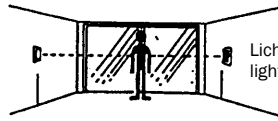
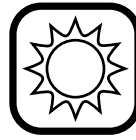




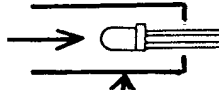
Lampe  
lamp



Lichtschanke  
light barrier



Licht  
light

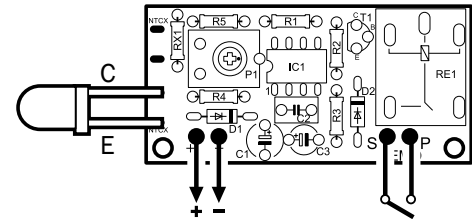
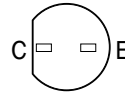
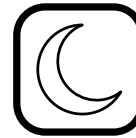
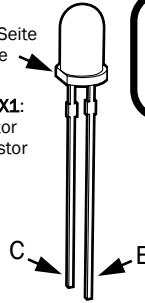


Fototransistor  
phototransistor

Papphülse  
cardboard tube

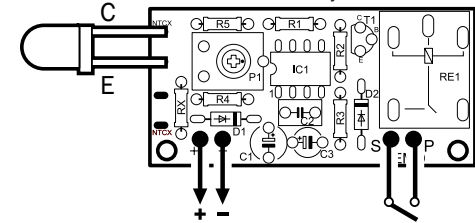
abgeflachte Seite  
flattened side

NTCX / NTCX1:  
Fototransistor  
phototransistor



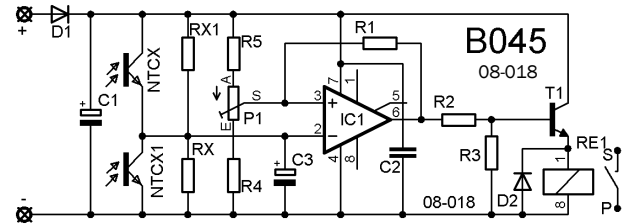
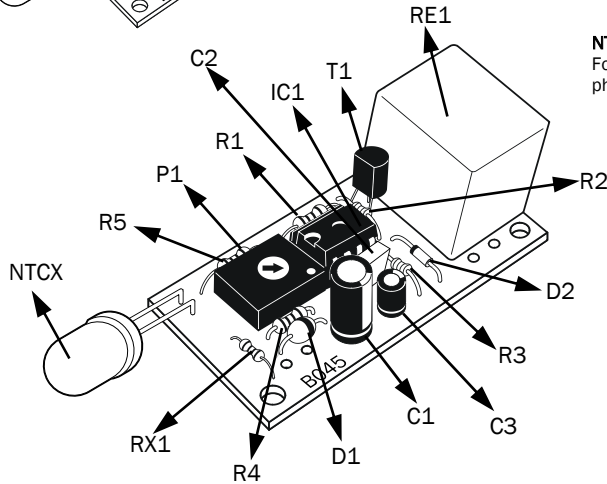
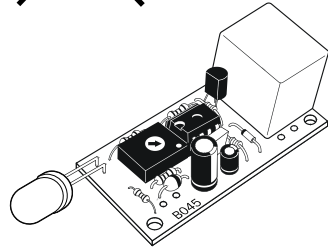
12 V=

Relaiskontakt 1 x EIN  
relay contact 1 x ON



12 V=

Relaiskontakt 1 x EIN  
relay contact 1 x ON



GB

Circuit description: The circuit works with an operational amplifier, which is used as comparator. The comparator has 2 inputs at which it monitors 2 tensions. A fixed tension is adjusted at the input pin 3 with the trimming potentiometer, thus regulating the sensitivity at the same time. A phototransistor is connected at the input pin 2 according to the description. The relay reacts if the tension at pin 2 changes due to a change of the luminous intensity.

Use as directed: For construction of light barriers where a relay connects upon interruption of a light ray. For monitoring the light intensity where a relay connects with an adjustable light intensity (use as twilight switch).

Assembly instructions: The board has to be assembled according to the parts list and instructions in the enclosed leaflet "General Instructions". Please employ a stabilized power supply 12 V for operation. Depending on the desired mode of operation the phototransistor NTCX and the resistor RX have to be mounted at 2 different spots on the board.

1. When inserting the phototransistor NTCX at "NTCX" on the board and the resistor RX at "RX", the relay switches on in case of darkness or shadow and switches off in case of brightness.
2. When inserting the transistor NTCX at "NTCX1" on the board and the resistor RX at "RX1", the relay switches on in case of brightness and switches off if there is darkness.

If the device shall be employed as light barrier, the phototransistor must be protected against incidence of light from the side and from behind by using a black cardboard tube (installation into a cardboard tube which is closed at the end, inside diameter approx. 8...10 mm, length approx. 5 cm). Then the cardboard tube with the built-in phototransistor must be mounted horizontally. After that a lamp is mounted on the opposite side, which shines exactly through the opening of the cardboard tube on the phototransistor. Then the light barrier is adjusted with the trimming potentiometer in such a manner that the relay just does not react. If now a person walks through the light ray, the relay connects.

Attention: The phototransistor must always be soldered up directly with the board! Do not lengthen the connecting cable of the phototransistor as this will cause interferences!

Setting into operation: Switch the operating voltage on. When using the device as light barrier, turn the lamp on and direct it towards the phototransistor. When employing the device as twilight switch, direct the phototransistor towards the spot where it shall work. Now the desired sensitivity can be adjusted with the trimming potentiometer on the board (try out). When covering (darkening) the phototransistor with the hand, the relay connects.

Technical data:

Operating voltage: 12 V=

Current consumption: < 100 mA

Relay contact: 1 x ON max. 3 A max. 25 V

Sensitivity: adjustable

Designed for visible light

Size of board: approx. 56 x 27 mm