation (directly connected to the extension input 1C of the presence detector).
    - Simultaneous actuation of the push-buttons for "Continuous ON" and "Continuous OFF".



#### Continuous OFF

- The lighting is continuously switched off. For devices with infrared remote control, the duration amounts to 8 hours. For devices with Bluetooth function, the duration is freely selectable via the smartphone app "ABB Watchdog Remote control".
- To activate this function, press the corresponding button on the IR service remote control 6843.
- A renewed press of the button on the remote control deactivates the continuous light OFF function.
- Only Monoblock devices:
  - The continuous light is operated using a separate switch connected via the 6494-500 Extension unit connection.
  - For the activation of this function, a push-button is connected to channel 2 of the 6494-500 Extension unit connection. In the case of the DALI main unit, the "Continuous Light" function must be activated via the extension push-button.
  - The return to automatic mode and/or previously selected operation mode is implemented through one of the following possibilities:
    - Push-button/extension operation (directly connected to the extension unit input 1C or the presence detector).
    - Simultaneous actuation of the push-buttons for "Continuous ON" and "Continuous OFF".
    - Via app.
    - Automatic after the expiration of the "Continuous OFF" time.
- This function cannot be combined with the panel light.



2-stage automatic switch-off according to EnEV (Germany Energy Saving Act, EN 15232, Chapter 5.1.2)

(only Monoblock devices)

- The lighting does not switch off completely at first go. If no movement is detected, the brightness reduces itself to 20% after the switch-off delay expires. If no further movement is detected the lighting switches off completely after a further 5 minutes.
- The brightness value of the intermediate stage (20% according to EnEV) and the time duration until switch-off can be set via the app.

Switch-off warning according to DIN 18015

- The light flashes 30 seconds before deactivation.
  - For a set switch-off delay under 60 seconds: 15 seconds before switch-off
  - For a set switch-off delay under 30 seconds: 5 seconds before switch-off
- This function is required for stairwells in multifamily houses. The end of the illumination time is indicated in a timely manner to extend the illumination duration through movement detection or extension unit operation.
- In the state of delivery of the presence detectors the switch-off warning is deactivated.
- The switch-off warning can be activated/deactivated on the Monoblock devices with Bluetooth<sup>®</sup> interface via the app.

To activate the switch-off warning of the flex presence detector sensors, the following process is to be carried out.

- Unlock the manual transmitter during the first 10 minutes after connection of the presence detector to the power via the IR remote control.
- Then press the unlocking button again and then the push-button briefly 3 times in succession for the brightness-value threshold 10 lux.
- Finally press the locking button to save and finish the process.

To deactivate the switch-off warning, this process must be carried out again with the 2,000 lux button on the remote control or the device reset via the reset button of the remote control.



### 3.3 Detection range

#### 3.3.1 Monoblock devices

Moving: maximum detection range length x width or diameter (measured on the floor).

- A: Lengthways toward the detector
- B: Crosswise toward the detector

6817/62-xxx-500 Compact, e-contact	A: Ø max. 4.5 m B: Ø max. 6.5 m	A: Ø max. 6 m B: Ø max. 8 m	A: Ø max. 8 m B: Ø max. 10 m
6817/32-xxx-500 Universal, e-contact	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6819/60-xxx-500 Compact, Relais	A: Ø max. 4.5 m B: Ø max. 6.5 m	A: Ø max. 6 m B: Ø max. 8 m	A: Ø max. 8 m B: Ø max. 10 m
6819/30-xxx-500 Universal, Relais	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6819/50-xxx-500 Corridor, Relais	A: max. 14 m x 2.5 m B: max. 24 m x 2.5 m	A: max. 14 m x 3 m B: max. 24 m x 3 m	A: max. 14 m x 3 m B: max. 24 m x 3 m
6817/33-xxx-500 Universal BT, e-contact	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6817/93-xxx-500 Universal BT, e-contact with sealing ring	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6819/31-xxx-500 Universal BT, Relais	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6819/51-xxx-500 Corridor BT, Relais	A: max. 18 m x 2.5 m B: max. 24 m x 2.5 m	A: max. 20 m x 3 m B: max. 30 m x 3 m	A: max. 20 m x 3 m B: max. 30 m x 3 m
6819/38-xxx-500 Universal, extension unit	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 14 m
6819/68-xxx-500 Compact, extension unit	A: Ø max. 4.5 m B: Ø max. 6.5 m	A: Ø max. 6 m B: Ø max. 8 m	A: Ø max. 8 m B: Ø max. 10 m
6819/58-xxx-500 Corridor, extension unit	A: max. 14 m x 2.5 m B: max. 24 m x 2.5 m	A: max. 14 m x 3 m B: max. 24 m x 3 m	A: max. 14 m x 3 m B: max. 24 m x 3 m

Table 10: Overview of the detection ranges moving





6819/35-xxx-500 Universal BT, DALI	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 8 m B: Ø max. 12 m
6819/55-xxx-500 Corridor BT, DALI	A: max. 18 m x 2.5 m B: max. 24 m x 2.5 m	A: max. 20 m x 3 m B: max. 30 m x 3 m	A: max. 20 m x 3 m B: max. 30 m x 3 m
6819/39-xxx-500 Universal, DALI extension unit	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 8 m B: Ø max. 12 m
6819/59-xxx-500 Corridor, DALI extension unit	A: max. 14 m x 2.5 m B: max. 24 m x 2.5 m	A: max. 14 m x 3 m B: max. 24 m x 3 m	A: max. 14 m x 3 m B: max. 24 m x 3 m

Table 11: Overview of the detection ranges moving

The range specifications refer only to an ambient temperature of 21°C.



Seated: maximum detection range length x width or diameter (measured on the floor).

6817/62-xxx-500 Compact, e-contact	Ø max. 5 m	Ø max. 6.5 m
6817/32-xxx-500 Universal, e-contact	Ø max. 8 m	Ø max. 10 m
6819/60-xxx-500 Compact, Relais	Ø max. 5 m	Ø max. 6.5 m
6819/30-xxx-500 Universal, Relais	Ø max. 8 m	Ø max. 10 m
6819/50-xxx-500 Corridor, Relais	— <sup>(1)</sup>	— <sup>(1)</sup>
6817/33-xxx-500 Universal BT, e-contact	Ø max. 8 m	Ø max. 10 m
6817/93-xxx-500 Universal BT, e-contact with sealing ring	Ø max. 8 m	Ø max. 10 m
6819/31-xxx-500 Universal BT, Relais	Ø max. 8 m	Ø max. 10 m
6819/51-xxx-500 Corridor BT, Relais	— <sup>(1)</sup>	— <sup>(1)</sup>
6819/38-xxx-500 Universal, extension unit	Ø max. 8 m	Ø max. 10 m
6819/68-xxx-500 Compact, extension unit	Ø max. 5 m	Ø max. 6.5 m
6819/58-xxx-500 Corridor, extension unit	— <sup>(1)</sup>	— <sup>(1)</sup>
6819/35-xxx-500 Universal BT, DALI	Ø max. 8 m	Ø max. 10 m
6819/55-xxx-500 Corridor BT, DALI	— <sup>(1)</sup>	— <sup>(1)</sup>
6819/39-xxx-500 Universal, DALI extension unit	Ø max. 8 m	Ø max. 10 m
6819/59-xxx-500 Corridor, DALI extension unit	— <sup>(1)</sup>	— <sup>(1)</sup>



### 3.3.2 ABB flexTronics®

Moving: maximum detection range length x width or diameter (measured on the floor)

- A: Lengthways toward the detector
- B: Crosswise toward the detector

	Mounting height			
	2.5m	3.0m	4m	6m
64753-xxx Presence detector flex, universal sensor	A: Ø max. 7 m B: Ø max. 10 m	A: Ø max. 8 m B: Ø max. 12 m	A: Ø max. 10 m B: Ø max. 16 m	—
64754-xxx Presence detector flex, Sky sensor	—	—	—	A: Ø max. 18 m *)
64755-xxx Presence detector flex, corridor sensor	A: Ø max. 14 x 2.5 m B: Ø max. 24 x 2.5 m	A: Ø max. 14 x 3 m B: Ø max. 24 x 3 m	A: Ø max. 14 x 3 m B: Ø max. 24 x 3 m	—

Table 13: Overview of the detection ranges moving

\*) No difference of the detection range between lengthwise or crosswise.

Seated: maximum detection range length x width or diameter  
(measured on the floor).

	Mounting height	
	2.5m	3.0m
64753-xxx Presence detector flex, universal sensor	Ø max. 8 m	Ø max. 10 m
64754-xxx Presence detector flex, Sky sensor	—	—
64755-xxx Presence detector flex, corridor sensor	—	—

Table 14: Overview of the detection ranges seated



3.4 Switching capacity

3.4.1 Monoblock devices

6817/62-xxx-500 Compact, e-contact	16 A	1 to 100 W	2 to 110 W	3 to 190 W	3 to 200 W
6817/32-xxx-500 Universal, e-contact	16 A	1 to 100 W	2 to 110 W	3 to 190 W	3 to 200 W
6819/60-xxx-500 Compact, Relais <sup>(1)</sup>	16 A	1100 W	1270 W	2200 W	2300 W
6819/30-xxx-500 Universal, Relais <sup>(1)</sup>	16 A	1100 W	1270 W	2200 W	2300 W
6819/50-xxx-500 Corridor, Relais <sup>(1)</sup>	16 A	1100 W	1270 W	2200 W	2300 W
6817/33-xxx-500 Universal BT, e- contact	16 A	1 to 100 W	2 to 110 W	3 to 190 W	3 to 200 W
6817/93-xxx-500 Universal BT, e- contact with sealing ring	16 A	1 to 100 W	2 to 110 W	3 to 190 W	3 to 200 W
6819/31-xxx-500 Universal BT, Relais <sup>(1)</sup>	16 A	1100 W	1270 W	2200 W	2300 W
6819/51-xxx-500 Corridor BT, Relais <sup>(1)</sup>	16 A	1100 W	1270 W	2200 W	2300 W
6819/38-xxx-500 Universal, extension unit	—	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—	—
6819/35-xxx-500 Universal BT, DALI	16 A	660 W	760 W	1320 W	1380 W
6819/55-xxx-500					





Device

6819/39-xxx-500 Universal, DALI extension unit	—	—	—	—	—
6819/59-xxx-500 Corridor, DALI extension unit	—	—	—	—	—



6817/62-xxx-500 Compact, e-contact	1 - 100 VA	2 - 110 VA	3 - 190 VA	3 - 200 VA
6817/32-xxx-500 Universal, e-contact	1 - 100 VA	2 - 110 VA	3 - 190 VA	3 - 200 VA
6819/60-xxx-500 Compact, Relais	96 VA	110 VA	190 VA	200 VA
6819/30-xxx-500 Universal, Relais	96 VA	110 VA	190 VA	200 VA
6819/50-xxx-500 Corridor, Relais	96 VA	110 VA	190 VA	200 VA
6817/33-xxx-500 Universal BT, e- contact	1 - 100 VA	2 - 110 VA	3 - 190 VA	3 - 200 VA
6817/93-xxx-500 Universal BT, e- contact with sealing ring	1 - 100 VA	2 - 110 VA	3 - 190 VA	3 - 200 VA
6819/31-xxx-500 Universal BT, Relais	96 VA	110 VA	190 VA	200 VA
6819/51-xxx-500 Corridor BT, Relais	96 VA	110 VA	190 VA	200 VA
6819/38-xxx-500 Universal, extension unit	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—
6819/35-xxx-500 Universal BT, DALI	96 VA	110 VA	190 VA	200 VA
6819/55-xxx-500 Corridor BT, DALI	96 VA	110 VA	190 VA	200 VA
6819/39-xxx-500 Universal, DALI extension unit	—	—	—	—



Device

6817/62-xxx-500 Compact, e-contact	—	—	—	—	—
6817/32-xxx-500 Universal, e-contact	—	—	—	—	—
6819/60-xxx-500 Compact, Relais	10 AX	1100 VA	1270 VA	2200 VA	2300 VA
6819/30-xxx-500 Universal, Relais	10 AX	1100 VA	1270 VA	2200 VA	2300 VA
6819/50-xxx-500 Corridor, Relais	10 AX	1100 VA	1270 VA	2200 VA	2300 VA
6817/33-xxx-500 Universal BT, e- contact	—	—	—	—	—
6817/93-xxx-500 Universal BT, e- contact with sealing ring	—	—	—	—	—
6819/31-xxx-500 Universal BT, Relais	10 AX	1100 VA	1270 VA	2200 VA	2300 VA
6819/51-xxx-500 Corridor BT, Relais	10 AX	1100 VA	1270 VA	2200 VA	2300 VA
6819/38-xxx-500 Universal, extension unit	—	—	—	—	—
6819/68-xxx-500 Compact, extension unit	—	—	—	—	—
6819/58-xxx-500 Corridor, extension unit	—	—	—	—	—



6819/35-xxx-500 Universal BT, DALI	6 AX	660 VA	760 VA	1320 VA	1380 VA
6819/55-xxx-500 Corridor BT, DALI	6 AX	660 VA	760 VA	1320 VA	1380 VA
6819/39-xxx-500 Universal, DALI extension unit	—	—	—		—
6819/59-xxx-500 Corridor, DALI extension unit	—	—	—		—

Table 15: Overview: Switching capacities

1) Suited for prospective inrush current up to 350 A / 200 µs analogous to the new LED test according to EN 60669-2-1





3.4.2      **ABB flexTronics**      ®

64814 U-500 e-contact insert flex, 1-gang		16 A	10 to 240 W	3 to 240 W/VA	—
64811 U-500 Relay insert flex, 1 gang		16 A	2300 W	300 VA	2300 VA
64821 U-500 Relay insert flex, 2 gang		16 A	2 x 1840 W	2x 300 VA	2x 1150 VA
64891 U-500 Sub-insert flex		16 A	—	—	—
64851 U-500 LED dimmer insert flex, 1gang	L	16 A	—	3 - 100 W/VA	—
	R,C	16 A	10 to 240 W	3 - 240 W/VA	—

Table 16: Overview: Switching capacities



3.5       **Status indication**

3.5.1      **Monoblock devices**

Fig. 11: Display of operating status

The operating status of the devices is displayed by means of a red and a blue LED at the front of the device.

Both LEDs are never switched on simultaneously.

Devices with IR reception

Operating status	LED red
Test Mode	Flashing at detected movement
Continuous light operation	OK
Continuous OFF operation	Continuous ON
Manual mode	OK
Automatic mode	OFF
IR reception	Flashes fast

Table 17: Operating status: Busch presence detector Monoblock



Devices with Bluetooth<sup>®</sup> function

Operating status	LED red	LED blue
Test Mode	Flashing at detected movement	OFF
Continuous light operation	Continuous ON	OFF
Continuous OFF operation	Continuous OFF	OFF
Manual mode	OFF	OFF
Automatic mode	OFF	OFF

Tab.18: Operating status: Devices with Bluetooth<sup>®</sup> function

Bluetooth <sup>®</sup> function	LED red	LED blue
No connection	According to the current operating status	OFF
Identifying devices	OFF	Flashes or OFF if the corresponding symbol is actuated again.
Devices selected, password input necessary	OFF	Flashes slowly
Devices selected, password input incorrect	OFF	3x fast flashing
Devices selected, submenu in the app in test mode	Flashing at detected movement	Continuous OFF
Devices selected, submenu in the app except in test mode	OFF	Continuous ON
Connection lost (signaling in the app)	After the blue LED is off, according to the current operating status Flashes for 4 seconds	3x fast flashing, then OFF
After mains power failure	<p>In the following situations, the LED pulses every 2 minutes for 0.1 seconds each:</p> <ul style="list-style-type: none"> <li>Activated functions: <ul style="list-style-type: none"> <li>Presence simulation</li> <li>Night light/anti-glare function</li> <li>Basic illumination</li> </ul> </li> <li>Time not set</li> </ul> <p>For the automatic synchronisation of the time, the app must be connected to the presence detector.</p>	OFF

Table 19: Status of Bluetooth<sup>®</sup> function



3.5.2      **ABB flexTronics** ®

Fig. 12: Display of operating status

The operating status of the devices is displayed by means of a red LED at the front of the device.

Devices with IR reception

Operating status	LED
	<ul style="list-style-type: none"><li>Flashes at a detected movement, the connected load switches on for approx. 5 seconds.</li><li>In test mode the switch-off delay amounts to 5 seconds, the brightness value is set on daylight.</li><li>Switch the test mode by setting the desired brightness value on the trimmer or by pressing the desired switch-off delay on the remote control (not possible with 64754-xxx)</li></ul>
Test mode	<p>Notice</p> <p>Due to the high sensitivity in the internal detection range (directly below the device), the pacing of the detection range is only possible with a distance of more than 2 metres from the device. If you are within this detection range, the device will always detect movement and not switch off.</p>
Continuous light operation	Continuous ON
Continuous OFF operation	Continuous ON
Manual mode	OFF
Automatic mode	OFF
IR reception	Flashes fast

Table 20:Operating status: Busch-Presence detector flex sensors





## 4 Information about planning and application

### 4.1 Principles of function / principles of operation

#### 4.1.1 The difference between movement detectors / presence detectors

Both device types are passive infrared detectors. They serve for switching the lighting when people are present.

Movement detector:

Movement detectors must detect gross movements, e.g., when someone enters or leaves a room or stairwell. They are usually mounted on a wall.

In terms of technical principle, movement detectors for indoor and outdoor use are the same. However, movement detectors for outdoor use usually have a different housing, as it has to withstand the environmental influences there, for example.

Presence detectors:

They are rather intended for indoor use. Since they need to detect small movements, such as typing on a keyboard, they are clearly more sensitive than movement detectors. In addition to movement, a presence detector monitors the ambient brightness during the ON phase and can switch off when the brightness-value threshold is exceeded. They are usually mounted below the ceiling.



#### 4.1.2 Principles of function

Infrared radiation, also called heat radiation, consists of electromagnetic waves. Every object transmits a characteristic heat radiation, depending on its specific temperature.

The detection of movement depends on the mounting height and the "free view" of the device.

Infrared sensor technology (IR sensor technology)

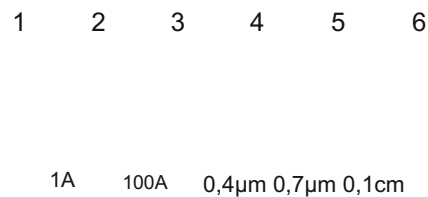


Fig. 13: Function principle of IR sensor technology

IR radiation can be detected with IR sensors and transformed into electric signals. As these sensors only receive and do not transmit IR radiation, they are also known as "passive IR sensors".

- [1] Gamma
- [2] X-ray
- [3] Ultraviolet
- [4] Visible
- [5] Infrared
- [6] Radio waves

Passive infrared sensors (passive IR sensors)

Fig. 14: Passive IR sensor

Passive IR sensors are designed so that they react only to a change in heat radiation. E.g. during movement.



### Optical system

Fig. 15: Optical system

By means of lenses, mirrors and sensors, the area to be monitored is divided into numerous fields, or so-called segments. If a person moves from one segment to the next, this movement is detected. The greater the number of segments, the smaller the movement that can be detected.

### Light measurement

Fig. 16: Brightness sensor

To extend the function, presence detectors can be fitted additional sensors.

The devices of ABB are fitted with a light measurement. This extends the simple On/Off switching process by one brightness-value threshold.

The brightness-value threshold determines the luminosity from which the light switches on. If the surrounding light is brighter than the set brightness threshold, the light does not switch on, or it switches off.



#### 4.1.3 Lens types

1 2

Fig. 17: Lens types

The devices of ABB are fitted with Fresnel lenses. Compared to normal lenses, Fresnel lenses offer the advantage of an increase in the amplification of infrared radiation.

[1] Normal lens (hemispherical)

[2] Fresnel lens

#### 4.1.4 DALI

DALI (Digital Addressable Lighting Interface) is comprehensive manufacturer interface standard for dimmable electronic ballasts. DALI offers increased functionality with easier handling. A maximum of 45 DALI operating devices can be controlled individually or together.

A single 2-wire control line for up to 45 operating devices offers several advantages.

- The planning of the control line and the power supply can take place completely separate from each other.
  - Alternatively, the control line can be accommodated in one cable together with the power supply line. E.g. 5 x 1.5 mm<sup>2</sup> NYM-J.
- No relays are necessary for switching of the lamps. Switching and dimming is carried out exclusively via the control line.
- The devices from ABB use the DALI broadcast mode. This means that all operating devices connected to the DALI control line are controlled together.
- The deactivation of the DALI buses allow the devices to switch totally free of voltage and are therefore free of power consumption.
- The DALI extension units do not require a separate mains supply. They can be directly connected to the DALI control line.





#### 4.1.5 **Detection ranges / detection levels**

Seated persons

Fig. 18: Detection seated

Presence detectors are required for movement detection of seated persons. Only presence detectors have the necessary detection sensitivity.

Seated persons must be completely within the detection range.

With higher installation, the detection range becomes larger, but the detection density smaller.

The shorter the distance between the person to be detected and the presence detector, the smaller the movement can be that is still detected. Ideally the maximum mounting height is 3.5 m.



Moving crosswise toward the device

1m

Fig. 19: Detection crosswise to the device

The detection range is at its highest when the person to be detected moves crosswise toward the device. This is called a tangential direction of movement.

The detection of the infrared change functions best when the person to be detected moves crosswise to the viewing field of the device. Here, for example, it crosses several sectors at a 1 m path. If the person moves directly towards the sensor, it takes longer before the person is detected by the device in other sectors.

In the right example graphic, the person touches 6 new sectors at a 1 m path.



Moving lengthways / parallel to the device

Fig. 20: Moving lengthways / parallel to the device

[A] Lengthways toward the device

[B] Parallel to the device

The detection width is physically dependent smaller when the person to be detected moves directly toward the device or in parallel (e.g., in a corridor) with it.

In the right example graphic a new sector is touched by the person only at the end of a 1 m path (arrow). It is only here that the person is detected by the device.

The detection of the infrared change functions best when the person to be detected moves crosswise to the viewing field of the device. Here, for example, it crosses several sectors at a 1 m path. If the person moves directly towards the sensor, it takes longer before the person is detected by the device in other sectors. This is called a central approach.



## Mounting heights (presence detector)

Fig. 21: Mounting heights (presence detector)

Depending on the mounting height, the detection characteristics change.

As the mounting height increases, the sensitivity and detection density decrease. In the example graphic the movement of the bottom hand is no longer detected because it does not cut across any additional sectors. The Busch-Presence detector is too far removed from it. Optimally, seated persons are detected at a maximum mounting height of 3.5 m.

Depending on the application, a high resolution is not required and a greater mounting height is possible (e.g. in storage rooms, corridors, gymnasiums).





## 4.2 Case studies

### Notice

The following examples of application refer to the use of the Monoblock devices.  
Of course, also the corresponding sensor insert combinations of the ABB-free@home<sup>®</sup> flex devices can be used.



4.2.1 Overview

Small rooms

Legend

- X Meets the requirements and is recommended.
- Over-fulfils the requirements. Possible, but usually not economically practical.
- Only suitable with restrictions (e.g. for the transmission range).
- Not suitable

6817/62-xxx-500 Compact, e-contact	X	X
6817/32-xxx-500 Universal, e-contact	●	●
6819/60-xxx-500 Compact, Relais	X	X
6819/30-xxx-500 Universal, Relais	●	●
6819/50-xxx-500 Corridor, Relais	--	--
6817/33-xxx-500 Universal BT, e-contact	●	●



Information about planning and app

6819/31-xxx-500 Universal BT, Relais	•	•
6819/51-xxx-500 Corridor BT, Relais	--	--
6819/35-xxx-500 Universal BT, DALI	•	•
6819/55-xxx-500 Corridor BT, DALI	--	--

Tab. 22: Areas of application: small rooms/cupboards



## Information about planning and app

### Individual office

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

			With daylight-dependent control	
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e-contact	X	X	--	--
6817/93-xxx-500 Universal BT, e-contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	X	X	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	●	●	X	X
6819/55-xxx-500				





## Information about planning and app

### Open-plan offices with or without windows

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

			With daylight-dependent control	
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e-contact	X	X	--	--
6817/93-xxx-500 Universal BT, e-contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	X	X	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	X	X	X	X
6819/55-xxx-500				



## Information about planning and app

### Class rooms

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

	With panel light			
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e- contact	X	X	--	--
6817/93-xxx-500 Universal BT, e- contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	X	X	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	X	X	X	X
6819/55-xxx-500	--	--	--	--



## Information about planning and app

### Meeting rooms

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

			With daylight-dependent control	
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e-contact	X	X	--	--
6817/93-xxx-500 Universal BT, e-contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	X	X	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	X	X	X	X
6819/55-xxx-500				



## Information about planning and app

### Toilets

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

			With HVAC switching output	
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e- contact	X	X	--	--
6817/93-xxx-500 Universal BT, e- contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	X	X	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	X	X	X	X
6819/55-xxx-500				





## Information about planning and app

### Corridors

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

#### With basic brightness

6817/62-xxx-500 Compact, e-contact	--	--	--	--
6817/32-xxx-500 Universal, e-contact	--	--	--	--
6819/60-xxx-500 Compact, Relais	--	--	--	--
6819/30-xxx-500 Universal, Relais	--	--	--	--
6819/50-xxx-500 Corridor, Relais	X	X	--	--
6817/33-xxx-500 Universal BT, e- contact	--	--	--	--
6817/93-xxx-500 Universal BT, e- contact with sealing ring	●	●	--	--
6819/31-xxx-500 Universal BT, Relais	--	--	--	--
6819/51-xxx-500 Corridor BT, Relais	X	X	--	--
6819/35-xxx-500 Universal BT, DALI	--	--	--	--
6819/55-xxx-500	X	X	X	X



## Information about planning and app

### Outdoors (outdoors with canopy)

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

6817/62-xxx-500 Compact, e-contact	--	--
6817/32-xxx-500 Universal, e-contact	--	--
6819/60-xxx-500 Compact, Relais	--	--
6819/30-xxx-500 Universal, Relais	--	--
6819/50-xxx-500 Corridor, Relais	--	--
6817/33-xxx-500 Universal BT, e- contact	--	--
6817/93-xxx-500 Universal BT, e- contact with sealing ring	X	X
6819/31-xxx-500 Universal BT, Relais	--	--
6819/51-xxx-500 Corridor BT, Relais	--	--
6819/35-xxx-500 Universal BT, DALI	--	--
6819/55-xxx-500 Corridor BT, DALI	--	--

Tab. 29: Areas of application: outdoors (outdoors with canopy)



## Information about planning and app

### Living areas/stairwells

#### Legend

X	Meets the requirements and is recommended.
●	Overfulfils the requirements. Possible, but usually not economically practical.
–	Only suitable with restrictions (e.g. for the transmission range).
--	Not suitable

			With basic illumination and presence simulation	
6817/62-xxx-500 Compact, e-contact	X	X	--	--
6817/32-xxx-500 Universal, e-contact	X	X	--	--
6819/60-xxx-500 Compact, Relais	X	X	--	--
6819/30-xxx-500 Universal, Relais	X	X	--	--
6819/50-xxx-500 Corridor, Relais	--	--	--	--
6817/33-xxx-500 Universal BT, e-contact	X	X	X <sup>1)</sup>	X <sup>1)</sup>
6817/93-xxx-500 Universal BT, e-contact with sealing ring	●	●	● <sup>1)</sup>	● <sup>1)</sup>
6819/31-xxx-500 Universal BT, Relais	X	X	X <sup>1)</sup>	X <sup>1)</sup>
6819/51-xxx-500 Corridor BT, Relais	--	--	--	--
6819/35-xxx-500 Universal BT, DALI	X	X	X	X
6819/55-xxx-500				



#### 4.2.2 **Single office**

##### Function

The lighting with fluorescent tube in an office shall be controlled via a Busch-Presence detector.

In addition, the user would like to switch the lighting on and off manually via a push-button.

##### Installation and settings

Fig. 22: Application example: individual office

For optimum detection, the installation position of the Busch-Presence detector should be selected above the workplace.

The switch-off delay for such applications is to be set at approx. 10 minutes.

##### Notice

When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.

Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 500 lux, you must set a value of about 100 lux on the device.

The "Take over brightness" app function indicates the current brightness at the mounting site. This value can be taken over directly for simplified commissioning.

##### Notice

When making the setting, pay attention to the legal requirements for luminosities at workstation.





### Switching examples of Monoblock devices

16A  
L  
N

1

2

Fig. 23: Examples of switching: Single offices light control without extension unit input

[1] 6817/32-xxx-500 Universal, e-contact /6819/60-xxx-500 Compact, Relais

[2] Lamp

3

16A  
L  
N

1

2

Fig. 24: Examples of switching: Single offices light control with extension unit input

[1] 6817/32-xxx-500 Universal, e-contact /6817/62-xxx-500 Compact, e-contact

[2] Lamp

[3] Extension unit push-button



## Examples of switching ABB flexTronics®



Fig. 25: Examples of switching: Single offices light control without extension unit input

[1] 64814 U-500 e-contact insert flex, 1-gang

[2] 64753-xxx Busch-Presence detector flex, universal sensor

[3] Lamp

### Notice

When using the 64814 U-500 e-contact insert flex, 1-gang the connection of the N-busbar is optional (broken line).

Limitations at reduced loads in 2-wire operation are possible.



Fig. 26: Examples of switching: Single offices light control with extension unit input

[1] 64814 U-500 e-contact insert flex, 1-gang

[2] 64753-xxx Busch-Presence detector flex, universal sensor



#### 4.2.3 **Classroom - Constant light control in automatic mode**

##### Function

In a school, the lighting of a classroom with DALI lamps is to be controlled efficiently via the Busch-Presence detector. Three Busch-Presence detector are to be installed in parallel to detect the entire area.

The illumination of the blackboard is to be integrated into the control. It is to be switched on and off independently of the status of the lighting. If manual deactivation is forgotten, it is to be switched off automatically with the other lighting.

##### Installation and settings

Fig. 27: Application example: classroom with blackboard light

For optimum detection, the installation position of the Busch-Presence detector should be selected above the pupils' desks.

The switch-off delay for such applications is to be set at approx. 10 minutes.

The Busch-Presence detector have an almost circular detection range. The areas must overlap slightly to ensure that there are no gaps in the detection.

The load is connected to the main unit. The main unit is responsible for monitoring the brightness and the switch-off delay. The extension units have the task of routing detected movement and the measured brightness value to the main unit.



## Information about planning and app

Through the smartphone app "ABB Watchdog Remote control" or a 2gang push-button connected to the 6494-500 Extension unit connection, the panel light can be activated.

### Notice

When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.

Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 300 lux, you must set a value of about 80 lux on the device.

The "Takeover current brightness" app function indicates the current brightness at the mounting site. This value can be take over directly for simplified commissioning.

### Notice

When making the setting, pay attention to the legal requirements for luminosities at the pupils' desk.

## Examples of switching

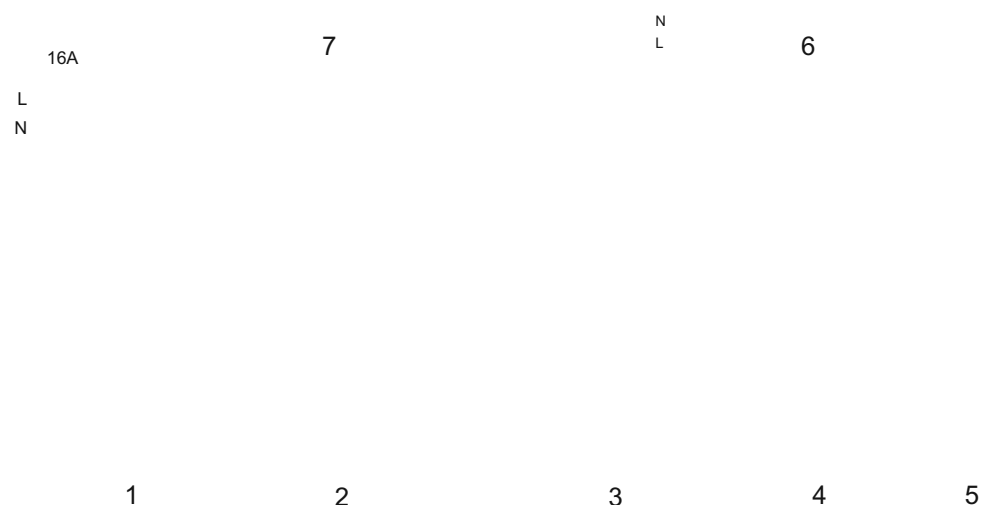


Fig. 28: Examples of switching: DALI light control with extension unit input and blackboard light in classroom

[1] 6494-500 Extension unit connection (for the connection of the blackboard light in the form of a 2-gang push-button)

[2] 6819/35-xxx-500 Universal BT, DALI

[3] 6819/39-xxx-500 Universal, DALI extension unit

[4] 6819/39-xxx-500 Universal, DALI extension unit





#### 4.2.4 Classroom - Constant light control in semi-automatic mode

##### Function

In a school, the lighting of a classroom is to be controlled via Busch-Presence detector. Three Busch-Presence detector are to be installed in parallel to detect the entire area. The lighting control must be enabled with a brief press of the extension unit push-button (semi-automatic mode).

The illumination of the school blackboard is switched via a push-button. It is to be switched on and off independent of the status only when the push-button is pressed. The brightness-dependent control is made via the DALI interface.

##### Constant light control:

- Daylight-dependent control (constant light control) provides greater comfort.
- The lighting is generally a mixture of daylight and artificial light. With this type of lighting control, the brightness is maintained at a constant level by dimming the share of artificial light. If daylight alone is sufficient, the artificial light/lighting is switched off.

##### Lighting control

Fig. 29: Application example: classroom with blackboard light and daylight-dependent control

The lighting must consist of DALI lamps.

In case of daylight-dependent control, manual intervention via the app is possible.

With the NO switch, the lighting can be switched on and off.

Through the coupling of the extension unit, the lighting can be dimmed up and down in a targeted manner in connection with a 2gang push-button.



## Information about planning and app

### Installation and settings

Fig. 30: Application example: classroom with blackboard light

For optimum detection, the installation position of the Busch-Presence detector should be selected above the pupils' desks.

The switch-off delay for such applications is to be set at approx. 10 minutes.

The Busch presence detectors have an almost circular detection range. The areas must overlap slightly to ensure that there are no gaps in the detection.

The load is connected to the main unit. The main unit is responsible for monitoring the brightness and the switch-off delay. The extension units have the task of routing detected movement and the measured brightness value to the main unit.



## Information about planning and app

The blackboard light can be activated via a push-button connected to the 6494-500 Extension unit connection .

### Notice

When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.

Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 300 lux, you must set a value on the device, for example, to about 80 lux.

The "Take over current brightness" app function indicates the current brightness at the mounting site. This value can be taken over directly for simplified commissioning.

### Notice

When making the setting, pay attention to the legal requirements for luminosities at the pupils' desk.

## Examples of switching

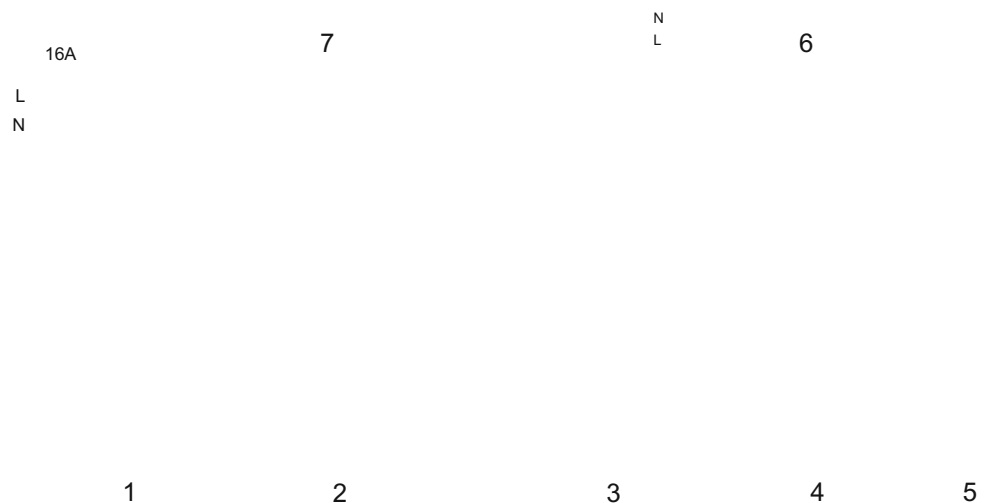


Fig. 31: Examples of switching: Classroom DALI light control with

[1] Optional: 6494-500 Extension unit connection to dim the lighting up and down in a targeted manner.

[2] 6819/35-xxx-500 Universal BT, DALI

[3] When using voltage enabling of DALI operating devices.

[4] 6819/39-xxx-500 Universal, DALI extension unit

[5] 6819/39-xxx-500 Universal, DALI extension unit



### 4.2.5 Open-plan office – Extension of the detection range with main units - Extension unit communication

#### Function

The lighting with fluorescent tube in a larger office is to be controlled via a Busch-Presence detector. Three Busch-Presence detector are to be installed in parallel to detect the entire area.

In addition, the user would like to switch the lighting on and off manually via a push-button.

#### Installation and settings

Fig. 32: Application example: open-plan office

For optimum detection, the installation positions of the Busch-Presence detector should be directly above the workplaces.

The Busch-Presence detector have an almost circular detection range. The areas should overlap slightly to ensure that there are no gaps in the detection.





## Information about planning and app

The load is connected to the main unit. The main unit is responsible for monitoring the brightness and the switch-off delay. The extension units have the task of routing detected movement to the main unit.

**Notice**  
When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.  
Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 500 lux, you must set a value of about 100 lux on the device.  
The "Take over current brightness" app function indicates the current brightness at the mounting site. This value can be taken over directly for simplified commissioning.

**Notice**  
When making the setting, pay attention to the legal requirements for luminosity at workstation.

Switching example of Monoblock device

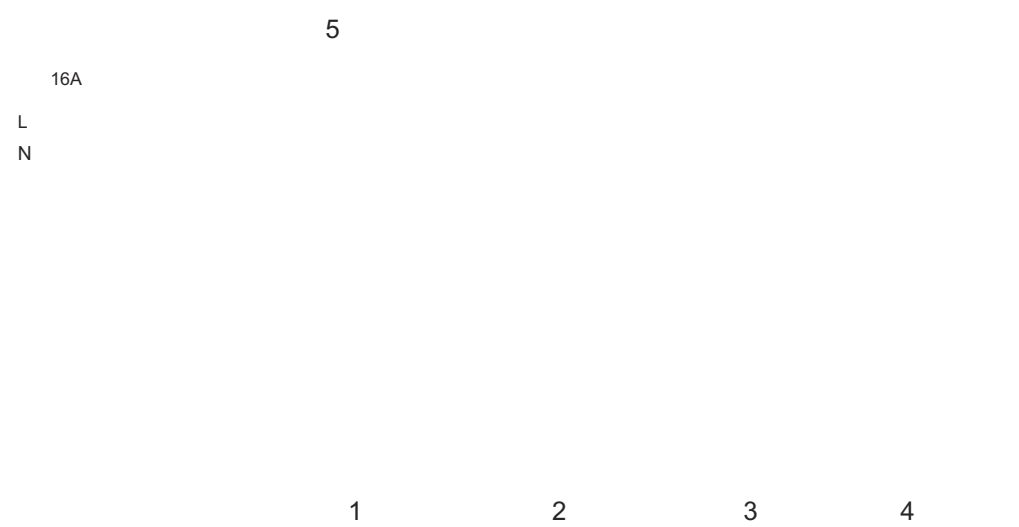


Fig. 33: Examples of switching: Open-plan office (main unit/extension unit) light control with extension unit input

[1] 6819/68-xxx-500 Compact, extension unit /6819/38-xxx-500 Universal, extension unit  
[2] 6819/68-xxx-500 Compact, extension unit /6819/38-xxx-500 Universal, extension unit  
[3] 6819/30-xxx-500 Universal, Relais / 6819/60-xxx-500 Compact, Relais



Switching example ABB flexTronics®



Fig. 34: Examples of switching: Open-plan office (main unit/extension unit) light control with extension unit input

- [1] 64811 U-500 Relay insert flex, 1 gang
- [2] 64753-xxx Busch-Presence detector flex, universal sensor
- [3] Extension unit push-button
- [4] 64891 U-500 Sub-insert flex
- [5] 64753-xxx Busch-Presence detector flex, universal sensor
- [6] Lamp



#### 4.2.6 Open-plan office – Extension of the detection range with main units - Extension unit DALI

##### Function

The lighting in a larger office is to be controlled using a Busch-Presence detector. Three Busch-Presence detector are to be installed in parallel to detect the entire area.

The allocation of lamps should be kept flexible. E.g. in case that the office is reorganized at a later point in time. The activation is therefore made via the DALI bus system.

In addition, the following was desired:

- The lighting is to be switched on and off manually via a push-button.
- The "Continuous Light" function as cleaning light.
- The "Continuous OFF" function, e.g., for a video presentation.

Optionally, a slow switch-on and switch-off of the light can be activated via a dimming function. The prerequisite for this are dimmable DALI loads. The times are settable via the smartphone app "ABB Watchdog Remote control".

##### Installation and settings

Fig. 35: Application example: DALI in an open-plan office

For optimum detection, the installation positions of the Busch-Presence detector should be directly above the workplaces.

The Busch-Presence detector have an almost circular detection range. The areas must overlap slightly to ensure that there are no gaps in the detection.



## Information about planning and app

The load is connected to the main unit. The main unit is responsible for monitoring the brightness and the switch-off delay. The extension units have the task of routing detected movement and brightness values to the main unit.

**Notice**  
When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.  
Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 500 lux, you must set a value of about 100 lux on the device.  
The "Take over current brightness" app function indicates the current brightness at the mounting site. This value can be taken over directly for simplified commissioning.

**Notice**  
When making the setting, pay attention to the legal requirements for luminosity at workstation.

### Examples of switching

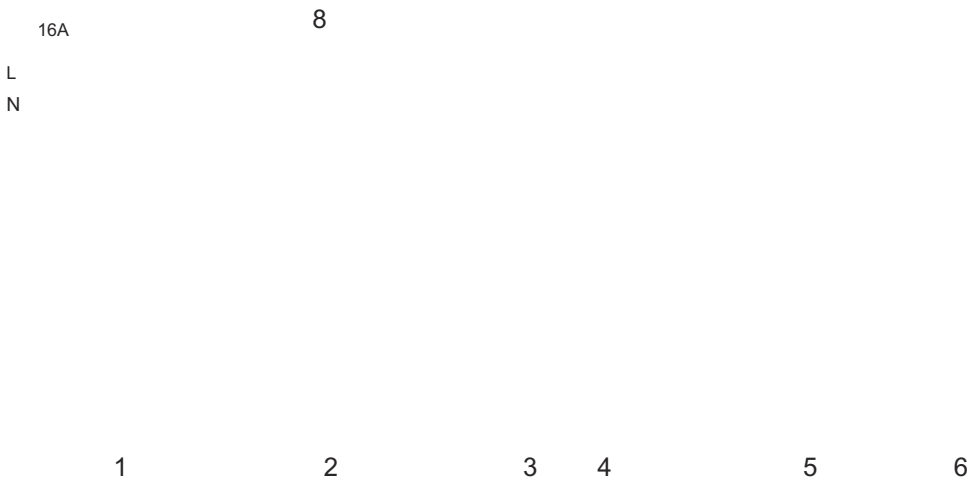


Fig. 36: Examples of switching: Open-plan office (main unit/extension unit) DALI light control with extension unit inp

- [1] 6494-500 Extension unit connection For "Continuous Light"/"Continuous OFF" modes
- [2] 6819/35-xxx-500 Universal BT, DALI
- [3] When using voltage enabling of DALI operating devices.
- [4] 6819/39-xxx-500 Universal, DALI extension unit
- [5] 6819/39-xxx-500 Universal. DALI extension unit





#### 4.2.7 **WC facility with DALI lamps**

##### Function

In a WC facility, the lighting with DALI lamps are to be regulated via a Busch-Presence detector in an intelligent manner.

The lighting is controlled depending on movement and brightness.

The fan should only be activated according to detected movement and with a switch-off delay.

##### Installation and settings

Fig. 37: Application example: DALI in a simple WC facility

Depending on the room divisions, it is necessary to install several Busch-Presence detector using active extension units in order to be able to monitor the individual areas (wash basins, urinals, individual cubicles as necessary).

The lighting is controlled directly depending on movement and brightness.

##### Integration of the ventilator

###### 1. Application:

The ventilator should start with a switch-on delay of 30 seconds and run for up to 10 minutes:

Parameter settings are made via the smartphone app "ABB Watchdog Remote control". Switch there to HVAC mode. There into the "Switch-on delay/switch-off delay" function.



## 2. Application:

The ventilator starts with a switch-on delay, but only if a movement is detected over a longer period (e.g. 5 minutes). This is intended to prevent the ventilator being activated when someone enters the toilet facility just briefly. If movement is detected over a longer period the ventilator should continue for some time. The switch-on delay is based on the frequency of movement in the first few minutes.

Parameter settings are made via the smartphone app "ABB Watchdog Remote control". Switch there to HVAC mode. There into the "Switch-on delay/switch-off delay" function.

### Examples of switching

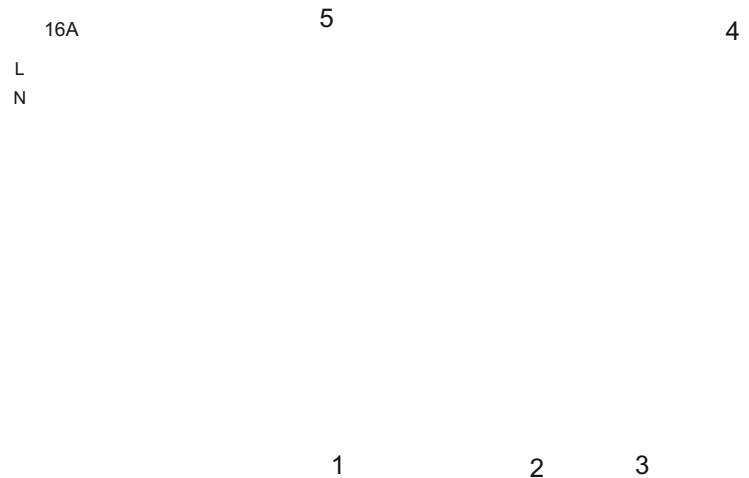


Fig. 38: Examples of switching: DALI light control with extension unit input for simple WC facility

[1] 6819/35-xxx-500 Universal BT, DALI

[2] When using voltage enabling of DALI operating devices

[3] DALI lamp

[4] Option: Voltage enabling of DALI operating devices is not used.

[5] Extension unit push-button



- [1] 6819/35-xxx-500 Universal BT, DALI
- [2] When using voltage enabling of DALI operating devices
- [3] 6819/39-xxx-500 Universal, DALI extension unit
- [4] 6819/39-xxx-500 Universal, DALI extension unit
- [5] DALI lamp
- [6] Fan
- [7] Extension unit push-button



#### 4.2.8 Daylight-dependent control (constant light control)

##### Function

The daylight-dependent control ensures increased comfort, e.g., in offices and conference rooms.

The lighting is generally a mixture of daylight and artificial light. With this type of lighting control the brightness is maintained at a constant level by dimming the share of artificial light. If daylight alone is sufficient, the artificial light/lighting is switched off.

##### Lighting control

Fig. 40: Application example: daylight-dependent control

The lighting must consist of DALI lamps.

In case of daylight-dependent control, manual intervention through the app is possible.

With the NO switch, the lighting can be switched on and off. With IR remote control, a distinction is made between short and long operations.

Through the coupling of the extension unit, the lighting can be dimmed up and down in a targeted manner in connection with a 2gang push-button.





Adaptation of the brightness set value via the app

Fig. 41: Adaptation of the brightness set value for the daylight-dependent control

By means of the app, it is possible to adjust the brightness limit value, which is kept at a constant level by the control.

Examples of switching

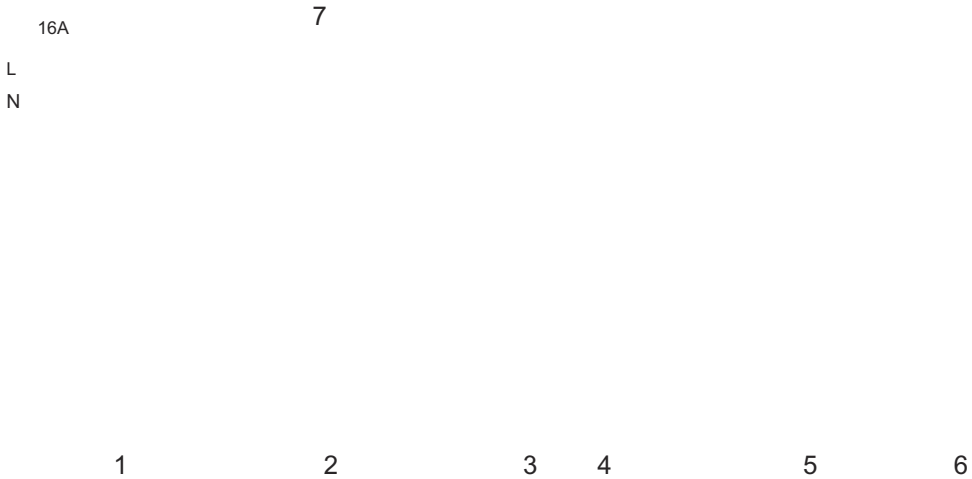


Fig. 42: Examples of switching: DALI daylight-dependent control (main unit/ extension unit) with extension unit input

[1] Optional: 6494-500 Extension unit connection to dim the lighting up and down in a targeted manner

[2] 6819/35-xxx-500 Universal BT, DALI



### Constant light switch in comparison to constant light control

Depending on the version, the presence detectors offer various options to ensure that the brightness in the room is maintained at a more pleasant level. There is a difference between the functions of the constant light switch and the constant light control. Both functions ensure that the brightness does not drop below a certain level when persons are in the room.

The use of a presence detector is especially practical for work stations in an office, since even small movements are detected.

The constant light switch, relay or e-contact is required on the output side, can switch lamps on and off. The constant light control, as DALI model or in combination with an LED dimmer insert flex, can additionally control the brightness of lamps in order to maintain a constant level. Both functions operate in dependence of light conditions and movement in the detection area.

The devices can operate either in "Automatic" or "Semi-automatic" mode.

If semi-automatic is selected, for example, the light must be switched on manually via a control element. The light remains on as long as movement is detected and daylight is not sufficient. If no movement is detected, the switch-off delay expires. Only then are the connected lamps switched off.

In automatic mode the movement sensor also takes over the switch-on function as soon as someone enters the room.

### Constant light switch

The presence detector switches on lamps in the room as soon as movement of a person is detected and the desired brightness value(setpoint) is not attained by the entering daylight alone. The light remains on as long as people are in the detection range. The presence detector automatically detects when the daylight is sufficient. The lamps are then switched off again to save energy.

Fig. 43: Control for constant light switch function

[A] Artificial light curve

[B] Sunlight curve

[1] Setpoint (lx), settable on presence detector (500 lux)

[2] Minimum time above the switch-off threshold (is specified by internal device parameters)



### Constant light control

The brightness of the light in a room is optimised to the respective use and kept constant. The normal brightness fluctuations, e.g. due to the sunlight entering the room depending on the time of day, are compensated as far as this is possible via the lighting and the spatial conditions.

The constant light control ensures, the same as the constant light switch, that the level of brightness in the room does not drop below the desired level. However, the presence detector is additionally able to dim the connected lamps in fine steps.

This enables a constant level to be attained due to the dimming of lights brighter and darker, always in dependence of the natural light in the room. The constant light control remembers the luminosity of the lamps used, while they are constantly measured. That is why the lamps used later must also be used during commissioning of the presence detector with the constant light control function. The artificial light component relative to daylight is also determined during commissioning. Aside from the brightness, the constant light control also responds as before to the presence of persons in the room.

Fig. 44: Constant light controller influences

- [1] Natural light
- [2] Brightness in the room
- [3] Parametrized brightness-value threshold
- [4] Artificial light

The set value for room brightness can be set using a potentiometer on the device, the IR service remote control 6843 or via the ABB Watchdog Remote control app.

### 4.2.9 Corridor

#### Function

A corridor system should be controlled intelligently via a corridor Busch-Presence detector.

The lighting is controlled depending on movement and brightness.



## Information about planning and app

Centralised approaches are fundamentally more difficult to detect than movements crosswise to the detector. For this reason, we recommend that, depending on the situation, the detector or detectors be positioned somewhat closer to the direction from which the centralised approach starts.

[A]

8 m

12m

20 m

Fig. 45: Application example: escape route corridor with one door

[A]

8 m

24 m

8

40 m

Fig. 46: Application example: escape route corridor with two doors (fire sector)





Switching examples of Monoblock devices



Fig. 47: Examples of switching: corridor light control with extension unit input

- [1] 6819/50-xxx-500 Corridor, Relais
- [2] Lamp
- [3] Extension unit push-button



Fig. 48: Examples of switching: corridor (main unit/extension unit) light control with extension unit input

- [1] 6819/58-xxx-500 / Corridor, extension unit



# Examples of switching ABB flexTronics®

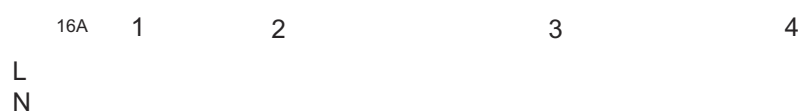


Fig. 49: Examples of switching: corridor light control with extension unit input

- [1] 64811 U-500 Relay insert flex, 1 gang
- [2] 64755-xxx Busch-Presence detector flex, corridor sensor
- [3] Lamp
- [4] Extension unit push-button



Fig. 50: Examples of switching: corridor (main unit/extension unit) light control with extension unit input

- [1] 64811 U-500 Relay insert flex, 1 gang
- [2] 64755-xxx Busch-Presence detector flex, corridor sensor
- [3] Extension unit push-button



#### 4.2.10 Stairwell

##### Function

A staircase should be controlled intelligently via a Busch-Presence detector.

The lighting is controlled depending on movement and brightness.

In addition, the user would like to switch the lighting on and off manually via a push-button.

##### Installation and settings



Fig. 51: Application example: stairwell with one main entrance

- A Ceiling mounting with Monoblock devices for suspended ceilings or corresponding concrete ceiling preparation
- B Surface mounting with ABB flexTronics<sup>®</sup> devices in combination with surface-mounted h 6883-...

Depending on the structure of the stairwell, several Busch-Presence detector are required.

- Position the main unit at the darkest of the positions selected, to ensure that the switch-on of lights also happens at this position.
- The setting of brightness-value threshold is made at this main unit.



### Switching examples of Monoblock devices



Fig. 52: Examples of switching: corridor (main unit/extension unit) light control with extension unit input

[1] 6819/38-xxx-500 / Universal, extension unit

[2] 6819/38-xxx-500 / Universal, extension unit

[3] 6819/31-xxx-500 Universal BT, Relais

[4] Lamp

[5] Extension unit push-button for manually switching the lighting ON/OFF





### Examples of switching ABB flexTronics®

	16A	1	2	3	4	5
L						
N						

Fig. 53: Examples of switching: stairwell (main unit/extension unit) light control with extension unit input

[1] 64811 U-500 Relay insert flex, 1 gang

[2] 64753-xxx Busch-Presence detector flex, universal sensor

[3] Extension unit push-button

[4] 64891 U-500 Sub-insert flex

[5] 64753-xxx Busch-Presence detector flex, universal sensor

[6] Lamp

#### Notice

A maximum of 9 extension units may be connected to a main unit per PlusWire



#### 4.2.11 **Gymnasium**

##### Function

A gymnasium should be controlled intelligently via a flex presence detector.

The lighting is switched dependent on movement.

The lighting is switched solely automatic. Manual operation is not provided.

##### Installation and settings

Fig. 54: Example of application: gymnasium

Depending on the structure of the gymnasium, several Busch-Presence detector are required.

The Busch-Presence detector have an almost circular detection range. The areas must overlap slightly to ensure that there are no gaps in the detection.

Due to the height of the room, ABB flexTronics<sup>®</sup> Sky sensors are required.

Mounting is preferably made surface mounting in combination with surface-mounted housing 6883-...

- Position the main unit at the darkest of the positions selected, to ensure that the switch-on of lights always happens.
- The setting of brightness-value threshold is made at this main unit.



### Examples of switching



Fig. 55: Examples of switching: gymnasium (main unit/extension unit)

[1] 64811 U-500 Relay insert flex, 1 gang

[2] 64754-xxx Busch-Presence detector flex, Sky sensor

[3] 64891 U-500 Sub-insert flex

[4] 64754-xxx Busch-Presence detector flex, Sky sensor

[5] Lamp



#### 4.2.12 **Private house**

##### Function

In a private house, the lighting shall be controlled outside under a canopy via a Busch-Presence detector.

In addition, the user would like to switch the lighting on and off manually via a push-button.

##### Installation and settings

Fig. 56: Application example: private house with canopy

For best detection results in connection with the best moisture protection, the mounting site of the Busch-Presence detector should be beneath the canopy.

For outdoor mounting, a moisture-protected device must be used.





### Examples of switching

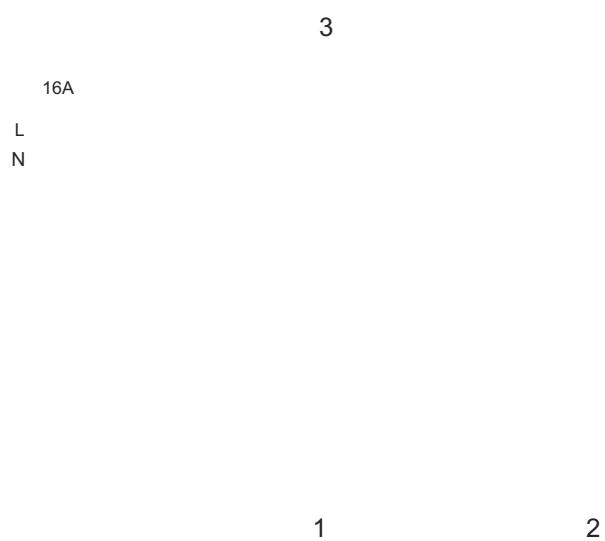


Fig. 57: Examples of switching: light control with extension unit input and moisture-protected device at a private house

[1] Universal BT, e-contact with sealing ring

[2] Lamp

[3] Extension unit push-button



#### 4.2.13 Office building with basic brightness function

##### Function

The lighting in a larger office is to be controlled using a Busch-Presence detector. Three Busch-Presence detector is to be installed in parallel to detect the entire area.

The office building is to receive an illuminated glass front. If the lighting in the office is shut off by the Busch-Presence detector a basic illumination is to remain.

DALI lamps are used for the implementation of different brightness values in the office.

##### Installation and settings

Fig. 58: Application example: open-plan office with illuminated glass front

For optimum detection, the installation position of the Busch-Presence detector should be selected directly above the workstations.

The switch-off delay for such applications is to be set at approx. 10 minutes.

The Busch-Presence detector have an almost circular detection range. The areas must overlap slightly to ensure that there are no gaps in the detection.

The load is connected to the main unit. The main unit is responsible for monitoring the brightness and the switch-off delay. The extension units have the task of routing detected movement and the respective brightness value to the main unit.



## Information about planning and app

The basic lighting can be activated using the "ABB Watchdog Remote control" smartphone app. The starting and ending times and brightness value of the basic lighting can also be set using the app.

### Notice

When determining the luminosities and setting of the device, pay attention to the different brightness distributions in the room.

Depending on the reflection conditions in the room or at the workstation, a considerably lower brightness value is determined at the mounting site of the device. If it should be switched on, for example, when the brightness at the workstations drops below 500 lux, you must set a value of about 100 lux on the device.

The "Take-over of current brightness" app function indicates the current brightness at the mounting site. This value can be take over directly for simplified commissioning.

### Notice

When making the setting, pay attention to the legal requirements for luminosities at workstations.

## Examples of switching

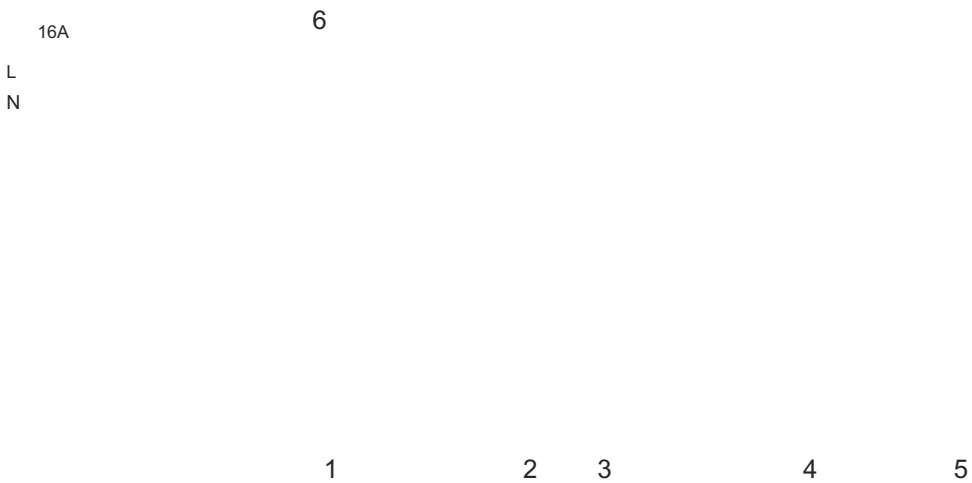


Fig. 59: Examples of switching: DALI light control system with extension unit input and basic lighting in a larger office

[1] Universal BT, DALI

[2] When using voltage enabling of DALI operating devices.

[3] Universal, DALI extension unit

[4] Universal, DALI extension unit



### 4.3 Sources of interference

#### 4.3.1 Sources of interference

Switching is normally activated by persons moving. However, there are also foreign heat sources that may cause unwanted activation. This should be taken into account during planning.

##### Suspended light bands

Suspended light bands that have an indirectly radiating part to the top can cause problems for ceiling presence detectors during the detection.

- The measurement of the reflected light from the floor or the table is affected unfavourably by the light part that radiates to the top.
- Depending on the lamp used, possibly existing infrared parts in the light or the rising heat of the lamp can affect the detection.

##### Remedy:

The presence detector must be located on the identical height level to the light band.

##### Limited view of the presence detector

Fig. 60: Sources of interference: limited view

The detection range of the presence detector may be obstructed by various objects, e.g.:

- Lamp strips that have been installed lower than the Busch-Presence detector
- Large plants
- Partitions





## Foreign heat sources

Fig. 61: Sources of interference: external heat sources

Rapid temperature changes in the environment of the presence detector may likewise trigger unwanted activation, e.g.:

- Additional fan
- Switching on/off of lamps in the direct vicinity ( $< 1.5$  m) of the presence detector, in particular incandescent lamps and halogen lamps
- Moving machines
- Swinging posters, etc.



#### Heat sources without interference effect

Fig. 62: Sources of interference: heat sources without interference effect

If the temperature changes only slowly, this will not affect the switching behaviour of the presence detector, e.g. for:

- Radiators (distance > 0.5 m)
- Surfaces heated by the sun
- EDP systems (computers, printers, monitors)
- Ventilation systems, when warm air does not flow directly into the detection range of the presence detector.



#### 4.3.2 **Remedy**

Fig. 63: Sources of interference: remedy

If such sources of interference cannot be excluded during planning, the use of devices with Bluetooth<sup>®</sup> function are recommended.

In the case of these devices, individual sensitivity sectors can be reduced or turned off using the "ABB Watchdog Remote control" smartphone app.



## 5 Notes





## 6 Index

### A

ABB flexTronics ® ..... 11, 14, 19, 30, 44, 50, 53

#### Application example

classroom with blackboard light ..... 76  
 DALI in a simple WC facility..... 86  
 DALI in an open-plan office ..... 84  
 daylight-dependent control ..... 89  
 escape route corridor with one door ..... 93  
 escape route corridor with two doors ..... 93  
 individual office ..... 72  
 open-plan office ..... 81  
 open-plan office with illuminated glass front ..... 103  
 private house with canopy ..... 101  
 stairwell with one main entrance ..... 96

Applications ..... 5

#### Areas of application

classrooms ..... 66  
 corridors ..... 69  
 individual offices ..... 64  
 living areas/stairwells ..... 71  
 meeting rooms ..... 67  
 open-plan offices with or without windows ..... 65  
 outdoors (outdoors with canopy) ..... 70  
 small rooms/cupboards ..... 63  
 toilets ..... 68

### B

Basic principles ..... 4

### C

Case studies ..... 11, 62  
 Constant light control ..... 34, 89  
 Control ..... 15  
 Corridor ..... 92

### D

DALI ..... 57  
 Daylight-dependent control ..... 34, 89  
 Design lines ..... 4  
 Detection levels ..... 58  
 Detection range ..... 41  
 Detection ranges ..... 58  
 Device Functions ..... 23  
 Device overview ..... 6  
 Device types ..... 6

### F

Functions ..... 33

### G

Gymnasium .....

### I

Information about planning and application .....

### L

Lens types .....

### M

Monoblock devices ..... 8, 13, 15, 23,

Mounting possibilities .....

Movement detectors .....

### N

Notes .....

### O

Office building with basic brightness function .....

Open-plan office – Extension of the detection range  
 with main units - Extension unit DALI .....

Open-plan office control of main unit - extension .....

Overview.....

Overview of functions .....

Overview of product range .....

### P

Presence detectors .....

Principles of function .....

Principles of operation .....

Private house .....

### S

Setting options .....

Single office .....

Sources of interference .....

external heat sources .....

heat sources without interference effect .....

limited view.....

remedy .....

Stairwell .....

Status indication .....

Switching capacity .....

### W

WC facility with DALI lamps .....



Busch-Jaeger Elektro GmbH  
A member of the ABB Group

Freisenbergstraße 2  
58513 Lüdenscheid

<https://new.abb.com/en>  
[info.bje@de.abb.com](mailto:info.bje@de.abb.com)

Central sales service:  
Tel.: +49 2351 956-1600  
Fax: +49 2351 956-1700