



Vehicle Access Control  
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Safety & Security Equipment

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# SafePass KTL Safety Light Curtains User Manual

## BF2 90 / BF2 180





Please read the instructions carefully before you start using your device. You fulfill step by step necessary specifications like installing settings, electrical connections and first operate system configurations carefully. After this stage, product owner/user have to keep this manual on known and visible place throughout product life.

This product can be used by person under 12 years of age above with low physical, sensory or mental capacity, knowledge and inexperience if instructed, supervised or informed about safe handling and possible hazards.

- Use the product only indoors and in dry environments. This product is designed for indoor using and there is no protection against water and dust.
- Keep the product in a dry place. Otherwise, break down of product may occur caused high humidity conditions.
- Batteries are not covered by the warranty in battery operated products. Also product that fill in the shelf life is not covered by the warranty failures due to discharge or flow of the fluid.
- All service and repairs can only be done by Kontal Elektronik technical service. The product should not be intervened by any other persons.
- Each product working voltage is described on own label. Do not supply the product with a different source outside this voltage range.



If the product is used as described above disagreeably, may cause fire, serious injuries, damage on the product or building. In case of such mistakes caused by the user, Kontal Elektronik San. and Tic. Ltd. Sti. does not accept any responsibility.

- ✓ This exclamation mark will be used to highlight important points.



Do not touch supply input of the product with bare hands.

- ✓ This electric mark will be used to highlight electricity hazard.



This symbol on the product or product box indicates that this product can not be treated as normal household waste. Instead, the product should be delivered to designated collection points for the recycling of electronic equipment. Disposal normal trash or incorrect destruction of the product can lead to negative consequences for the environment and human health.



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# 1. DEFINITION

Light curtain that we produced works with Photocell infrared communication protocol. They designed to be receiver and transmitter units and usually used for safety purposes. We have two different light curtain models, BF90(Length is 90cm) and BF180(Length is 180cm. The technical features of these products are given below.

## 2. TECHNICAL FEATURES

TECHNICAL FEATURES	90CM LIGHT CURTAIN TRANSMITTER 2	90CM LIGHT CURTAIN RECEIVER 2
Model	BF2 90V	BF2 90A
Product Code	K159-01	K158-01
Working Voltage	12-24V AC / 15-40V DC	12-24V AC / 15-40V DC
Working Current	100mA @24V DC	100mA @24V DC
Max. Reaction Time (Linear / Cross Mode)	-	88ms / 155ms
Max. Working Distance	16m*	16m*
Min. Contacting Time	-	500ms
Infrared Frequency	38kHz	38kHz
Working Temperature	-20 °C +55 °C	-20 °C +55 °C
Contact Type	-	Dry Contact NO / NC
Max. Contact Power	-	60V DC 100mA, 42V AC 100mA
Weight	1128,4gr	1128,4gr
Dimensions (Width x Length x Depth)	3,6 x 92 x 1,3cm	3,6 x 92 x 1,3cm

TECHNICAL FEATURES	180CM LIGHT CURTAIN TRANSMITTER 2	180CM LIGHT CURTAIN RECEIVER 2
Model	BF2 180V	BF2 180A
Product Code	K161-01	K160-01
Working Voltage	12-24V AC / 15-40V DC	12-24V AC / 15-40V DC
Working Current	100mA @24V DC	100mA @24V DC
Max. Reaction Time (Linear / Cross Mode)	-	125ms / 270ms
Max. Working Distance	16m*	16m*
Min. Contacting Time	-	500ms
Infrared Frequency	38kHz	38kHz
Working Temperature	-20 °C +55 °C	-20 °C +55 °C
Contact Type	-	Dry Contact NO / NC
Max. Contact Power	-	60V DC 100mA, 42V AC 100mA
Weight	2040gr	2040gr
Dimensions (Width x Length x Depth)	3,6 x 92 x 1,3cm	3,6 x 92 x 1,3cm

\* Maximum operating distance tested indoors. The operating distance of the product varies slightly depending on weather conditions and environments.

**Linear / Shutter Scan Mode:** In this mode, a receiver zone scans a transmitter zone. In addition, when this mode is activated, the shutter mode will also be active. In this mode, the photocell to be used with the shutter will not react to the lowering of the shutter, considering the normal descending times of the shutters, but will react to an obstacle (object) that intervenes in this process. Shutter closing speed for shutter mode max. It is designed in a way that 1m / s and cables will come out from the bottom. If the eyes are closed above the specified speed, the system will exit.

**Cross Scan Mode:** With this mode, three recipient eyes scan for each transmitter eye. The detection sensitivity of this mode is 2 times higher than the linear mode. (For example, if an object with a minimum diameter of 10cm can be detected in linear mode, objects with a minimum diameter of 5cm can be detected when switched to cross mode.)



Do not forget to disconnect the power to change the system operating modes (Linear, Cross).

## 2.1. Light Curtain Power Card

The power card that will control the Light Curtain receiver and transmitter cards is shown in Figure 1. On this board, there are various terminal connections, 1 trimpot used for transmitter signal strength adjustment, synchronous cable connection to ensure the harmony between the receiver and transmitter

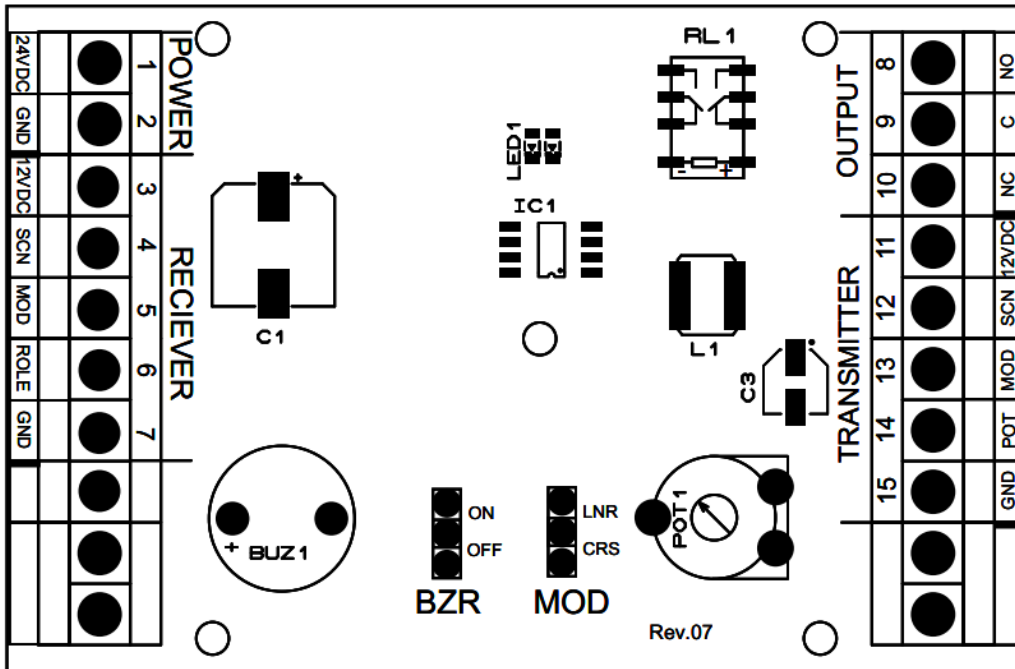
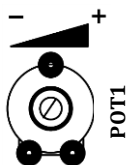


Figure 1- BFG - Light Curtain Power Card (K171-01)





The terminal group on the **power** card is divided into 4 parts. The first of these is the power inputs required for the board to work. The terminal group on the power card called the **receiver** is the part where the receiver photocell connection will be made. In this section, there is a 12V input for feeding the receiver photocell, a synchronous connection that will enable the receiver card to work in harmony with the transmitter card, a mode input that will determine the system's operating mode (linear or cross), a relay connection to output the system, and a gnd connection. Another terminal group on the power card is the relay output of the system called **output**. The **transmitter** part on the power card will be used for the connection of the power card with the transmitter photocell. In this section, as in the receiver part, there is a supply voltage input that will enable the system to operate, a synchronous connection that will ensure the system to work in harmony, a mode input that will determine the operating mode of the system, a trimpot (POT) connection to adjust the signal strength of the transmitter card, and gnd.

## 2.2. Adjusting the Transmitter signal Strength

Light Curtain With the trimpot shown as **POT1** on the power card, you increase the working distance of the Light Curtain with the adjustment you will make in the **+ direction (clockwise)**, while the working distance will decrease with the adjustment you make in the **- direction (counterclockwise)**.



The 2 jumpers on the control card have different functions. These functions are shown below;

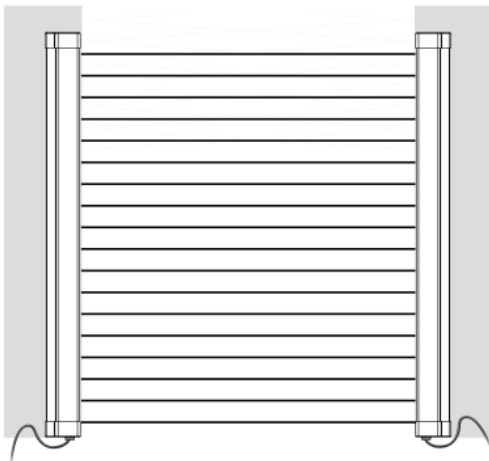
JUMPER	JUMPER STATUS		JUMPER STATUS	
<b>BZR</b>		Buzzer is active.		Buzzer is passive.
<b>MOD</b>		The system works in linear mode.		The system works in cross mode.

- Response time will be short when the system works in Linear mode. However, the detection sensitivity will not be as good as the cross mode. For example, while the system detects a minimum 10cm object in linear mode, it will be able to detect a 5cm object in cross mode.
- The response time will be longer when the system is operating in Cross mode. However, detection sensitivity will be better than linear mode.

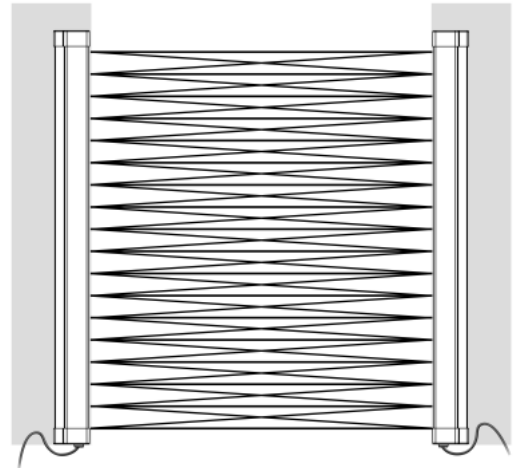
Linear Mode	Cross Mode
➤ Response time is shorter.	➤ Response time is longer.
➤ Detection sensitivity is not as good as cross mode.	➤ Detection sensitivity is better.

➤ **Representative images of Linear Mode / Shutter Mode and Cross Mode are shown below.**

➤ **Linear Mode / Shutter Mode**

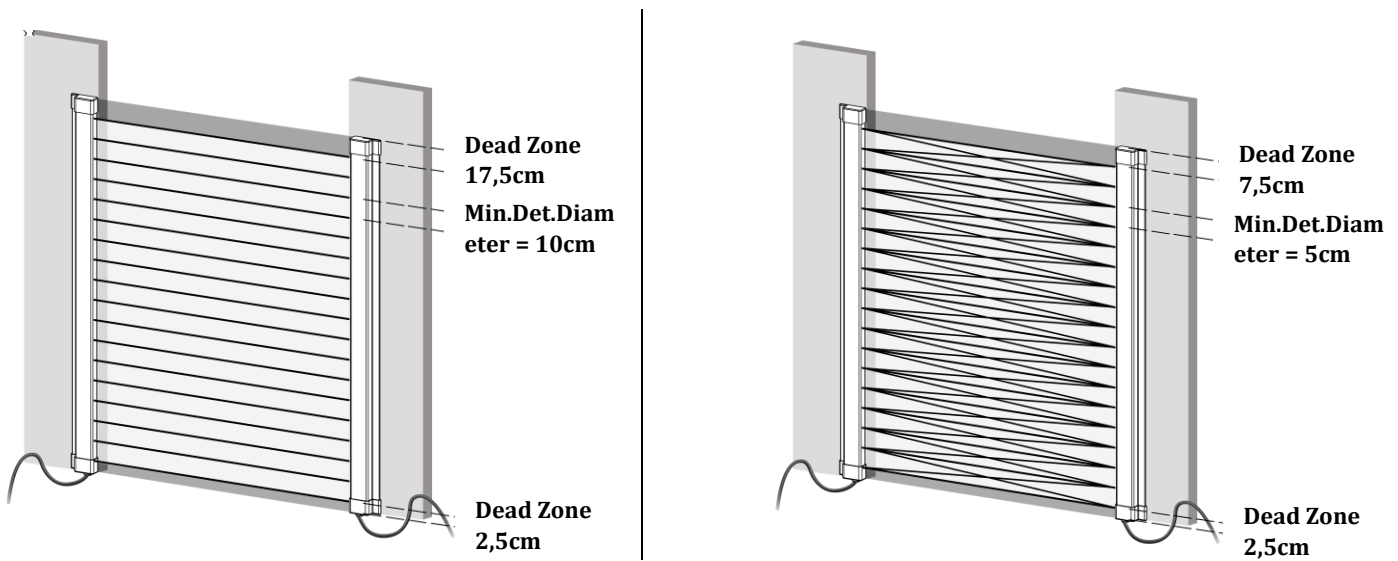


➤ **Cross Mode**



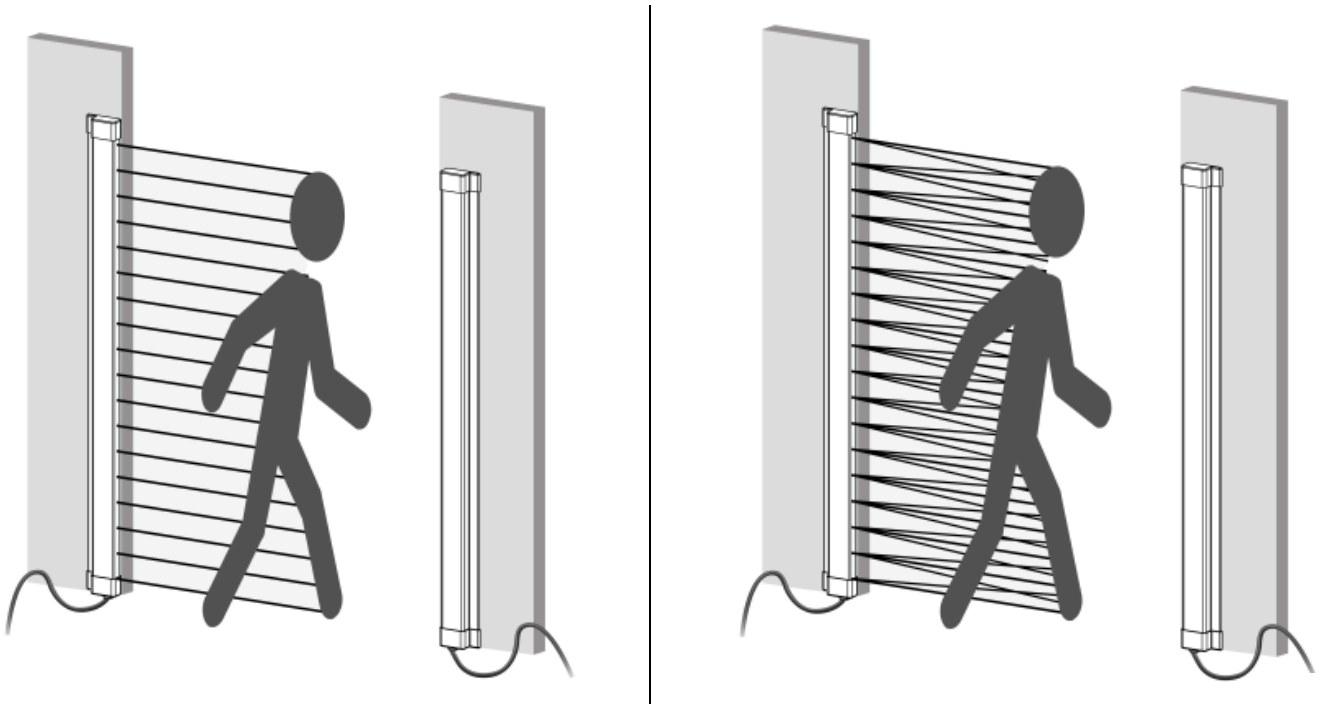
## ➤ Dead Zone and beam range

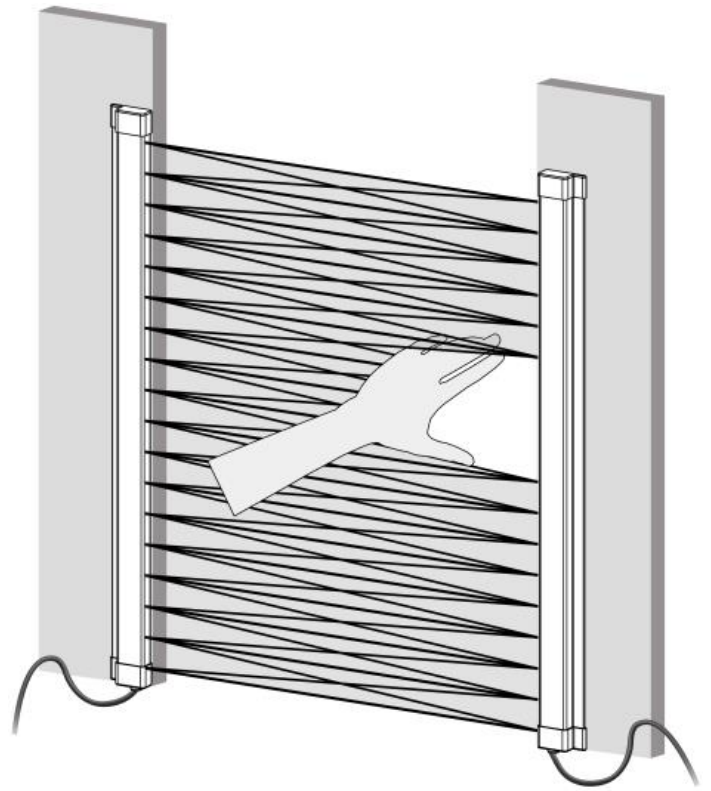
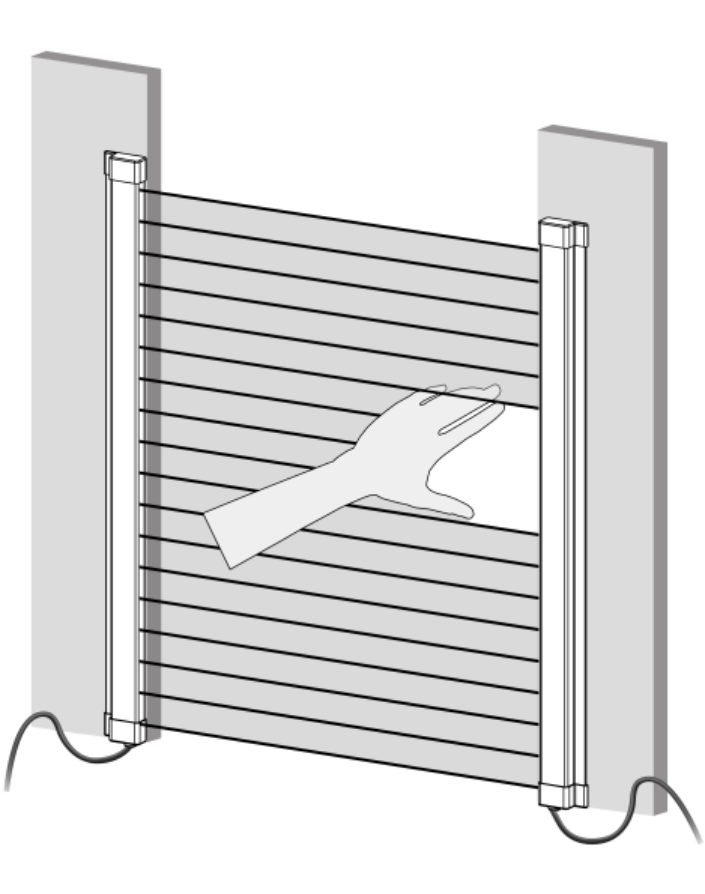
Light Curtains have a dead zone of 7.5cm on the upper part and 2.5cm on the lower part in cross mode. These regions are the parts where the Light Curtain does not detect. The Light Curtain will not be able to detect the hand, arm or any object coming to these areas and will not be able to output. In Light Curtain, there is 10 cm between each eye.



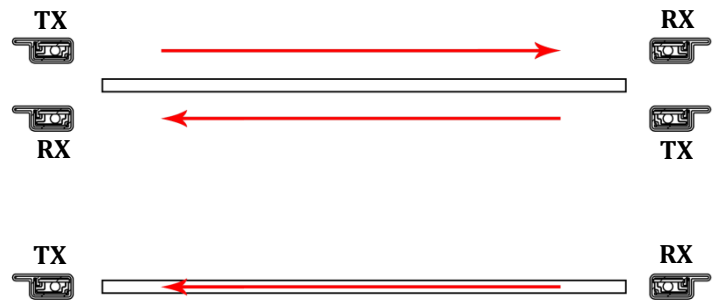
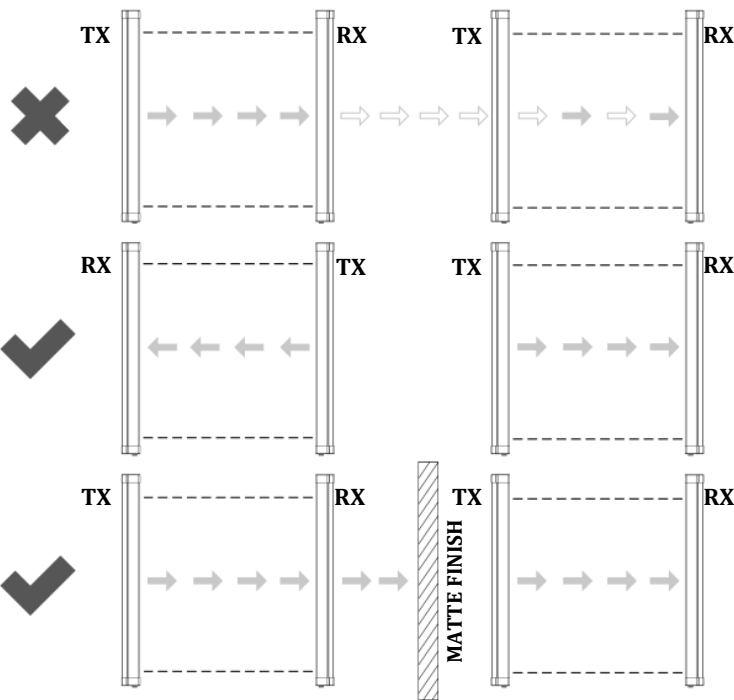
## ➤ Scanning Area

Light Curtian Control Card will detect and output the arm, body or objects of these sizes, regardless of the scanning system, during operation.





➤ Use of More Than One Light Curtains

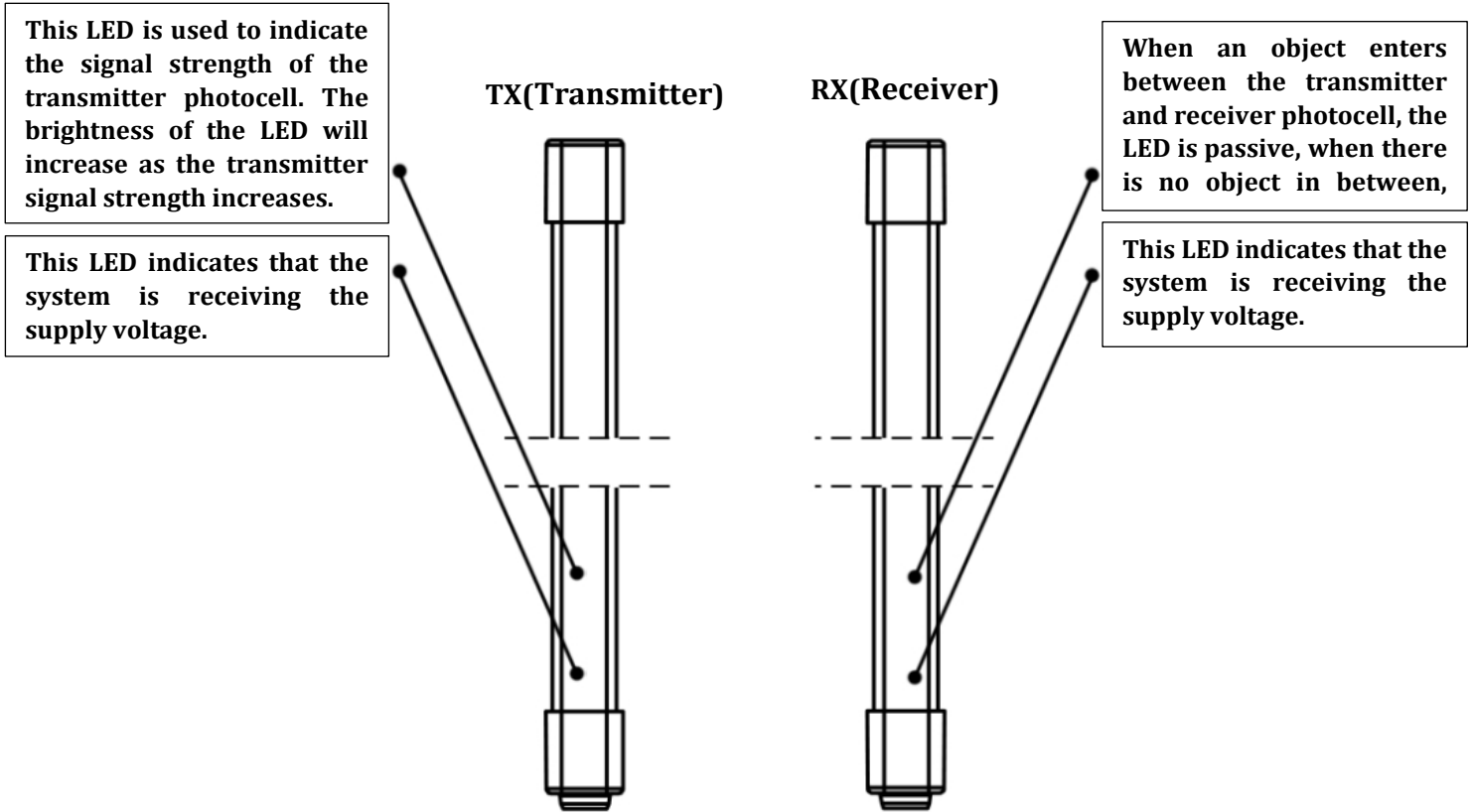


➤ Top view of the products is used in this figure.

➤ TX : Transmitter RX : Receiver

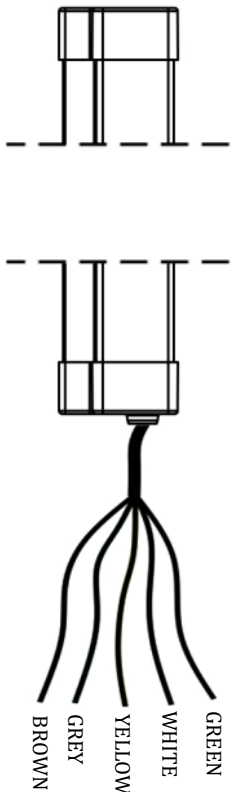
## ➤ Led Status

There are two LEDs on each of the Receiver and Transmitter Light Curtains cards. These LEDs are explained on the visual below.



## ➤ Cable Color Chart

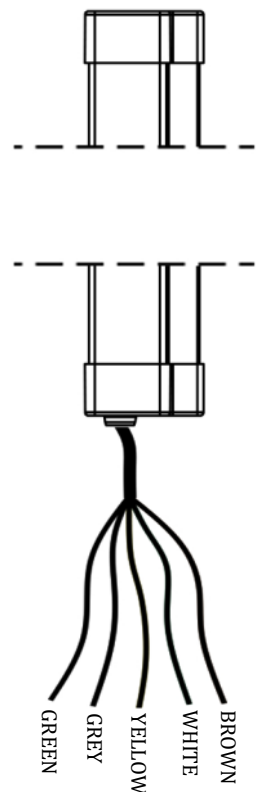
### RX(Receiver)



Receiver Cable Color (RX)	Connection
Green	12V DC
White	SNC
Yellow	MOD
Grey	RELAY
Brown	GND

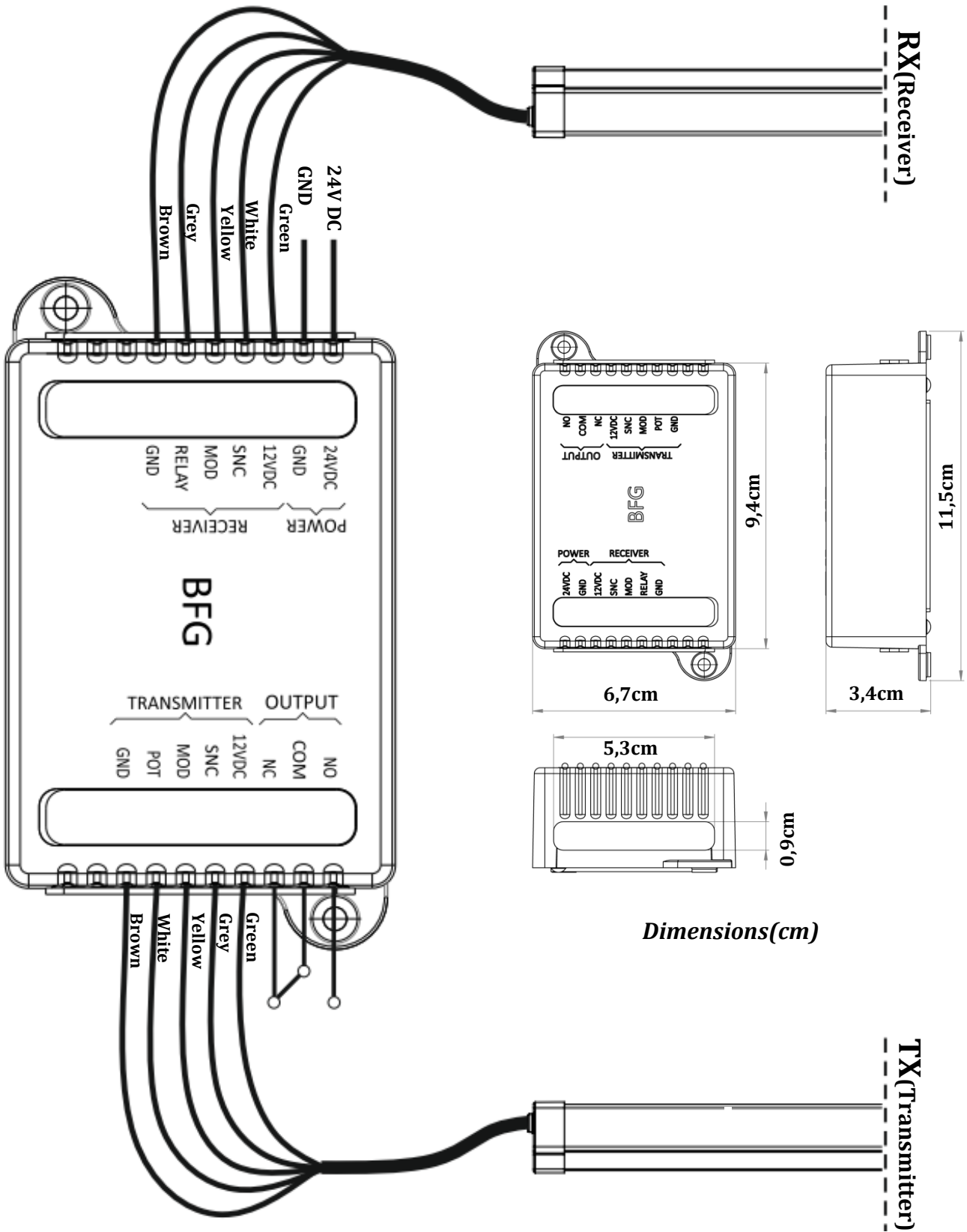
Transmitter Cable Color (TX)	Connection
Green	12V DC
Grey	SNC
Yellow	MOD
White	POT
Brown	GND

### TX(Transmitter)

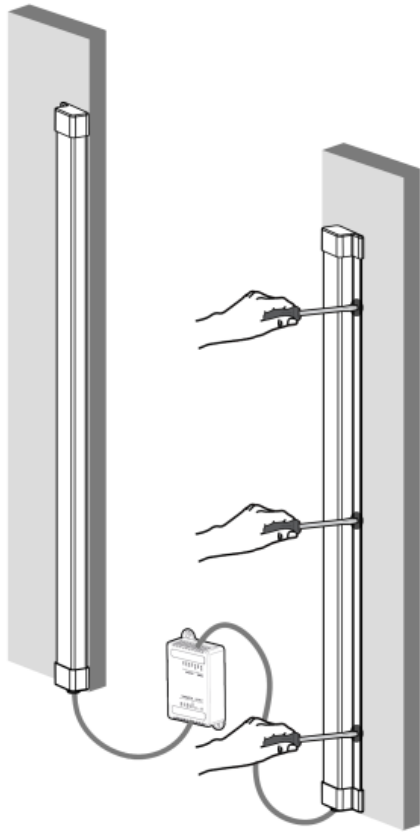




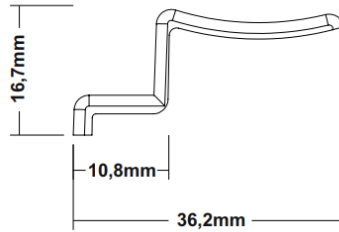
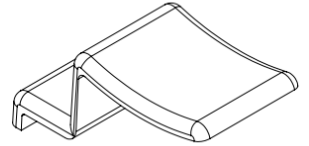
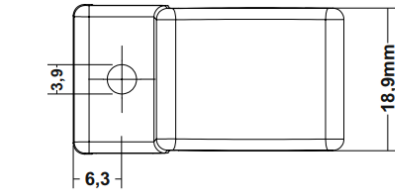
# 3.CONNECTION SCHEMA



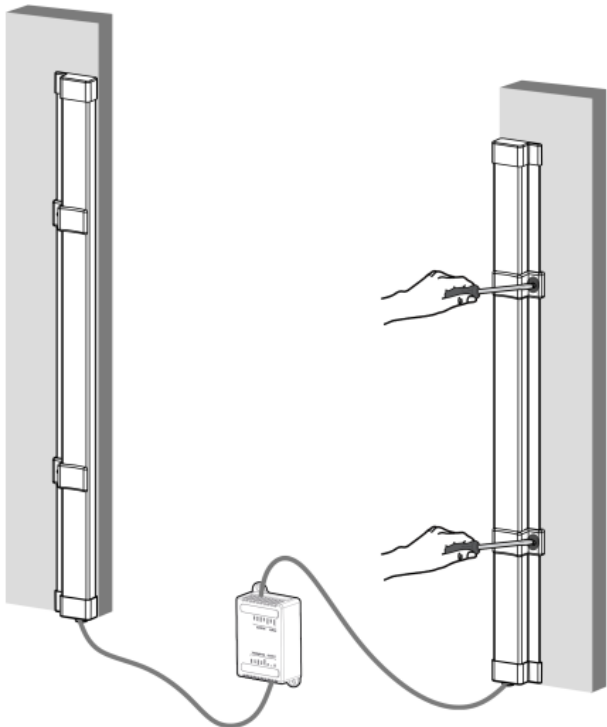
# 4. INSTALLING



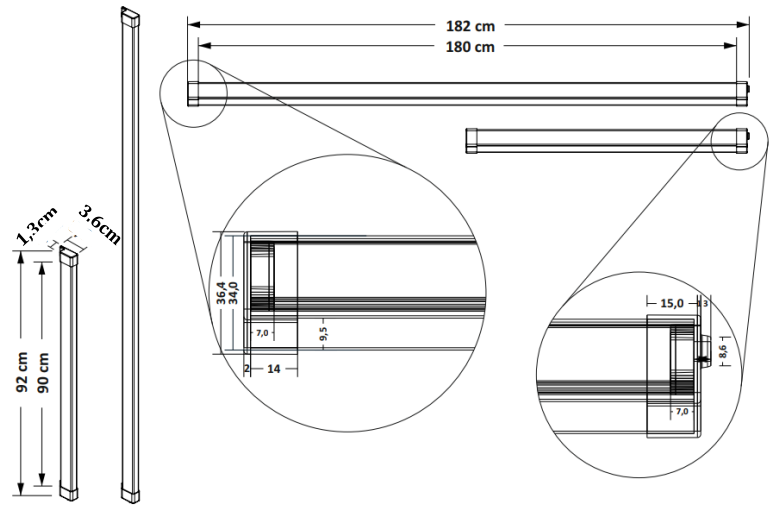
*Fixing the Light curtains with the help of a screwdriver*



*Pegs to be used for uneven floors*



*Fixing the Light curtains on uneven floors with a latch*



*Dimensions (cm)*



If the system is mounted on bright floors and surfaces, the eyes on the bottom of the product may not detect.



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