

Safety instructions

Installation and assembly of electrical devices may only be carried out by an electrician.

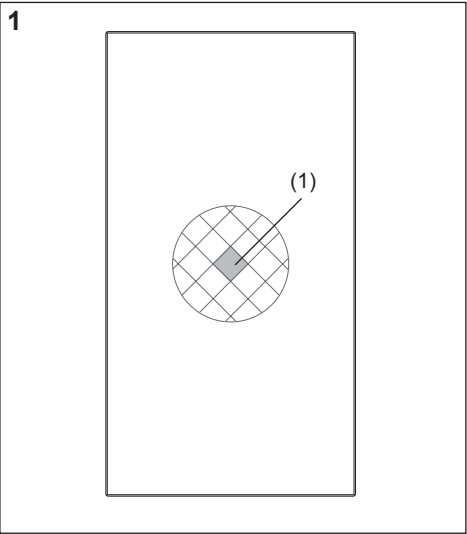
The Crystal Ball is not suitable for direct switching of mains voltage or low voltage.

Failure to observe these instructions may lead to damage to the device, fire, or other hazards.

These instructions are an integral component of the product, and must be retained by the end user.

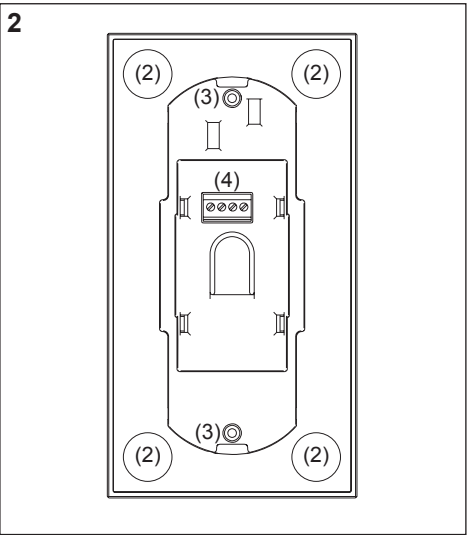
Structure of the device

Front view (Figure 1)



(1) Sensor surface

Rear view (Figure 2)



(2) Attachment locations for adhesive points

(3) Socket with setscrew and retaining pin

(4) Connecting terminal

Function

The Crystal Ball is intended for connection to building installation systems for lighting control. The functions which are available depend on the system that is connected. We strongly recommend coordination between the user and the installer with regard to the functions.

A 4pole screw terminal can be used to connect interfaces to the systems KNX/EIB or radio bus, or supply voltage. Other systems, such as relay circuits, can also be connected within the limits of the technical specifications.

Operation

The operation of functions must be set individually for each Crystal Ball depending on the system. Switching lighting, etc. on/off and dimming it brighter/darker is carried out in toggle mode, i.e. alternately by repeated touching of the sensor surface.

Operating the Crystal Ball

- Touch the sensor surface (Figure 1, 1).

The underlying function is executed.

- The actuation pulse is active for as long as the surface is touched. Depending on the function, short and long touches can trigger different actions, e.g. switching/dimming.

Information for electricians

Assembly and electrical connections

CAUTION!
Risk of destruction of the sensor or the connected system.
Fault voltages may occur when working under voltage.
Isolate from voltage before connecting the installation environment.

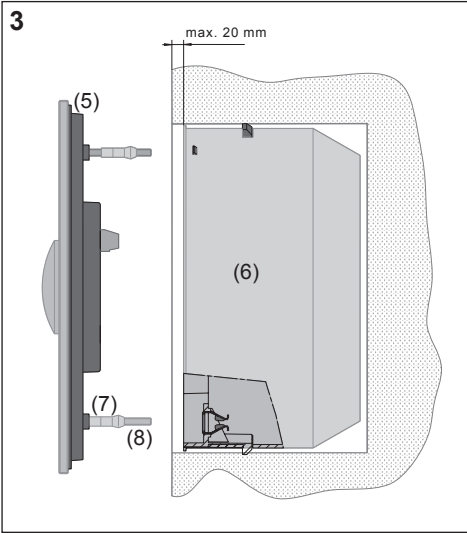
Mounting requirements

A special wall box (Figure 3, 6) is required for mounting the Crystal Ball. This wall box 2gang for glass sensors provides enough room to house the necessary interfaces. The Crystal Ball is fastened to the wall box with a snap-in fastening. With deep-set wall boxes, surface adjustment of up to 20 mm is possible by adjusting the retaining pins (Figure 3, 7) on the setscrews (Figure 3, 8).

For mounting on smooth surfaces, adhesive points are included with the Crystal Ball; these can be used for additional fastening of the glass plate after it is aligned.

The supplied adapter ring (Figure 3, 5) must be used

- for additional anti-dismantling protection
- for visual reasons, so that the distance from the wall will create a shadow gap



Preparing the Crystal Ball for mounting on a smooth surface

The adhesive points prevent the Crystal Ball from shifting on smooth surfaces.

- Clean the attachment locations for the adhesive points on the back of the Crystal Ball (Figure 2, 2).
- Peel the adhesive points off of their backing and apply them to the four attachment points.
- Clean the mounting surface.
- Before mounting the Crystal Ball, peel the protective foil off of the adhesive points.
- Before completing mounting, align the Crystal Ball and press on the areas over the adhesive points to fix it in place.

Connecting the Crystal Ball and mounting it on a wall box

The wall box 2gang for the glass sensor is mounted at the installation location.

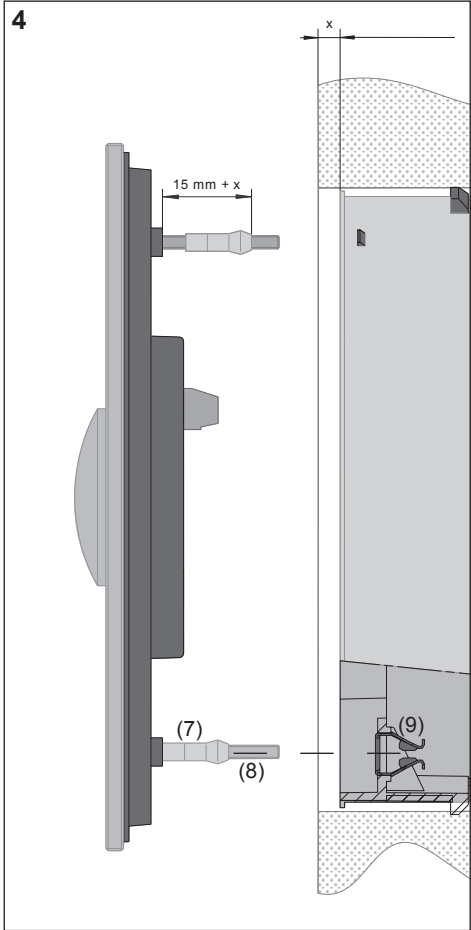
- If necessary, measure the required surface adjustment (Figure 4, x). Screw the retaining pins (Figure 4, 7) on the setscrews (Figure 4, 8) out by the surface adjustment x so that the upper edge has a distance of 15 mm + x from the socket for the setscrews.
- Set the surface adjustment precisely so that after mounting the Crystal Ball is firmly in contact with the wall.

- Connecting the Crystal Ball to the system being used and the supply voltage.

The electrical connection has been established.

- Place the connecting cables and if necessary system interfaces in the wall box.

- Insert the setscrews (Figure 4, 8) of the Crystal Ball into the clamp springs (Figure 4, 9) and press in until the retaining pins (Figure 4, 7) engage noticeably.



Connecting the Crystal Ball and mounting it on a wall box with the adapter ring

The wall box 2gang for the glass sensor is mounted at the installation location.

- Snap the adapter ring onto the back of the Crystal Ball. The marking TOP on the inside of the adapter ring must be at the top.
- Adjust the positions of the retaining pins. Screw the retaining pins on the setscrews out by the thickness of the adapter ring (5 mm).
- If necessary, measure the required surface adjustment (Figure 4, x). Screw the retaining pins (Figure 4, 7) on the setscrews (Figure 4, 8) out further by the surface adjustment x so that the upper edge has a distance of 20 mm + x from the socket for the setscrews.
- Set the surface adjustment precisely so that after mounting the Crystal Ball is firmly in contact with the wall.

- Connecting the Crystal Ball to the system being used and the supply voltage.

The electrical connection has been established.

- Place the connecting cables and if necessary system interfaces in the wall box.

- Insert the setscrews (Figure 4, 8) of the Crystal Ball into the clamp springs (Figure 4, 9) and press in until the retaining pins (Figure 4, 7) engage noticeably.

Connecting the Crystal Ball and mounting it with additional anti-dismantling protection

For additional anti-dismantling protection the Crystal Ball is connected to the adapter ring by means of a locking screw at the bottom of the adapter ring. For this reason, previously the adapter ring must be screwed to the wall box or the wall.

The wall box 2gang for the glass sensor is mounted at the installation location.

- If the adapter ring is to be screwed to the wall box, pry the clamp spring supports (Figure 5, 12) out of the wall box.

This exposes the screw holes in the wall box.

- Align the adapter ring (Figure 5, 11) and screw it to the wall box. The marking Top on the inside of the adapter ring must be at the top. For fastening to the wall with screws, use the supplied set of screws and wall plugs.

The adapter ring has been fastened at the installation location.

- Connecting the Crystal Ball to the system being used and the supply voltage.

The electrical connection has been established.

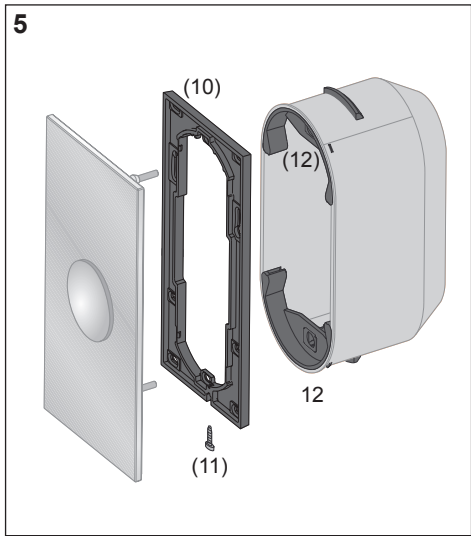
- Place the connecting cables and if necessary system interfaces in the wall box.

- Push the Crystal Ball onto the adapter ring until it engages.

- The engagement on the adapter ring is only a preliminary fastening. Additional fastening using the anti-dismantling protection is necessary for operation.

- Tighten the screw (Figure 5, 11) at the bottom of the adapter ring. Use a Pozidriv-type screwdriver, size 0.

Additional anti-dismantling protection has been provided.



Dismantling the Crystal Ball

- If necessary remove the screw (Figure 5, 11) at the bottom of the adapter ring. Use a Pozidriv-type screwdriver, size 0.

The additional anti-dismantling protection has been removed.

- Press the supplied dismantling tool above and below the crystal.

- Using the dismantling tool, pull the Crystal Ball evenly out of the clamp springs.

- Disconnect the terminal leads.

The Crystal Ball has been dismantled.

Operation and assembly instructions

Crystal Ball

Order no. 1685 78

B. Berker

GB

B. Berker
Schalter und Systeme

Berker GmbH & Co. KG
Klagebach 38
58579 Schalksmühle/Germany
Telefon: + 49 (0) 23 55/90 5-0
Telefax: + 49 (0) 23 55/90 5-111
www.berker.com

08/2007
97-09445-000

Connection requirements

- i

Because the signal transmission from the sensor surface to the connecting terminals takes place via optocouplers in the device, attention must be paid to the potentials when making connections.
In each case the conductor with the higher potential must be connected to the **IN +** terminal of the terminal block. Observe the specifications of the system interfaces being used.
- i

The user must provide a supply voltage of from 8 to 30 V = typically 24 V = for the Crystal Ball.

!

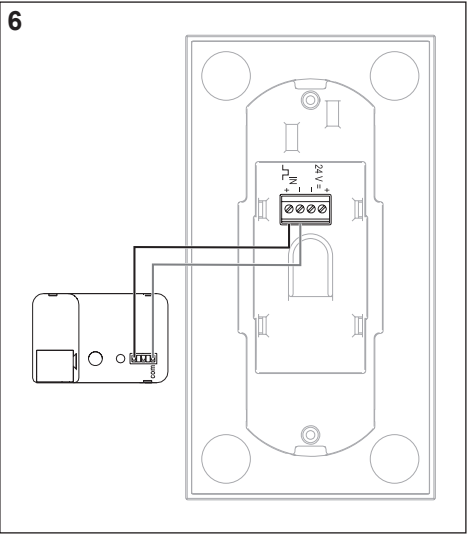
CAUTION!

Risk of destruction of the device or the connected sensor.
High switching currents can destroy the electronics.
Do not load any terminal pair of the IN terminal blocks with more than 10 mA of switching current.

Connecting the Crystal Ball to the KNX/EIB system via universal interface 2gang or 4gang comfort flush-mounted

- The Crystal Ball is connected to a channel of the universal interface via the screw terminal. This connection is shown using the universal interface 2gang as an example.
- i

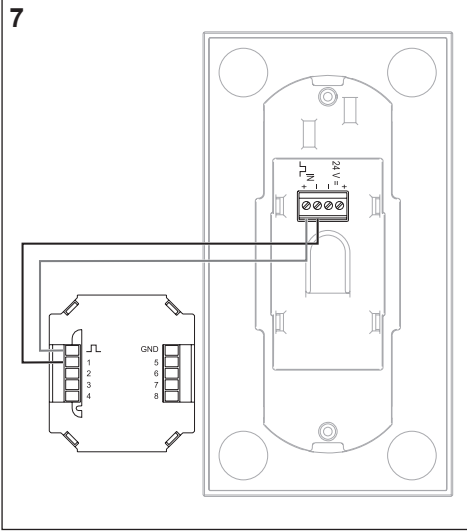
The channel of the interface being used must be programmed as an input.
- Route cable of input **E** to terminal position **IN +** of the screw terminal (Figure 6) and tighten it.
- Route com connecting cable to terminal position **IN –** of the screw terminal and tighten it.
- The sensor surfaces can now be used to transmit signals to the KNX/EIB system.



Connecting the Crystal Ball to the KNX/EIB system via universal interface 8gang comfort flush-mounted

- The Crystal Ball is connected to a channel of the universal interface via the screw terminal.
- i

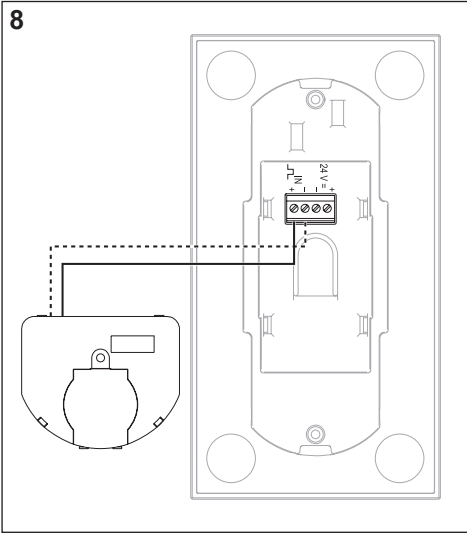
The channel of the interface being used must be programmed as an input.
- Wire the input, labelled with the numerals 1–8, to terminal position **IN –** of the screw terminal (Figure 7).
- Wire terminal **┘┐** to terminal position **IN +** of the terminal block (Figure 7).
- The sensor surfaces can now be used to transmit signals to the KNX/EIB system.



Connecting the Crystal Ball to the Berker radio bus system via radio push-button interface flush-mounted

- The Crystal Ball is connected to a channel of the radio push-button interface via the screw terminal.
- i

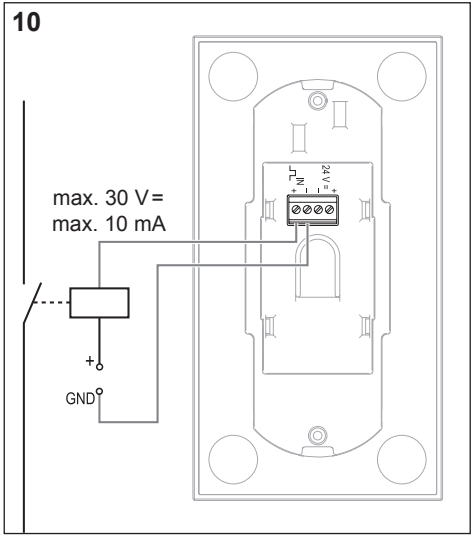
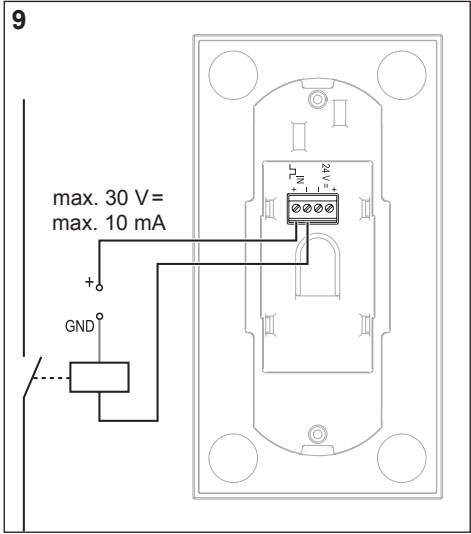
For the operating mode setting, please consult the operating instructions of the radio push-button interface.
- Route single-colour cable of input **E** to terminal position **IN +** of the screw terminal (Figure 8) and tighten it.
- Route two-colour cable of input **E** to terminal position **IN –** of the screw terminal and tighten it.
- The sensor surfaces can now be used to transmit signals to the Berker radio bus system.



Connecting the Crystal Ball to a relay

- The Crystal Ball is connected to a relay via the terminal block.
- i

Note polarity:
In each case the conductor with the higher potential must be connected to the **IN +** terminal of the terminal block. Observe the specifications of the relay being used.
- Make connections depending on connection mode in accordance with the overview of connections in Figure 9 or Figure 10.
- The sensor surfaces can now be used to transmit signals to the relay.



Connecting the power supply

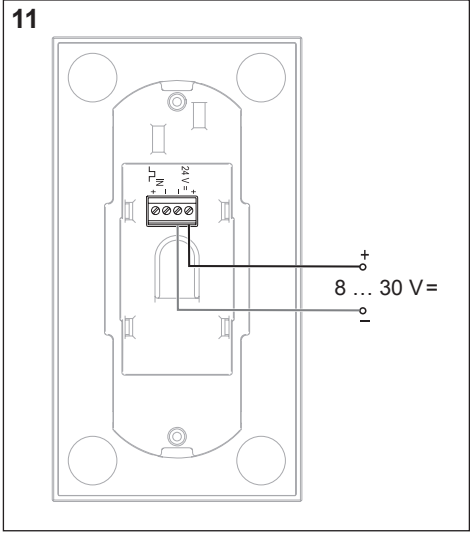
- The Crystal Ball requires a DC voltage connection for the power supply.
- The connection for the power supply is equipped with reversed voltage protection.

!

CAUTION!

Risk of destruction of the sensor or the adapter.
Continued polarity reversal of the supply voltage leads to excessive heating of the devices that destroys the reversed voltage protection.
Ensure correct polarity when making connections.

- Route **+** cable from the power supply into the **+** terminal of the 24 V = connecting terminal (Figure 11) and tighten screw terminal.
- Route **–** cable from the power supply into the **–** terminal of the 24 V = connecting terminals (Figure 11) and tighten screw terminal.
- The power supply is now connected.



Putting the Crystal Ball into operation

- The installation system has been made ready for operation. Mains voltage is connected to the system devices.
- Switch on supply voltage for the Crystal Ball.
- The Crystal Ball is ready for operation.

Annex

Technical data

Operating voltage	8 ... 30 V =
Current consumption in operation	18.3 mA
in standby	4.3 mA
Switching voltage	max. 30 V =
Switching current	max. 10 mA
Surface adjustment	up to 20 mm

Troubleshooting

Crystal Ball does not lock in

- Cause: Retaining pins incorrectly adjusted on the setscrews.
- Re-measure setting of the retaining pin and correct if necessary.

Crystal Ball shifts on the wall

- Cause: Smooth surface provides insufficient purchase.
- Use the adhesive points for mounting (prepare Crystal Ball for mounting on smooth surface).

Crystal Ball does not respond to operator control

- Cause 1: The connection from the Crystal Ball to the interface is faulty.
- Check the screw terminal connection and correct if necessary.
- Cause 2: The Crystal Ball has no voltage supply.
- Check the voltage supply and re-establish if necessary.
- Cause 3: The polarity of the voltage supply connection is reversed.
- Switch polarity of the voltage supply.
- Cause 4: Condensation on the surface of the Crystal Ball because of a temperature difference from the ambient temperature.
- Remove condensation. If necessary, wait for temperature to equalize.

Crystal Ball cannot be pulled off

- Cause: Additional anti-dismantling protection has been provided.
- Remove screw at the bottom of the adapter ring (dismantle the Crystal Ball).

Accessories

Wall box 2gang for glass sensor	1870
Universal interface 2gang comfort flush-mounted	7564 20 01
Universal interface 4gang comfort flush-mounted	7564 40 01
Universal interface 8gang comfort flush-mounted	7564 80 01
Radio push-button interface 4gang flush-mounted	0126

Warranty

- We reserve the right to make technical and formal changes to the product in the interest of technical progress.
- Our products are under guarantee within the scope of the statutory provisions.
- If you have a warranty claim, please contact the point of sale or ship the device postage free with a description of the fault to the appropriate regional representative.