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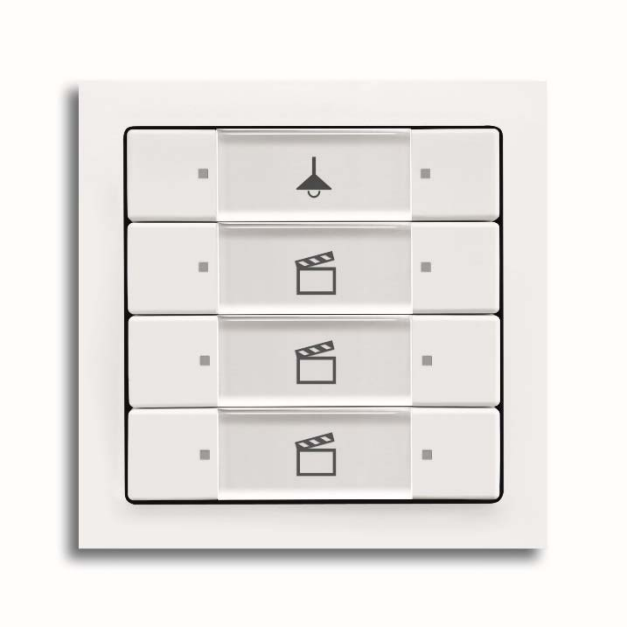
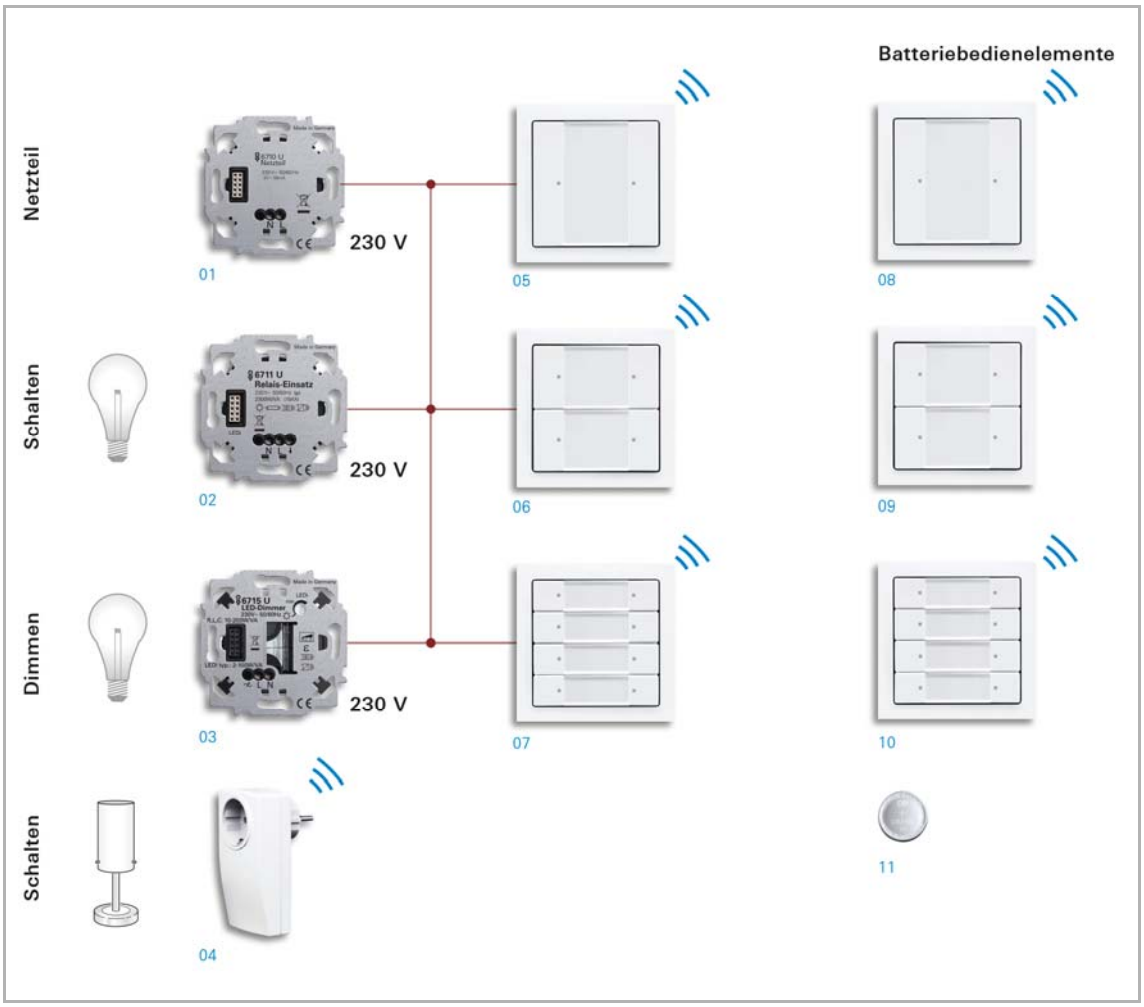
Busch-Jaeger ZigBee Light Link System Manual



BUSCH-JAEGER

Content

1 Overview



1.1 ZigBee Light Link

When it comes to light control and light scenes, ZigBee Light Link is the answer. Three different control elements are available:

- 1gang,
- 2gang and
- 4gang.

Each as control element for the flush-mounted inserts with user interface or battery-operated (wall-mounted transmitter).

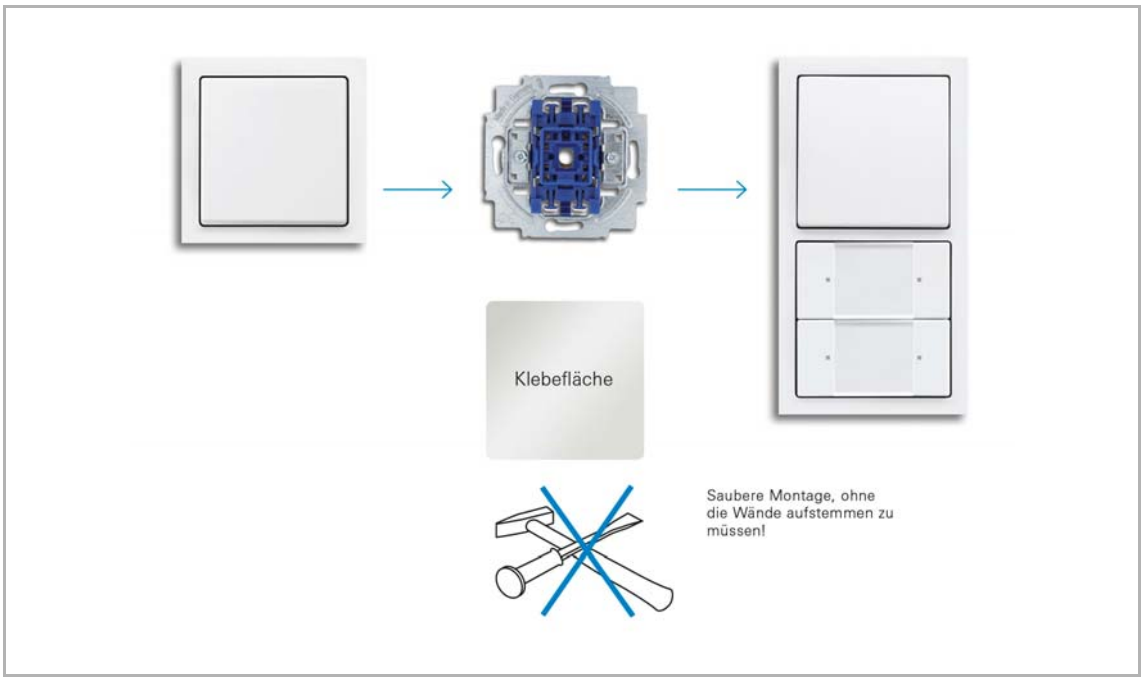
The flush-mounted inserts are available with three functions: as power adaptor for the wall-mounted transmitter, as switch insert and as dimmer insert.

ZigBee Light Link wall-mounted transmitter (battery-operated)

The battery control elements offer twice the flexibility. Switch combinations can be extended without chiselling work, simply by exchanging the cover frame. Battery control elements can be mounted precisely where they are needed.
E.g. next to a terrace door.

Number	Name	Article number
01	ZigBee Light Link power supply insert	Article no. 6710 U
02	ZigBee Light Link universal relay insert	Article no. 6711 U
03	ZigBee Light Link LED-dimmer insert	Article no. 6715 U
04	Adaptor plug, ZigBee Light Link switch	Article no. 6717-84
05	ZigBee Light Link control element, 1gang	Article no. 6735-84
06	ZigBee Light Link control element, 2gang	Article no. 6736-84
07	ZigBee Light Link control element, 4gang	Article no. 6737-84
08	ZigBee Light Link wall-mounted transmitter, 1-channel	Article no. 6735/01-84
09	ZigBee Light Link wall-mounted transmitter, 2-channel	Article no. 6736/01-84
10	ZigBee Light Link wall-mounted transmitter, 4-channel	Article no. 6737/01-84
11	Battery CR 2450 for battery control elements	(included in the scope of delivery)
05-10	Future® linear switch range, colour studio white Cover frame, 1gang, article no. 1721-181K	

1.2 Radio control for retrofitting



Small cause - large effect: with the ZigBee Light Link the comfort of remote control is easily retrofitted, clean and without a separate cable. The old switch is replaced with a switch combination that is glued on. And a ZigBee Light Link flush-mounted insert or adaptor plug is ready to be remote controlled from this position. ZigBee Light Link lamps can be activated directly without any additional devices.

1.3 ZigBee Alliance and third-party suppliers

The merger of many renowned manufacturers into the ZigBee Alliance (www.zigbee.org) greatly extends the range of application. For example, lamps and light rows from the Philips hue or the OSRAM LIGHTIFY system can be combined with the Busch-Jaeger components.

For additional information see: www.youtube.com/watch?v=10lai6tKIKo (video)

Fig. 1: Example: OSRAM LIGHTIFY Home

Fig. 2: Example: OSRAM LIGHTIFY Pro

2 System requirements

The Busch-Jaeger ZigBee Light Link components can be operated without any additional software. That is why initially no special system requirements need to be observed.

For the creation of a ZigBee network, a device classified as router must initialize the network. Busch-Jaeger flush-mounted inserts with control elements can serve as router, or appropriate devices of third-party suppliers (e.g. the OSRAM LIGHTIFY Gateway or the Philips hue Bridge).

2.1 Smartphone and table apps

For an especially comfortable installation and configuration of the lamps, the manufacturers of lamps often make tablet and smartphone apps available.

For the installation of the apps of third-party suppliers such as OSRAM LIGHTIFY or Philips hue, you require a smartphone or tablet with an Android or iOS operating system.

Please observe the system requirements of the manufacturers.

2.2 Home network

To be able to use the extended functions of ZigBee lamps, an OSRAM LIGHTIFY gateway or a Philips hue Bridge may have to be integrated into the home network. For this, a router with Ethernet and WLAN interface is required.

3 Performance features

The ZigBee Light Link system is a radio control system based on the ZigBee protocol for the control of lamps. ZigBee Light Link devices use a radio signal of frequency 2.4 GHz. This allows ZigBee Light Link devices to be used globally. The radio signal is defined by international Standard IEEE 802-15.4.

Control takes place on site using permanently installed control elements or mobile via apps of third-party suppliers for the smartphone or tablet (e.g.: OSRAM LIGHTIFY, Philips hue). The radio control allocation (subdivision into groups and creation of scenes) can take place both via the control elements, as wells the apps of Philips or OSRAM, for example. If the use of a room is to change in the future, or a light scene is to be changed, this is possible quickly and easily.

No special software is required for commissioning. The setup can take place directly via the control elements and wall-mounted transmitters.

3.1 Performance features

Up to 20 devices can be interconnected in a Busch-Jaeger ZigBee Light Link network. The devices can be combined into groups and controlled. Individual devices can be an integral part of several groups. The following versions of devices are available:

- ZigBee Light Link wall-mounted transmitter, 1-4 channel (battery-operated)
- ZigBee Light Link control element, 1-4gang with user interface
- ZigBee Light Link power supply insert
- ZigBee Light Link LED-dimmer insert
- ZigBee Light Link universal relay insert
- Adaptor plug, ZigBee Light Link switch

3.2 Integration of existing lighting

With the ZigBee Light Link radio control system Busch-Jaeger offers its customers a new, comfortable and future-oriented option of combining their existing lighting control system with new radio-controlled lamps (which meet the ZigBee Light Link standard). The entire system can be operated easily and comfortably in parallel with cabled and battery-operated control elements or from a smartphone or tablet.

4 Planning and Installation

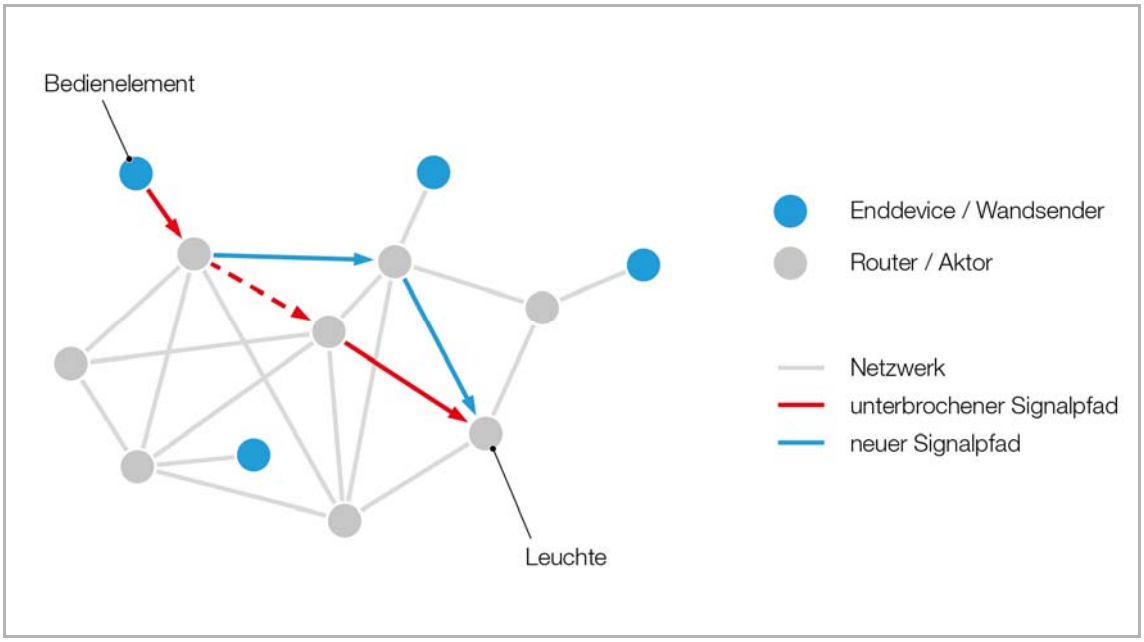
To ensure a robust radio control system, one should take important parameters into consideration already in the run-up, such as the number of devices, transmission range, sources of interference and installation sites. You will find all information required for planning in the following.

4.1 Setup of a ZigBee radio control network

ZigBee Light Link networks function as so-called mesh networks. In a mesh-network each network node is connected with one or several other network nodes. The information is passed from node to node. This setup makes mesh networks very reliable. If a node or a connection is blocked, the network searches independently for alternative paths to bring the signal to its destination.

A ZigBee Light Link network consists of at least two participants, one of which must be a router. A network participant cannot be part of two different ZigBee Light Link networks at the same time.

ZigBee topology



4.2 Differentiation between router / terminal devices

A ZigBee Light Link network has different participants which fundamentally differentiate themselves due to their functions: It has participants with router function (Full Function Device/FFD) and participants without router function (Reduced Function Device/RFD).

Router (Full Function Device/FFD)

A router is responsible for the initialization / creation of the network, channel selection, assigning of addresses, logging in and off of devices, and it additionally serves for the extension of the transmission range and the transfer of messages. A router is absolutely necessary for the initialization of a new ZigBee Light Link network.

The following Busch-Jaeger products are included among the routers:
The three flush-mounted inserts in connection with the user interface control elements as well as the adaptor plug. However, the adaptor plug has a special status since no network can be opened from it.

The class of routers also includes gateways and bridges of third-party manufacturers (e.g.: Philips hue, OSRAM LIGHTIFY).

End Device (Reduced Function Device/RFD)

End devices are Reduced Function Devices (RFD). An end device always establishes a connection to a router in the network. The end device cannot join a network without a router.

The following Busch-Jaeger products count among the end devices:
The three battery-operated wall-mounted transmitters.

4.3 Number of devices

The number of devices in the ZigBee Light Link network is limited to a maximum of 20 devices. This includes all system devices and ZigBee lamps.

4.4 Planning the transmission range

The transmission range of the radio control system plays an important role in the arrangement of the devices. This, for example, means the distance of the devices to the floors, ceilings and walls, or their distance to metallic objects.

The following contains an explanation of the basic constraints with regard to positioning of the devices, which, if they are adhered to, allows a robust radio control system be set up. Just as the arrangement of the devices affects the transmission range, so do people and the furnishings in the room. The maximum transmission range of the ZigBee radio control system in the free field amounts to a maximum of 100 m. Inside buildings the devices should not be installed further from each other than a maximum of 30 m.

Transmission range parameters

In the radio control application the transmission range is limited by the following effects:

- The power emitted from the device (normative, legally specified).
- Attenuation effect on the transmission route. Radio waves get weaker with increasing distance and are additionally attenuated during the penetration of obstacles.
- Destruction of radio signals due to blanking. Deflected, reflected radio waves can be weakened due to blanking or lead to the total destruction of the signal. The reflection of radio telegrams, however, could also make it possible that the radio wave reaches a device in a position at which reception from a direct path would not be possible.

4.5 Transmission behaviour

The reception of radio waves is dependent greatly on the location. The quality of the reception depends on:

- The distance between ZigBee devices
- The number and type of walls and ceilings
- The position of the ZigBee device to each other

Shielding

Important factors which reduce the radio transmission range:

- Separating walls made of metal or with a filling of aluminium-coated insulating foil.
- Suspended ceilings with panels made of metal
- Furnishings made of steel and metal-coated glass
- Panel and towel heaters
- Mounting of the device on a metal wall
- Installation of the device in metallic switch frames

Mounting a ZigBee device in metal housings, on fire walls, lift shafts, stairwells and supply areas is deemed as shielding and impairs the radio transmission. Shielding can be reduced either by changing the position of the transmitter or removing the receiver from the radio shadow or the use of an additional ZigBee device for the onward transmission of the signal (see section 4.1). Also to be observed is that moisture in the stonework reduces the transmission.

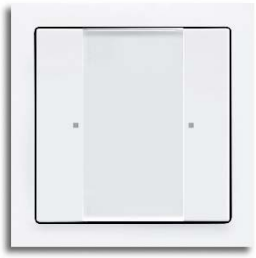
5 Types of devices and functions

The ZigBee Light Link range includes ten different products. This includes 3 radio control elements with user interface, 3 battery-operated wall-mounted radio transmitters, 3 flush-mounted inserts and an intermediate radio adapter plug. The ZLL radio parts is located in the control elements/wall-mounted transmitters or the intermediate plug. The flush-mounted inserts do not contain a radio control component.

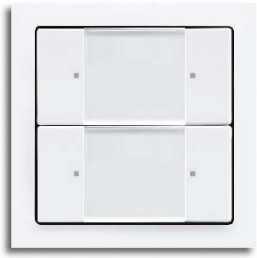
5.1 Radio control elements with user interface (6735-8xx, 6736-8xx, 6837-8xx)

The control elements are available in the solo/future design. They can therefore be integrated with the ranges carat®, pure stainless steel, solo®, Busch-axcent® and future® linear.

Available are 1gang, 2gang and 4gang control elements with user interface



6735-8xx

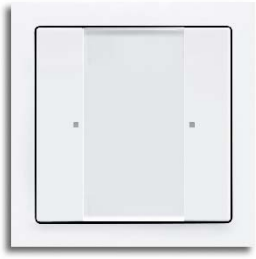


6736-8xx

6737-8xx

5.2 Wall-mounted radio transmitters with battery (6735/01-8xx, 6736/01-8xx, 6837/01-8xx)

The control elements named under 5.1 are additionally available as a battery version. The power is supplied via a lithium-ion battery of type CR 2450, which is included in the scope of delivery. The service life of the battery at an average use amounts to typically three years.



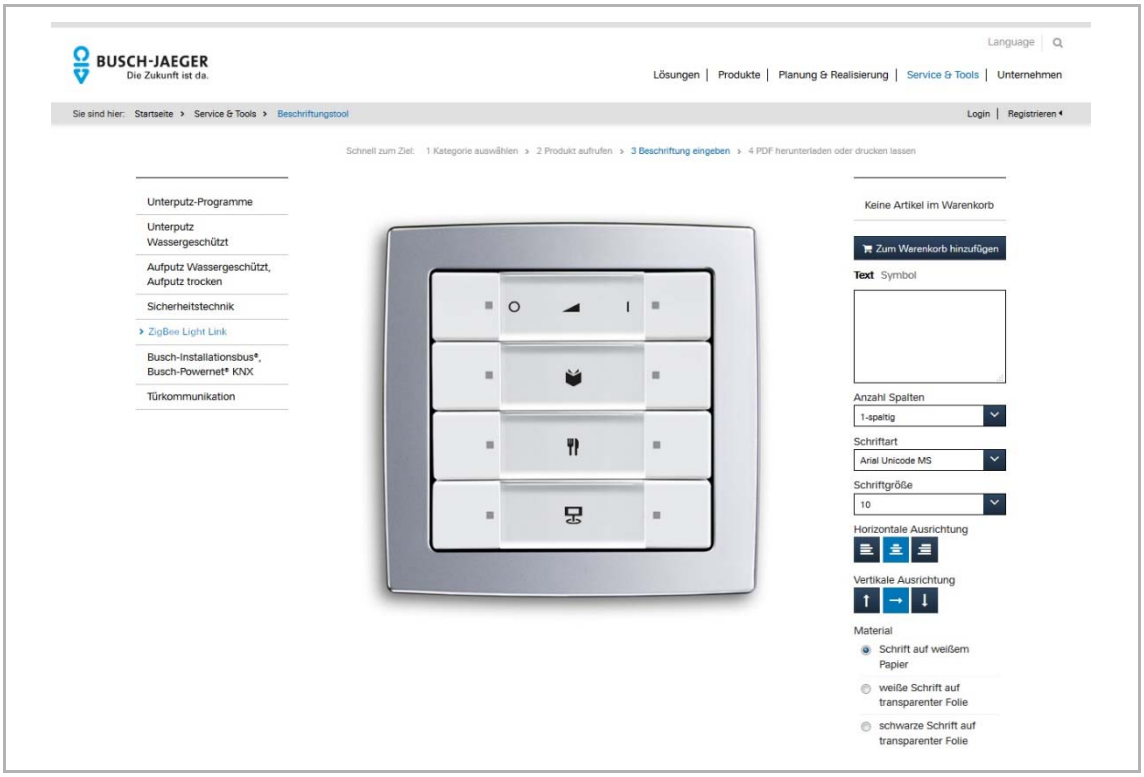
6735/01-8xx

6736/01-8xx

6737/01-8xx

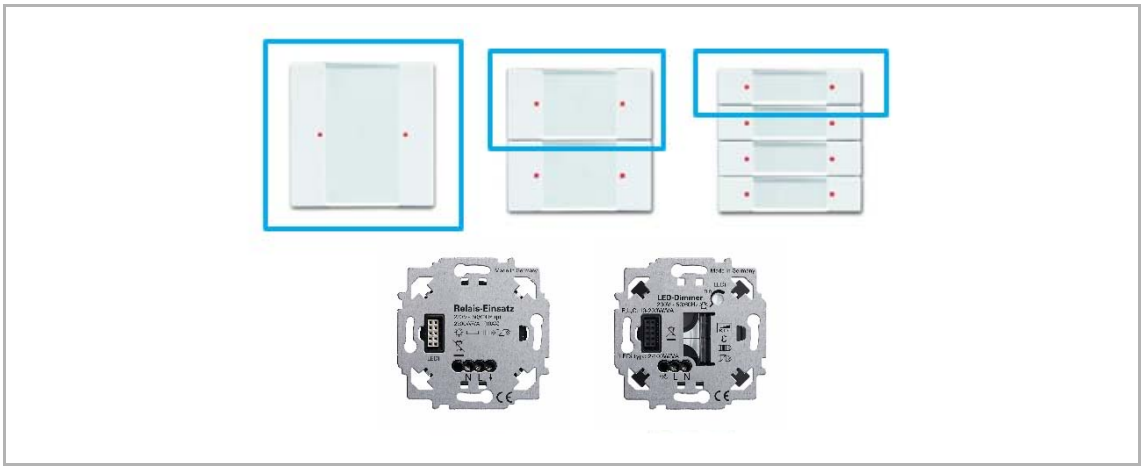
5.4 Labelling tool

The control elements and wall-mounted transmitters can be labelled. An online labelling tool is available for this at www.busch-jaeger-beschriftungstool.de



5.5 Local operation

In connection with a flush-mounted insert - to which a load is connected (relay/dimmer insert) - the top rocker of a control element (user interface) always controls the directly connected load. The additional storage of a scene is not possible with this rocker.



If a control element is attached to one of the available flush-mounted inserts, the control element automatically recognizes the functionality (switching or dimming) of the flush-mounted insert used.

Rockers which are not used for local operation can be occupied with light scenes. Dimming is not possible with these rockers; only dimmed values that are stored in scenes can be called up.

5.6 Flush-mounted inserts

Three flush-mounted inserts are available for the power supply of the control elements with user interface.

ZigBee Light Link power supply insert / 6710 U

Power supply insert for the continuous power supply of the control elements with user interface.

Technical data:

Nominal voltage: 230 V~ 50/60 Hz

Secondary nominal voltage: 5 V =

Nominal current: 50 mA

Neutral conductor required

ZigBee Light Link relay insert 6711 U

Relay insert for switching the following lamps:

- Incandescent lamps
- Fluorescent lamps
- 230 V halogen lamps
- Low-voltage halogen lamps on conventional and electronic transformers
- Retrofit LED lamps with intefrated ballasts (LEDi)

	2300 W
	2300 W
	2300 VA
	2300 VA
LEDi	100 W

Technical data:

Nominal voltage: 230 V~ 50/60 Hz

Outputs: 1 x normally open contact (potential-bound)

Nominal current: 10 AX

Rated power: 2300 W / VA

3-wire connection (neutral conductor is required)

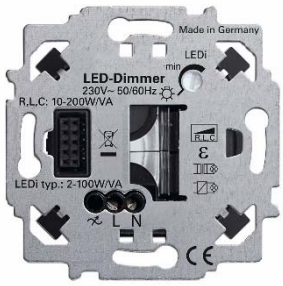
ZigBee Light Link LED dimmer insert / 6715 U

LED dimmer insert for dimming the following lamps:

- Incandescent lamps
- Fluorescent lamps
- 230 V halogen lamps
- Low-voltage halogen lamps on conventional and electronic transformers
- Retrofit LED lamps with integrated ballasts (LEDi)

	Min., Max. Last	Max. Anzahl
LEDi 230 V~	2 W/VA, 100 W/VA	20
LC L LEDi	4 W/VA, 100 W/VA	20
LC L	10 W/VA, 200 W/VA	-
C	10 W/VA, 200 W/VA	-
230 V~	10 W, 200 W	-
230 V~	10 W, 200 W	-

The minimum brightness can only be adjusted in leading edge control operation (for LEDi loads/right trimmer area). In trailing edge operation (left trimmer end stop) – as with all Busch-Jaeger touch-dimmers – a permanently fixed value is available for it.



Technical data:

Nominal voltage: 230 V~ 50/60 Hz

3-wire connection (neutral conductor is required) Nominal power: 2 - 100 W/VA LEDi loads

Nominal power: 10 - 200 W/VA all non-LEDi loads

No extension unit input

5.7 Radio adaptor plug (switch) ZigBee Light Link / 6717-84

Radio adaptor plug for the remote switching of mobile loads, which are connected via a SCHUKO® or euro plug.

Technical data:

Nominal voltage: 230 V~ 50/60 Hz

Nominal current: 6 AX

Nominal power: 100 W/VA LEDi loads

Nominal power: 1,380 W/VA all non-LEDi loads

Housing colour: studio white (-84)

5.8 Philips hue

Philips hue is an app-controlled lighting system from Philips which can simultaneously operate up to 50 light sources and display 16 million colours. hue can be used in many areas and has numerous useful functions, such as:

- Alarm call function
- Timer
- Warning signals.

The connection of the Philips hue Bridge with an own WLAN router makes it possible to control lamps also by means of app via the Internet and via numerous services and rule engines, such as IFTTT, for example.

5.9 OSRAM LIGHTIFY

OSRAM LIGHTIFY has two product ranges: One for the consumer sector (LIGHTIFY Home) and a supplementary for the professional sector (LIGHTIFY Pro). Also the LIGHTIFY lamps can be controlled via app and are connected with the WLAN router via the LIGHTIFY gateway.

5.10 Dresden Elektronik

Also Dresden Elektronik offers a ZLL-based radio solution. This, too, enables one to create individual light arrangements easily and uncomplicated. The desired settings can be carried out from any location via smartphone, tablet or laptop. Dresden Elektronik currently does not offer its own lamps.

5.11 Paul Neuhaus

Lamp manufacturer Paul Neuhaus offers a large range of complete lamps which can be controlled via ZigBee Light Link.

5.12 LG, Leederson, GE

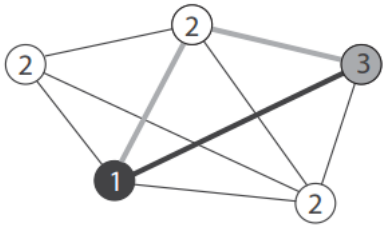
Also LG, Leederson and General Electric offer lamps compatible with ZigBee Light Link.

6 Commissioning

Commissioning the ZigBee radio control network To make communication possible between ZigBee Light Link devices, the devices must join the same network. Communication between devices not connected via the network is not possible.

Setting up the ZigBee network and configuring the devices

Every control element on flush-mounted inserts also works as a router. This allows radio control signals to be transmitted to devices that cannot be reached directly. Example: When the radio control path is interrupted between device (1) and (3) by building sections, the communication is automatically transmitted via one of the devices (2).

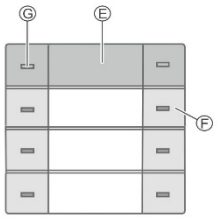


The setup of the ZigBee network and the configuration of the devices is carried out in three steps:

6.1 Creating and a ZigBee network for the first time

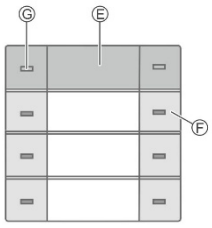
ZigBee networks can only be created by brand new devices mounted a flush-mounted insert. Devices which have previously been integrated in a network must first be reset (see chapter 6.1.2).

6.1.1 Brand new devices



1. Switch on the voltage.
   - The status LEDs (G) of the top rocker (E) flash red.
2. Press both buttons of the top rocker (E) and keep them pressed.
   - The LEDs flash alternately. The LEDs light up permanently after approx. 5 seconds.
3. Release both buttons of the top rocker (E).
   - The device is in programming mode.
4. Briefly press the right button of the top rocker (E).
   - The LEDs of the rocker light up green once and then switch back again to red. The network is now created and open for 2 minutes. The LEDs flash quickly red during this period. Other control elements within radio transmission range that are searching for networks will be added automatically to this network.
   - After the successful integration into the network, the status LEDs of the joined devices briefly light up red.

6.1.2 Devices which have already been integrated into a network (Resetting devices to factory settings):

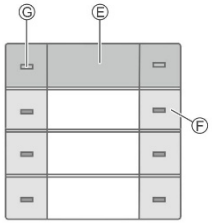


Note:

ZigBee networks can only be created by brand new devices. Devices which have previously been integrated in a network must first be reset.

1. Press both buttons of the top rocker (E) and keep them pressed.
   - The status LEDs flash alternately red. The LEDs light up permanently red after approx. 5 seconds.
2. Release both buttons of the top rocker (E).
   – The device is in programming mode.
3. Press both buttons again.
   – The status LEDs flash red, the device has been reset to the factory settings.
4. Briefly press the right button of the top rocker (E).
   – The LEDs of the rocker light up green once and then switch back again to red. The network is now created and open for 2 minutes. The LEDs flash quickly red during this period. Other control elements within radio transmission range that are searching for networks will be added automatically to this network.
   – After the successful integration into the network, the status LEDs of the joined devices briefly light up red.

6.1.3 Adding devices to an existing ZigBee® network

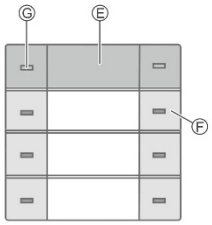


1.Keep both buttons of the top rocker (E) pressed on a device which is already in an existing network.
– The status LEDs (G) flash alternately. The LEDs light up permanently red after approx. 5 seconds.

2. Release both buttons of the top rocker (E).
– The device is in programming mode.

3. Briefly press the right button of the top rocker (E).
– The LEDs quickly flash repeatedly three times red. The network is open for 2 minutes. The LEDs continue to flash quickly red during this period. New control elements which are to be added the network will now join the network.
– After the successful integration into the network, the LEDs of the newly added devices light up red once and then do not flash again.

6.1.4 Deleting devices from an existing network



1. Keep both buttons of the top rocker (E) pressed.
– The LEDs flash alternately. The LEDs light up permanently red after approx. 5 seconds.

2. Release both buttons of the top rocker (E).
– The device is in programming mode.

3. Press both buttons again.
– The LEDs light up for 5 seconds. The device has been reset to the factory settings.
– All network and scene assignments will be deleted.
– Then the LEDs flash red again for 2 minutes. The device now searches again for an open network.

6.2 Setting and saving scenes

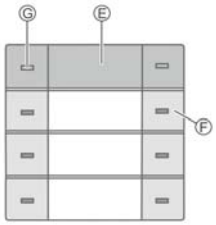
ZigBee Light Link devices can be combined into groups. This allows all devices in the group to be jointly activated. For example, to jointly activate or deactivate all lamps in a room. This means that a scene or light scene is the defined status of all network participants that are combined in a group. Such as colour and brightness of the lamps, for example. Also deactivated lamps can be an integral part of a scene.

Light scenes can only be stored with a brief press on the available control element or wall-mounted transmitter buttons. Each further actuation of this button calls up the stored light scene again. If the lamps of this scene are to be switched off, a corresponding scene with the same participants must be programmed as Off scene and assigned to a separate button.

Note:

The top rocker of control element 6736 and 6737 for flush-mounted inserts switches the lamps wired directly to the flush-mounted insert. This rocker cannot be used for storing and calling up scenes.

Depending on network conditions, up to 20 participants can be saved per scene.



Note:

In case of the adaptor plug the plugged-in load must be switched via the micro button directly on the adaptor plug.

Before storing scene, battery-operated wall-mounted transmitters must actively search all network participants. For this a network scan must be carried out.

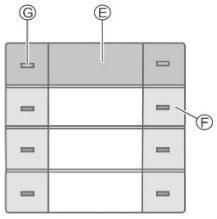
Performing a network scan

1. Keep both buttons of the top rocker (E) pressed.
   – The LEDs flash alternately. The LEDs light up permanently red after approx. 5 seconds.
2. Release both buttons of the top rocker (E).
   – The device is in programming mode
3. Again press the right button of the top rocker longer than 2 seconds.
   – Once the network participants have been recognized, the LEDs of the top rocker flicker. When all participants have been found, the LEDs light up once.

Control elements on flush-mounted inserts and battery-operated:

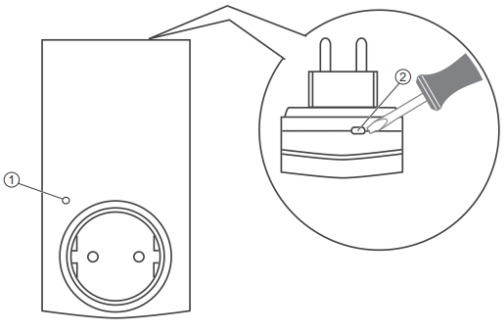
4. Switch on all lamps that are to be switched with a scene. This also includes lamps that are to be switched off with the scene later. All remaining lamps remain switched off.
5. Press the button (F), with which the scene is to be switched, longer than 15 seconds
   – The status LED flashes.
6. Set the desired status of the lamps and load (adaptor plug) within the period of 10 minutes (e.g. on, dimmed, off).
7. Press the button (F) again briefly.
   – The LED lights up briefly. The scene is stored.

6.3 Setting the light for orientation (Only for control elements on flush-mounted inserts)



1. Press both buttons of the top rocker (E) and keep them pressed.
   – The LEDs flash alternately red. The LEDs light up permanently red after approx. 5 seconds.
2. Release both buttons of the top rocker (E).
   – The device is in programming mode.
3. Briefly press only the left button of the top rocker (E) and keep it pressed. The following states are displayed in succession: green/bright, red/bright, red/dark, off.
4. Release the button in the desired state. The light for orientation in now set.

6.4 Joining a network with the adapter plug



Operation is carried out via separate ZigBee control elements.

6.4.1 Brand new devices

1. Plug the device into a SCHUKO® socket outlet.
   – The status LED (1) flashes red.
   – The device can now join an opened network for 2 minutes.
   – This state can continue to be extended each time for 2 minutes by pulling the device out and plugging it back into the socket outlet.
2. Press both buttons of the top rocker on a control element on a flush-mounted insert and keep it pressed to open the network.
   – The LEDs flash alternately red. The LEDs light up permanently red after approx. 5 seconds.
3. Release both buttons of the top rocker.
4. Again briefly press the right button of the top rocker,
   – The LEDs of the rocker light up. The network is now open for 2 minutes.
   – The adaptor plug automatically joins this network. The LED on the adaptor plug flashes quickly red during this period.
   – After the successful integration into the network the LED of the adaptor plug briefly lights up red.

6.4.2 Devices which have already been integrated into a network (Resetting devices to factory settings):

1. Press and hold the button (2).
   – The LED flashes. The LED lights up permanently after approx. 5 seconds.
2. Release the button (2) and press it again.
   – The LED flashes, the device has been reset to the factory settings.

6.4.3 Deleting devices from an existing network

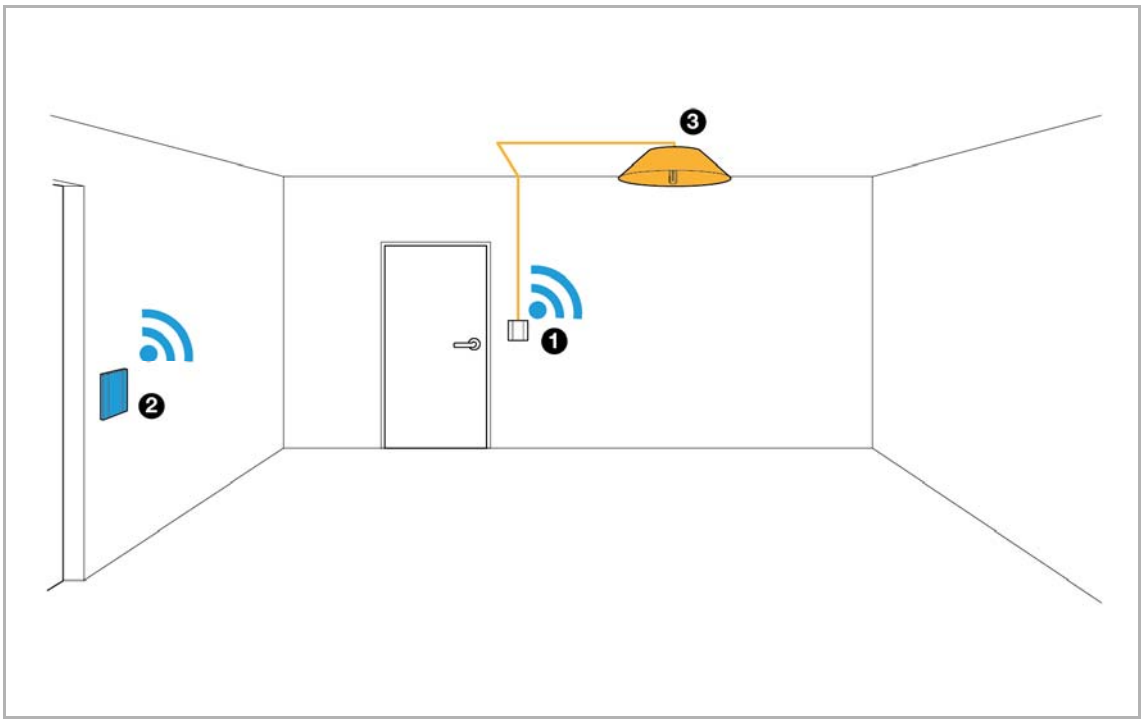
1. Press and hold the button (2).
   – The LED flashes. The LED lights up permanently after approx. 5 seconds.
2. Release the button (2) and press it again.
   The LED flashes, the device has been reset to the factory settings.
   – All network and scene assignments will be deleted.

7 Examples of application

Note:

A neutral conductor is required for the ZigBee Light Link flush-mounted inserts.

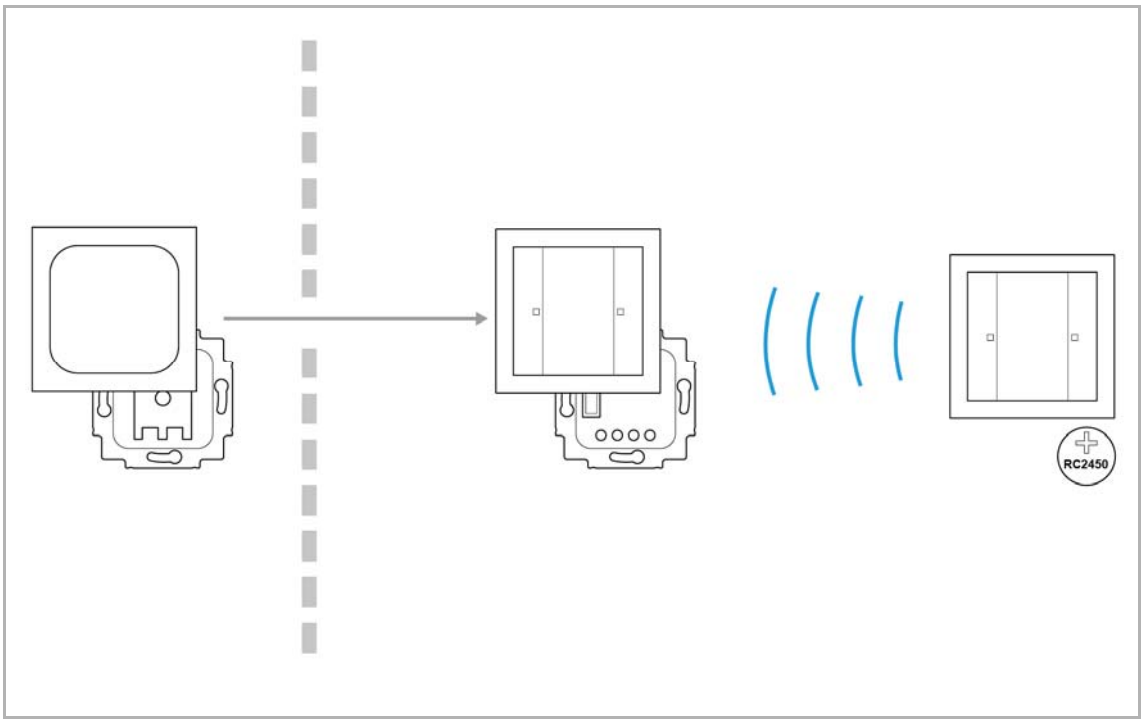
7.1 Extension of deactivation to remote controllable 2-way circuit



An existing deactivation can be easily retrofitted as a 2-way circuit. For example, with an additional wall-mounted transmitter next to the terrace door you can switch a ceiling light on or off. To do this, install the ZigBee Light Link universal relay insert next to the door and wire it to the existing lighting. For operation, attach a multi-gang ZigBee Light Link control element with user interface. Now a ZigBee Light Link wall-mounted transmitter can be glued on next to the terrace door, which activates the relay via the ZigBee Light Link radio control signal.

Products used:

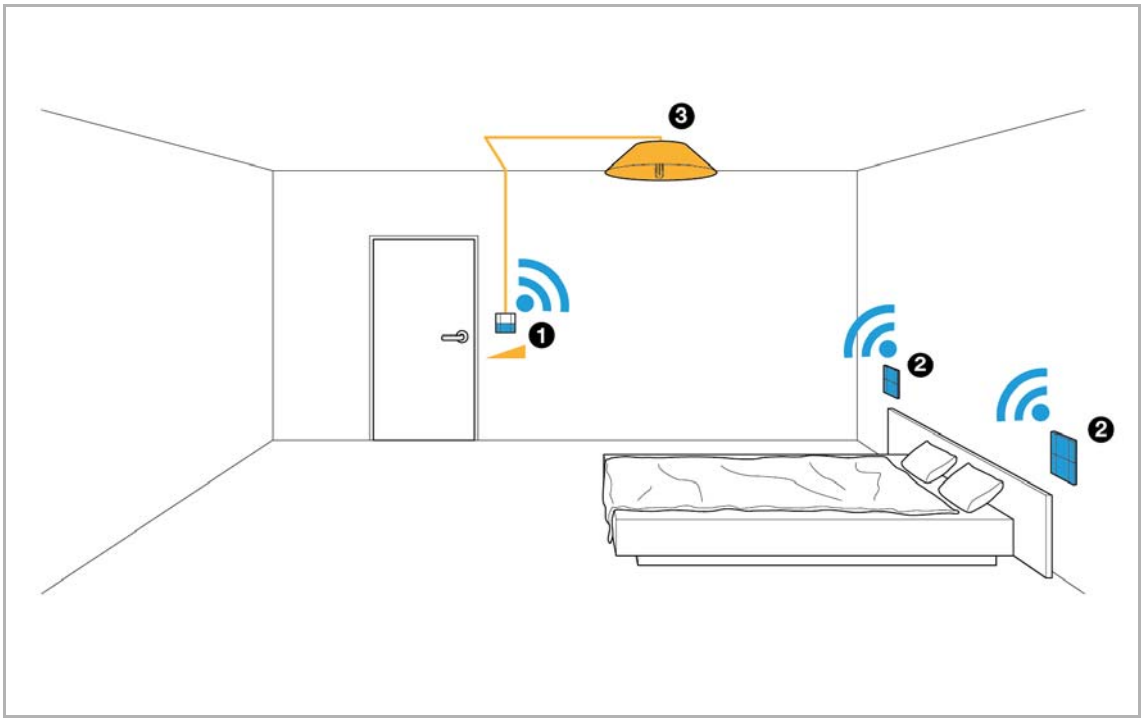
No.	Designation	Number	Article number
1	ZigBee Light Link control element	1	6735-XX
	ZigBee Light Link universal relay insert	1	6711 U
2	ZigBee Light Link wall-mounted transmitter	1	6735/01-XX
3	Conventional hard-wired lamp		



Procedure:

1. Dismantle existing conventional light switch.
2. Install the ZigBee Light Link universal relay insert and wire it to the ceiling light.
3. Attach the ZigBee Light Link control element to the universal relay insert.
4. Glue on the ZigBee Light Link wall-mounted transmitter.
5. Create a network on the ZigBee control element and join the network with the wall-mounted transmitter (for details see: Commissioning).
6. Set the button assignment on the control element and the wall-mounted transmitter and save (for details see: Commissioning).

7.2 Extending the deactivation to remote controllable cross circuit, incl. dimmer

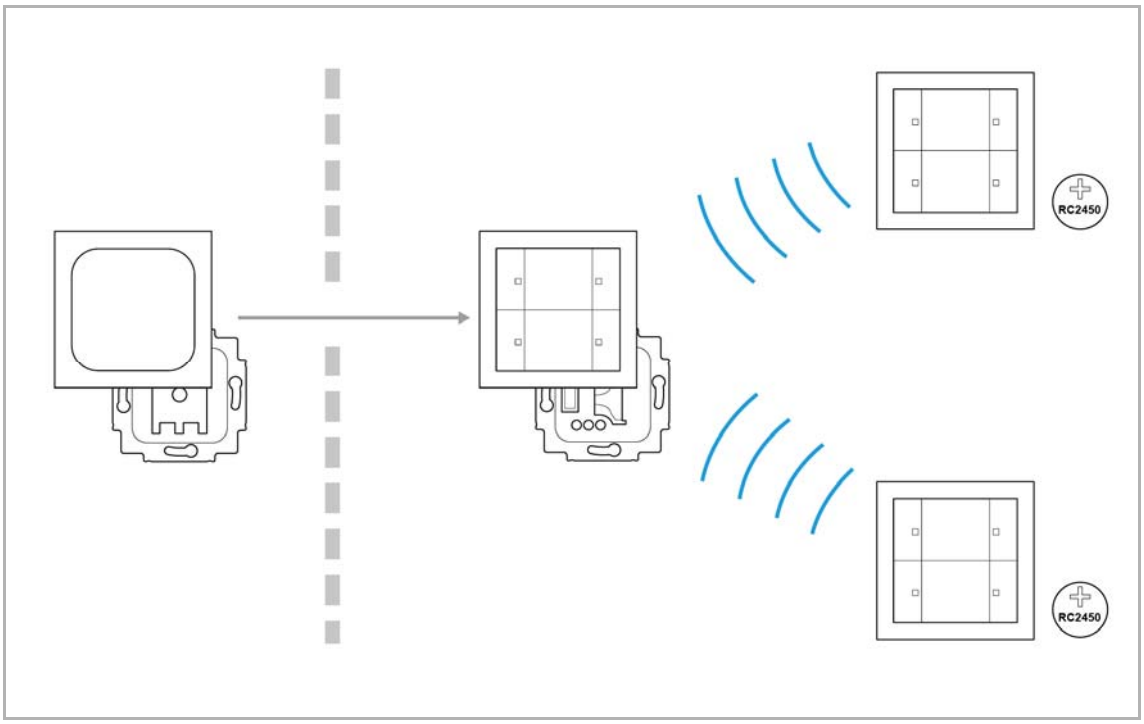


An existing deactivation is easy to retrofit to a dimmable cross circuit.
For example, you can make a ceiling light in the bedroom dimmable and then also operate it from two additional wall-mounted transmitters next to the bed. To do this, install the ZigBee Light Link LED dimmer insert next to the door and wire it to the existing lighting. Ensure that the lamps used in the ceiling light are dimmable. For operation, attach a multi-gang ZigBee Light Link control element with user interface. Now the two ZigBee Light Link wall-mounted transmitters can be glued next to the bed on the right and the left.

The ceiling light can be dimmed directly via the top rocker of the control element. The buttons of the wall-mounted transmitter can be occupied with different brightness scenes, which can be called up with a simple press of the button.

Products used:

No.	Designation	Number	Article number
1	ZigBee Light Link control element	1	6736-XX
	ZigBee Light Link LED-dimmer insert	1	6715 U
2	ZigBee Light Link wall-mounted transmitter	2	6736/01-XX
3	Conventional hard-wired lamp		



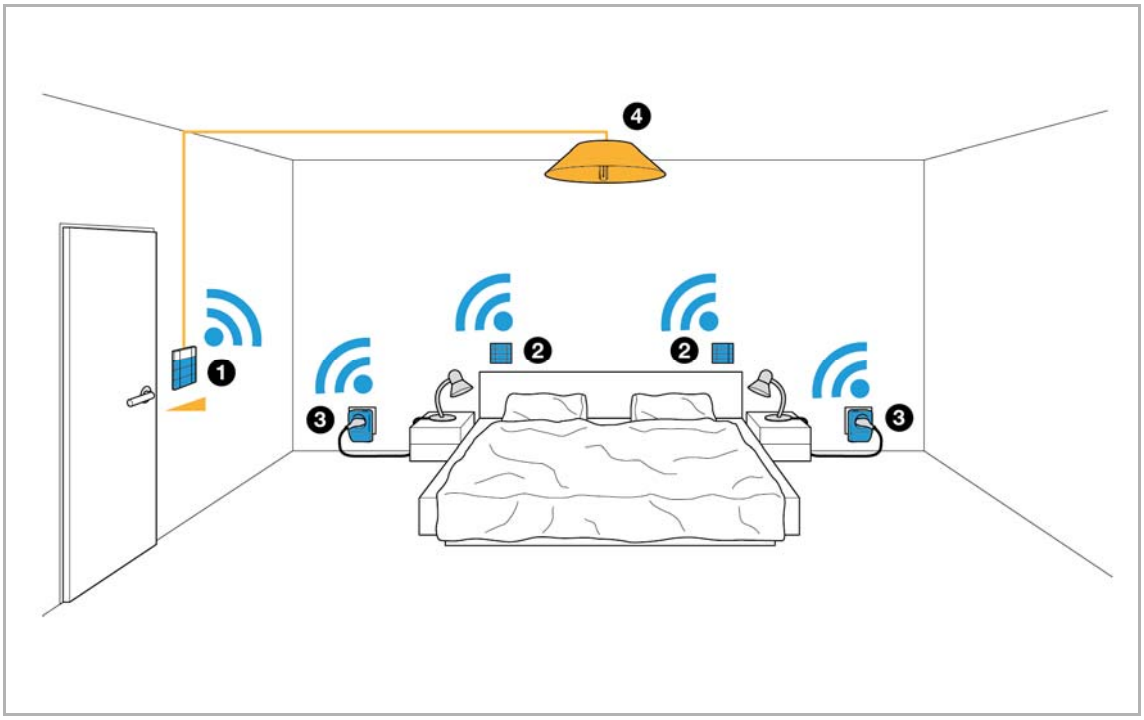
Procedure:

1. Dismantle existing conventional light switch.
2. Install ZigBee Light Link LED-dimmer insert and wire to the ceiling light.
3. Attach the ZigBee Light Link control element to the ZigBee Light Link LED-dimmer insert.

4.Glue on the two ZigBee Light Link wall-mounted transmitters.

5. Create a network on the ZigBee control element and join the network with the wall-mounted transmitters (for details see: Commissioning).
6. Set the button assignment on the control element and the wall-mounted transmitters and save (for details see: Commissioning).

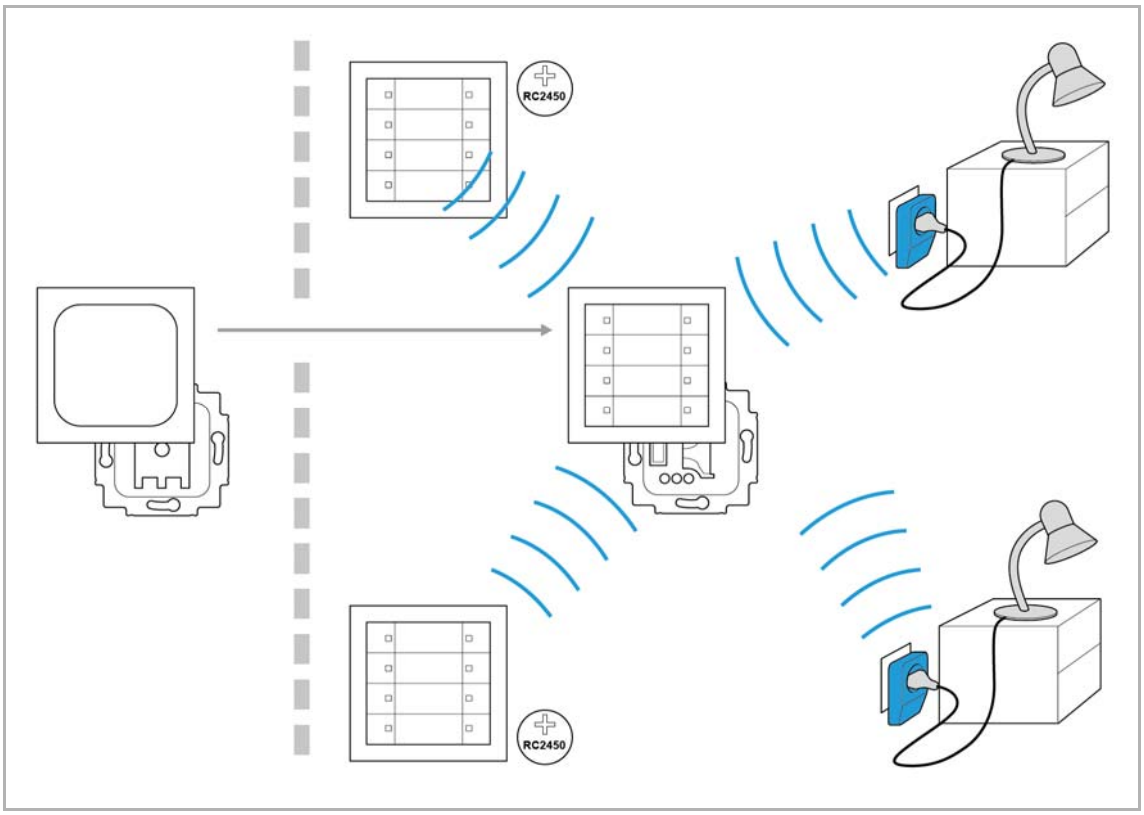
7.3 Retrofitting cross circuit and integrating bedside table lamp



In addition to the remote controllable and dimmable ceiling lamp, as illustrated in the example for application 7.2, existing bedside table lamps can be integrated into the circuit with the aid of the adaptor plug. This allows the bedside table lamps to be switched on directly by the control element next to the bedroom door. When using 4gang
control elements and 4gang wall-mounted transmitters, each lamp can be conveniently switched on and off by each control element or wall-mounted transmitter. In addition, both bedside table lamps can be combined into a group, for example, and in this way can be switched on or off with a press of a single button.

Products used:

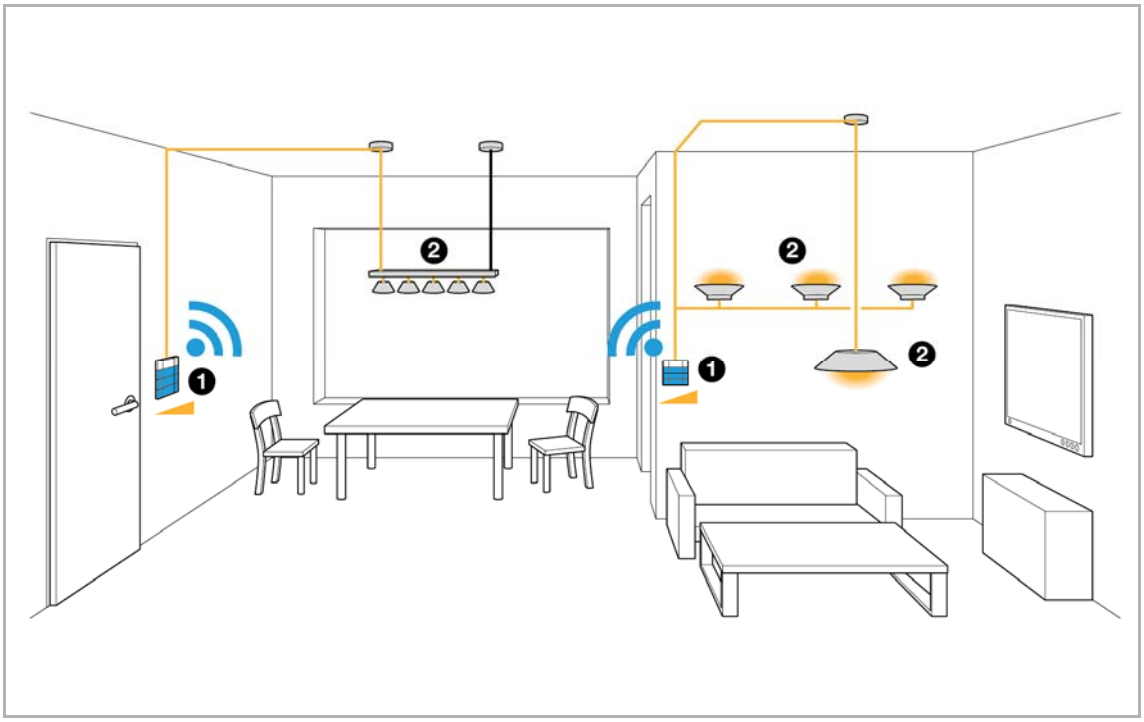
No.	Designation	Number	Article number
1	ZigBee Light Link control element	1	6737-XX
	ZigBee Light Link LED-dimmer insert	1	6715 U
2	ZigBee Light Link wall-mounted transmitter	2	6737/01-XX
3	Adapter plug	2	6717-84
4	Conventional hard-wired lamp		



Procedure:

1. Dismantle existing conventional light switch.
2. Install ZigBee Light Link LED-dimmer insert and wire to the ceiling light.
3. Attach the ZigBee Light Link control element to the ZigBee Light Link LED-dimmer insert.
4. Glue on the two ZigBee Light Link wall-mounted transmitters.
5. Plug in the adaptor plug between socket outlet and bedside table lamp.
6. Create a network on the ZigBee control element and join the network with the wall-mounted transmitters and the adaptor plugs (for details see: Commissioning).
7. Set the button assignment on the control element and the wall-mounted transmitters and save (for details see: Commissioning).

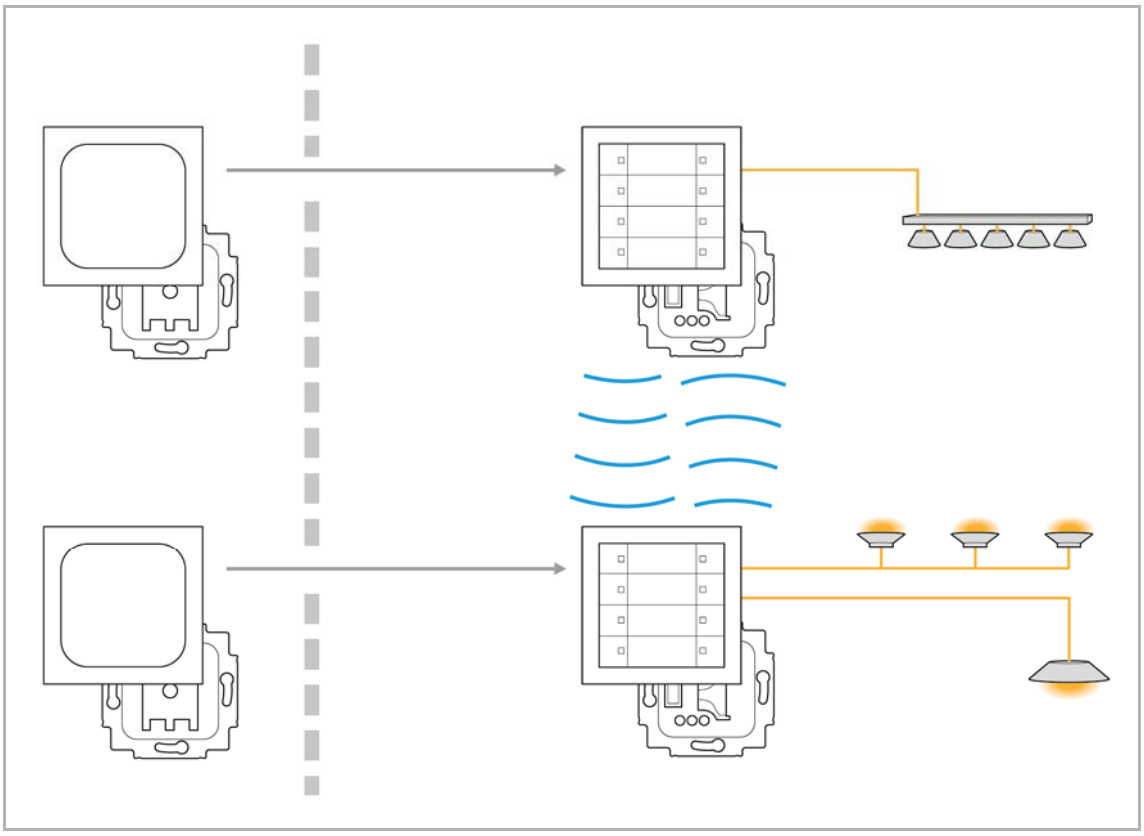
7.4 Extending existing lamps with clever ZigBee functions



Even when comprehensive conventional lighting has already been installed, the advantages of the Busch-Jaeger ZigBee Light Link products can still be used. For example, several lamps can be combined into groups, be made remote controllable and dimmable. And, when additional ZigBee products are released later, they will be easy to integrate.

Products used:

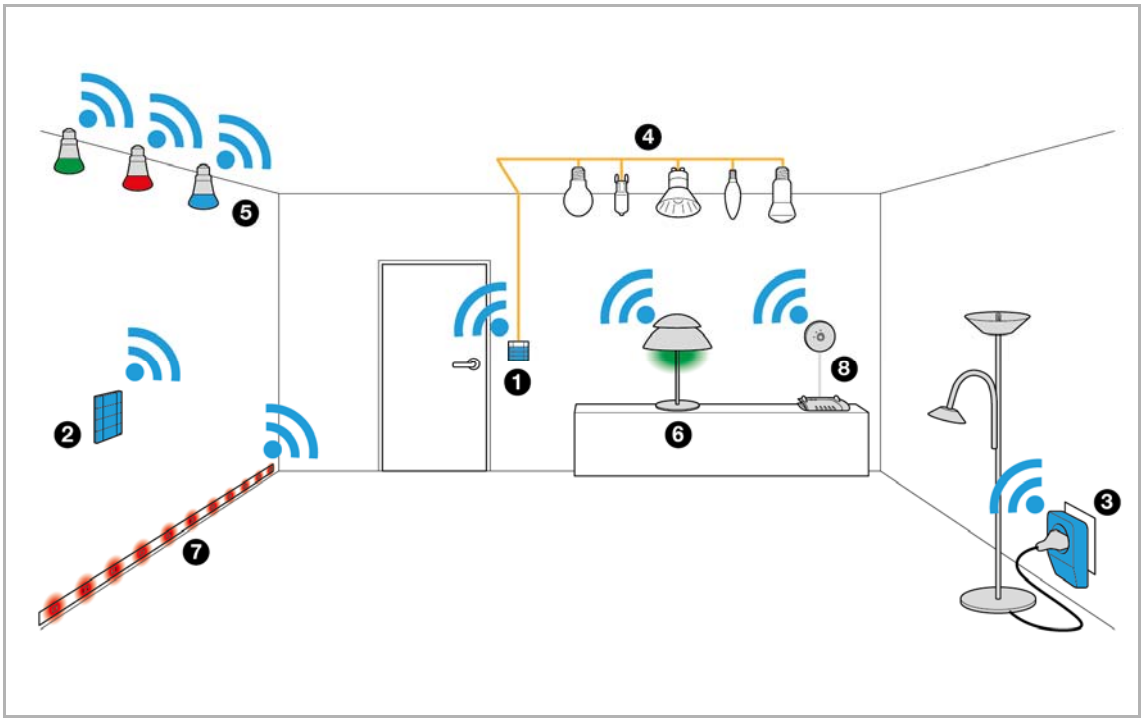
No.	Designation	Number	Article number
1	ZigBee Light Link control element	2	6737-XX
	ZigBee Light Link LED-dimmer insert	2	6715 U
2	Conventional hard-wired lamps		



Procedure:

1. Dismantle the existing conventional light switches.
2. Install ZigBee Light Link LED-dimmer insert and wire it to the ceiling light.
3. Attach the ZigBee Light Link control element to the ZigBee Light Link LED-dimmer insert.
4. Create the ZigBee network on one of the control elements and join the network with the other control elements (for details see: Commissioning).
5. Set the button assignment on the control element and the wall-mounted transmitters and save (for details see: Commissioning).

7.5 Extending the existing lighting with ZigBee elements



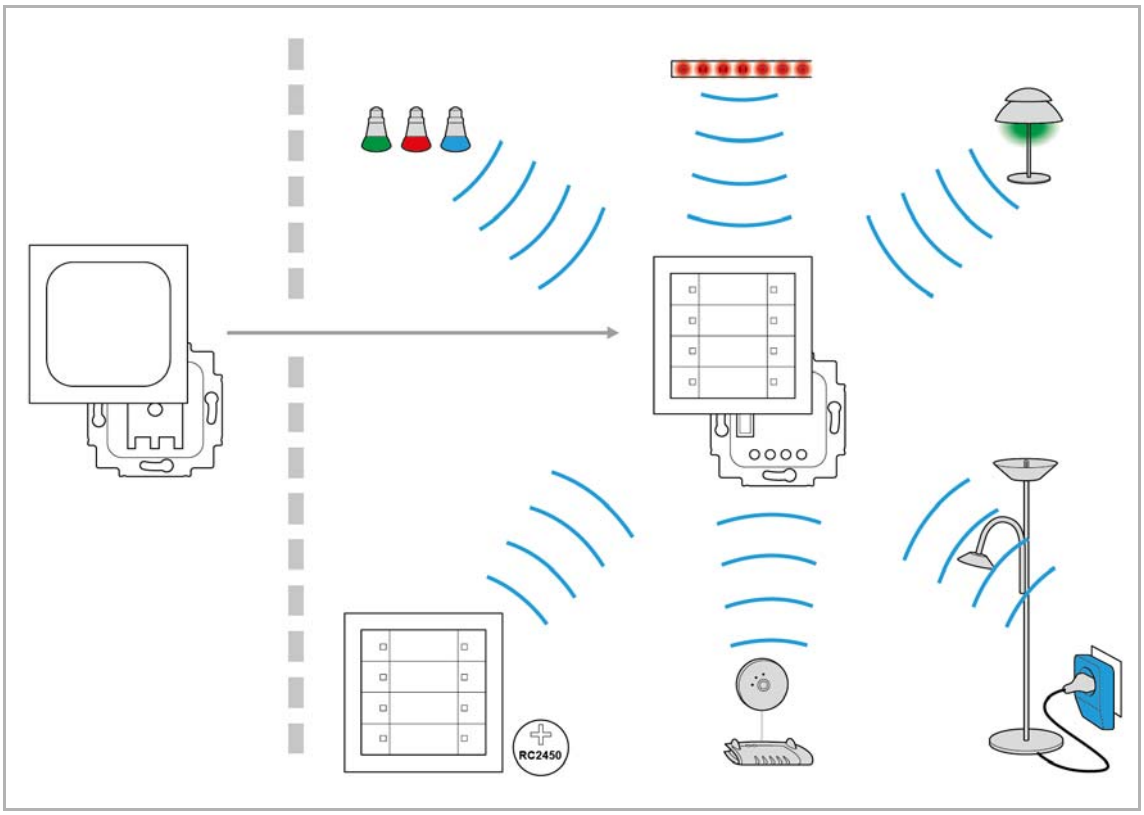
A room with existing conventional lighting can be easily extended with the use of ZigBee Light Link inserts, control elements and lamps. This allows existing conventional lighting to be remote controlled and integrated into scenes with ZigBee lamps. Also complex lighting scenes and circuits can be easily and quickly set up without having to install new cables.

The existing lamps can be activated and deactivated with the aid of relay inserts. ZigBee lamps can be used in existing lighting and therefore stored directly on a button of the control element or on a button of the wall-mounted transmitter. This also works when the scene has been created in the app of a third-party manufacturer.

Third-party manufacturers also offer a range of complete lamps which can be integrated in the ZigBee networks. For example, the Philips hue beyond models or ZigBee-capable lamps from Paul Neuhaus.

Products used:

No.	Designation	Number	Article number
1	ZigBee Light Link control element	1	6737-XX
	ZigBee Light Link universal relay insert	1	6711 U
2	ZigBee Light Link wall-mounted transmitter	1	6737/01-XX
3	Adaptor plug, ZigBee Light Link switch	1	6717-84
4	Conventional hard-wired lamps		
5	Philips hue LED lamps		
6	Philips hue beyond table lamps		
7	Philips friends of hue LightStrips		
8	WLAN router with Philips hue Bridge		



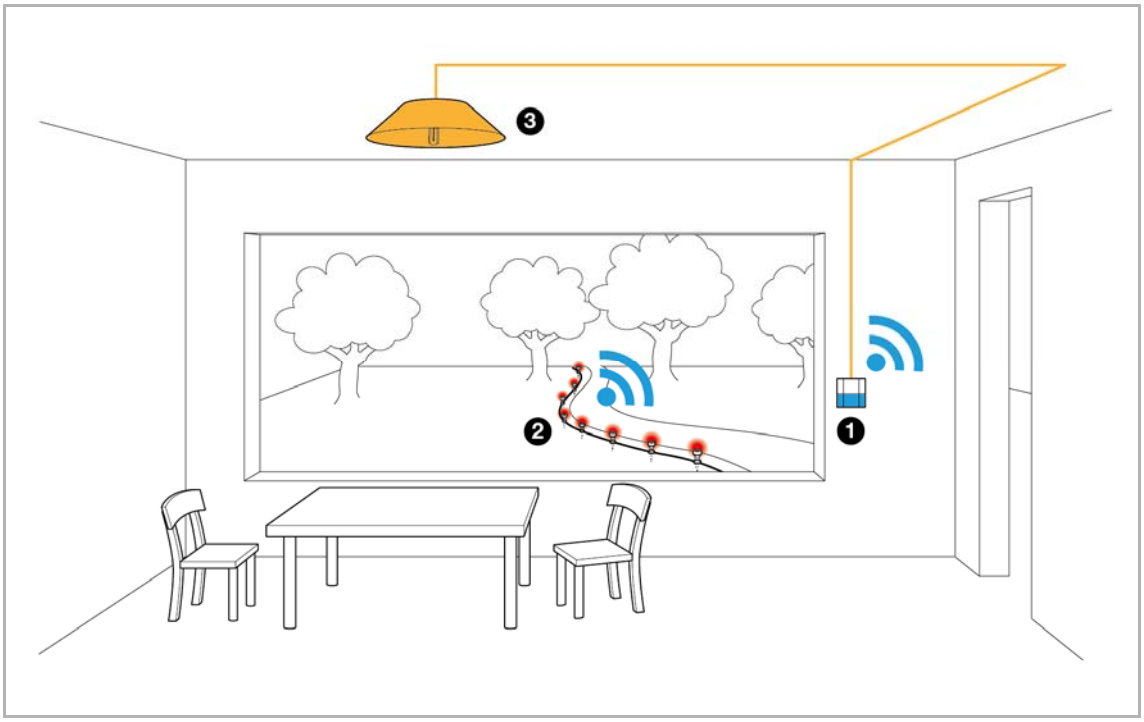
Procedure for integrating existing conventional lighting:

1. Dismantle existing conventional light switch.
2. Install the ZigBee Light Link universal relay insert and wire it to the lighting.
3. Attach the ZigBee Light Link control element to the universal relay insert.
4. Glue on the ZigBee Light Link wall-mounted transmitter.
5. Create a network on the ZigBee control element and join the network with the wall-mounted transmitter (for details see: Commissioning).
6. Set the button assignment on the control element and the wall-mounted transmitter and save (for details see: Commissioning).

Procedure for integrating additional ZigBee lamps or lighting:

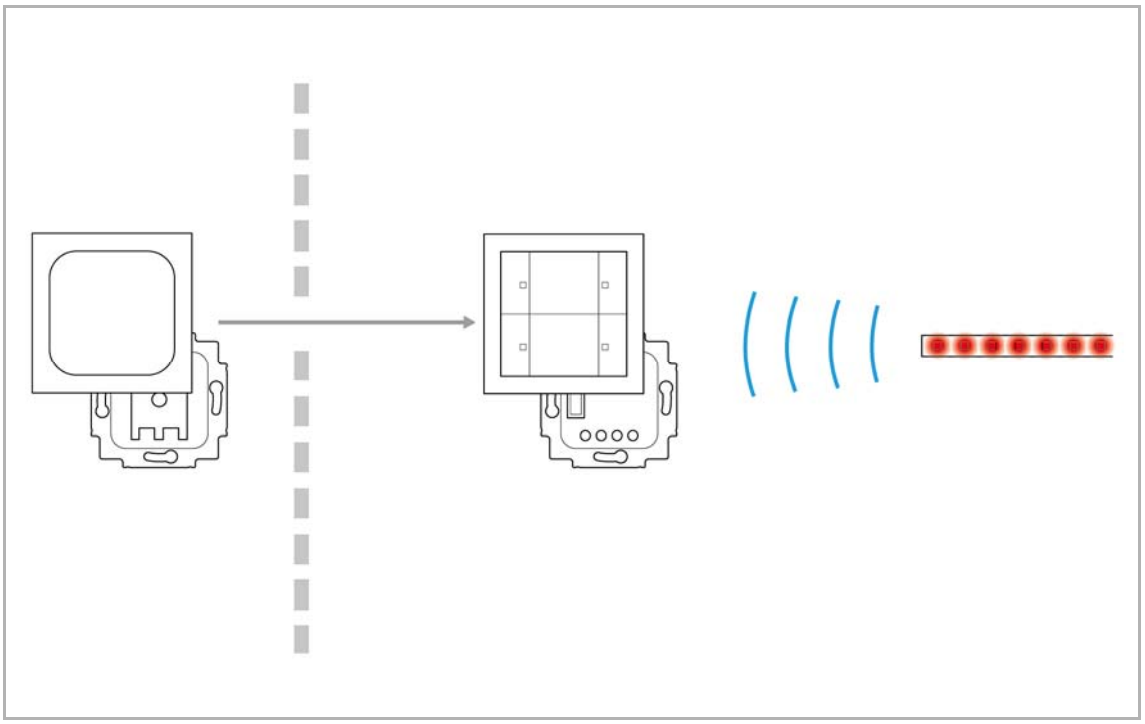
1. Set up ZigBee-capable lamps or lighting in existing lamp.
2. Create a ZigBee network or open an existing network for joining additional participants (for details see: Commissioning).
3. Join the ZigBee network with the lamps and lighting
   (for details see: Commissioning).
4. Set up lighting scenes and store on buttons of the control elements or wall-mounted transmitters (for details see: Commissioning).

7.6 Controlling garden lighting with ZigBee



Light rows which have been installed in the garden, such as the OSRAM LIGHTIFY Gardenspot, can be comfortably switched from a control element. This allows the existing exterior lighting to be easily extended. Colourful lighting scenes can be activated from inside the house with a press of a button.

No.	Designation	Number	Article number
1	ZigBee Light Link control element	1	6736-XX
	ZigBee Light Link universal relay insert	1	6711 U
2	OSRAM LIGHTIFY Gardenspot		
3	Conventional hard-wired lamps		



Procedure:

1. Dismantle existing conventional light switch.
2. Install the ZigBee Light Link universal relay insert and wire it to the existing lighting.
3. Attach the ZigBee Light Link control element to the universal relay insert.
4. Create a network on the ZigBee control element and open it for additional devices to join (for details see: Commissioning).
5. Join the ZigBee network with the light row (for details see: Commissioning).

8 Overview of Product Range

8.1 ZigBee Light Link control elements

6735-XX

6736-XX

6737-XX

QR-Code service

www.busch-jaeger-katalog.de/6730-0-0067,artikel.html

www.busch-jaeger-katalog.de/6730-0-0071,artikel.html

www.busch-jaeger-katalog.de/6730-0-0075,artikel.html

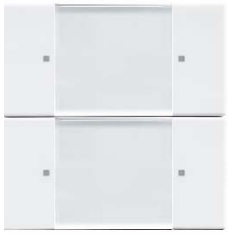
For switching and dimming electric loads via radio control. Available in models 1gang, 2gang or 4gang. For switching ZigBee Light Link flush-mounted inserts 6710 U, 6711 U and 6715 U. In connection with the ZigBee Light Link flush-mounted inserts 6711 U and 6715 U, the loads connected to the flush-mounted inserts are switched or dimmed directly with the top rocker. The remaining buttons can be used for storing individual light scenes. The control elements can be integrated into other systems which operate with the ZigBee Light Link protocol.

Technical data:

- Push-button function: Switching/dimming/light scenes
- With labelling field
- Labelling sheet not supplied
- Compatible labeling software is available at www.busch-jaeger-Beschriftungstool.de
- Send/receive frequency: 2.4 GHz
- Transmission range: approx. 100 m (free-field)
- Protection type of device: IP 20
- Temperature range of device: -5°C to 45°C
- Dimensions (H x W x D): 64 mm x 64 mm x 18 mm

8.2 ZigBee Light Link wall-mounted transmitter

6735/01-XX



6736/01-XX

6737/01-XX

QR-Code service

www.busch-jaeger-katalog.de/6730-0-0079,artikel.html

www.busch-jaeger-katalog.de/6730-0-0083,artikel.html

www.busch-jaeger-katalog.de/6730-0-0087,artikel.html

Network-independent wall-mounted transmitters available in models 1gang, 2gang or 4gang. For the wireless remote control of other ZigBee Light Link radio components. For switching and dimming electric loads via radio control. For combining with/integrating in other systems which operate with the ZigBee Light Link protocol, such as Philips hue.

Technical data:

- Push-button function: Switching/dimming/light scenes
- With labelling field
- Labelling sheet not supplied
- Compatible labeling software is available at www.busch-jaeger-Beschriftungstool.de
- Send/receive frequency: 2.4 GHz
- Transmission range: approx. 100 m (free-field)
- Power supply: lithium button cell battery type CR 2450 (included in scope of delivery)
- Battery service life: typically 3 years
- Automatic monitoring of battery service life
- Incl. fixing plate for mounting on smooth walls or on switch boxes
- Nominal voltage: 3 V
- Protection type of device: IP 20
- Temperature range of device: -5°C to 45°C
- Dimensions (H x W x D): 64 mm x 64 mm x 18 mm

8.3 Flush-mounted inserts and adaptor plugs

ZigBee Light Link power supply insert

6710 U

QR-Code service

www.busch-jaeger-katalog.de/6710-0-0001,artikel.html

For the power supply of ZigBee Light Link control elements.

- With electronic short-circuit protection.
- With electronic overload protection.
- For ZigBee Light Link control element 6735-xxx, 6736-xxx and 6737-xxx.
- Without control element.
- Nominal voltage: 230 V~, +10% / -10%
- Secondary: 5 V-, +5% / -5%
- Rated frequency: 50 Hz - 60 Hz
- Nominal current: 50 mA
- Protection type of device: IP 20
- Temperature range of device: -5°C to 45°C
- Installation depth: 33 mm
- IEC 60669-2-1, British Standard EN 60669-2-1

ZigBee Light Link universal relay insert

6711 U

QR-Code service

www.busch-jaeger-katalog.de/6710-0-0002,artikel.html

For switching of electrical loads via radio control.

3-wire connection (neutral conductor is required). For switching retrofit LED lamps (LEDi). For switching incandescent lamps, 230 V tungsten halogen lamps, fluorescent lamps and low-voltage halogen lamps, that are operated via transformers. Without control element. For ZigBee Light Link control element 6735-xxx, 6736-xxx and 6737-xxx.

- Nominal voltage: 230 V~, +10% / -10%
- Rated frequency: 50 Hz - 60 Hz
- Polling voltage: 230 V~,
- Outputs: 1 x normally open contact, potential-bound
- Type of load: ohmic, capacitive, inductive
- Nominal current: 10 AX
- Rated power: 2300 W/VA
- Protection type of device: IP 20
- Temperature range of device: -5°C to 45°C
- Installation depth: 33 mm
- IEC 60669-2-1, British Standard EN 60669-2-1

ZigBee Light Link LED-dimmer insert

6715 U

QR-Code service

www.busch-jaeger-katalog.de/6710-0-0003,artikel.html

Touch-dimmer for switching and dimming electric loads via radio control.

3-wire connection (neutral conductor is required). Optimised for dimming of retrofit LED lamps (LEDi). For incandescent lamps, 230 V tungsten halogen lamps, low-voltage halogen lamps with conventional or electronic transformers and dimmable energy-saving halogen lamps.

- Mixed-load operation with LEDi and conventional lamps possible
- With adjustable minimum brightness
- Minimum brightness for the leading edge control can be adjusted using the potentiometer.
- The potentiometer at the left limit stop corresponds to trailing edge control
- Low-noise due to use of MOSFET transistors
- Short-circuit-proof and overload-protected (electronic fuse)
- With light value storage and minimum brightness value storage
- Without control element
- For ZigBee Light Link control element 6735-xxx, 6736-xxx and 6737-xxx
- Nominal power: 2 - 100 W/VA (retrofit LED loads)
- Nominal power: 10 - 200 W/VA (non-LED loads)
- Nominal voltage: 230 V~, +10% / -10%
- Rated frequency: 50 Hz - 60 Hz
- Protection type of device: IP 20
- Temperature range of device: 0°C to 35°C
- Installation depth: 33 mm
- IEC 60669-2-1, British Standard EN 60669-2-1

Adaptor plug, ZigBee Light Link switch

6717-84

QR-Code service

www.busch-jaeger-katalog.de/6710-0-0004,artikel.html

For switching of electrical loads via radio control.

Plug device for switching electric loads up to 1,380 W/VA. Activation of thermal actuating drives for control of heating. Not for electrical heating devices. Connected load can be activated/deactivated via micro switch.

- Send/receive frequency: 2.4 GHz
- Transmission range: approx. 100 m (free-field)
- Nominal voltage: 230 V~, + 10% / - 10%
- Outputs: one normally open contact, potential-bound
- Output voltage: 230 V~
- Nominal current: 6 AX
- Nominal power: 1,380 W/VA (non-LED loads)
- Nominal power: 100 W/VA (LED loads)
- Rated frequency: 50 Hz - 60 Hz
- Protection type of device: IP 20
- Temperature range of device: -5°C to 45°C
- Dimensions (H x W x D): 122 mm x 65 mm x 77 mm

Product brochure

A member of the ABB Group

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