

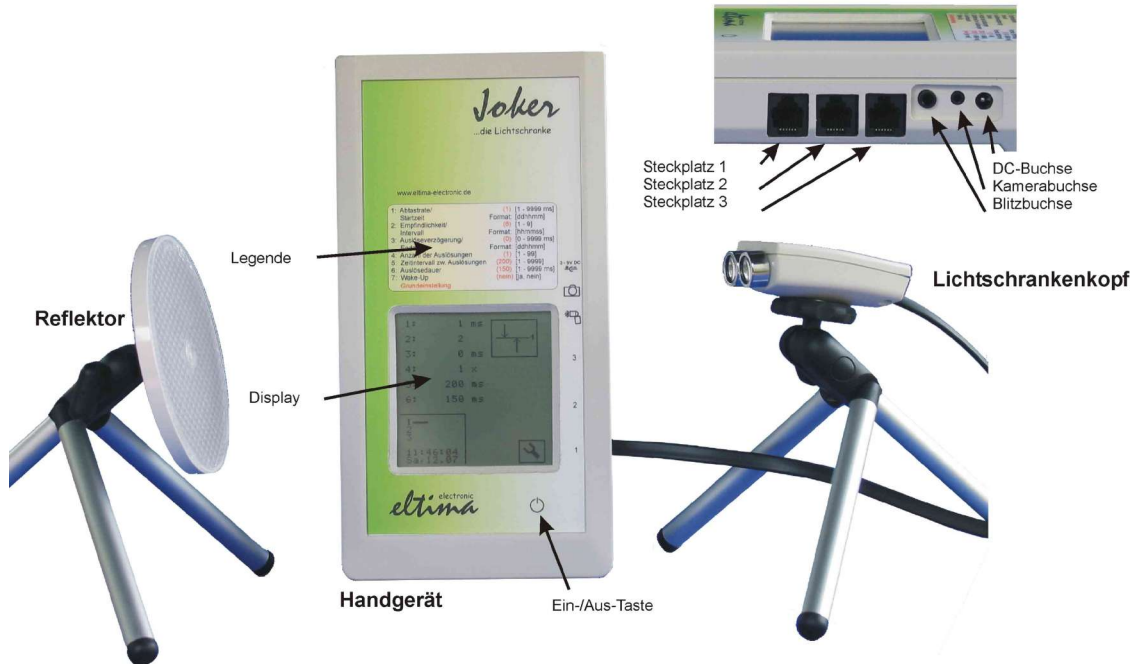
Light barrier system *Joker*



Draft

instruction manual

Component description



Content

Inhalt

Inhalt	4	Beispiel für einen Ablauf mit Auslösewiederholung.....	19
Einleitung	5	Startzeit, Parameter 1 (Zweifunktion).....	19
Hinweise zur Handhabung	6	Intervall, Parameter 2 (Zweifunktion).....	20
Verwendungszweck.....	6	Endzeit, Parameter 3 (Zweifunktion).....	20
Symbole.....	6	Auslösemodi	21
Pflege und Lagerung.....	6	Einfache Lichtschranke.....	21
Einlegen der Batterien	7	Kreuzlichtschranke.....	22
Anschluss an eine externe Spannungsquelle	8	Richtungs-Lichtschranke.....	23
Anschluss der Lichtschrankenköpfe	9	Richtungs-Kreuzlichtschranke.....	24
Gerät Ein- und Ausschalten	10	Vorhanglichtschranke.....	25
Bedienung	11	Zeit-Auslösung.....	26
Ausrichten der Lichtschrankenköpfe	13	Einstellen von Datum und Uhrzeit	27
Aktivieren der Lichtschranke	14	Technische Daten	28
Anschließen der Kamera	15	Notizen	29
Anschließen eines Blitzgeräts	16		
Funktionsweise des Lichtschrankensystems	17		
Grundprinzip.....	17		
Der Einlernvorgang.....	17		
Die Auslösung.....	17		
Funktionsparameter	18		
Abtastrate, Parameter 1.....	18		
Empfindlichkeit, Parameter 2.....	18		
Auslöseverzögerung, Parameter 3.....	18		
Anzahl der Auslösungen, Parameter 4.....	18		
Zeitintervall zwischen den Auslösungen, Parameter 5.....	19		
Auslösedauer, Parameter 6.....	19		
Wake-Up, Parameter 7.....	19		

Dear customer,

thanks for buying the light barrier system *Joker*. Developed and manufactured with special diligence it is a reliable tool with handy dimensions for the ambitious photographer.

The wide functional range and the easy to use-ness leave nothing to be desired.

However, if you are missing something don't be hesitant to tell us. Suggestions for improvement are welcome too. In this way this product is able to meet your requirements.

Please read this instruction manual carefully before using the Joker. You should be familiar with the functionality of this system to achieve best results in different situations.

Content

Usage

The light barrier *Joker* was exclusively developed to activate photographic cameras, flashlights or other film devices. Use it only for this purpose!

Symbols



Information about the device handling.



Important Information about the functionality of the device.



Important Information to avoid damage from the device / camera etc.

Care and stocking

- The light barrier Joker is not waterproof and is unsuitable to be used in rain or under water. If the device is getting wet then contact immediately to the manufacturer. Wipe off waterdrops with a dry cloth.
- Never let the device fall down or expose it hard blows .
- This device is an electronic precision instrument. Do not try to make changes yourself.

- If you are not using the device for a longer time please remove the batteries from the device to prevent batteries leakage.
- Always use the touchscreen with care. Do not use hard or angular objects to operate the touchscreen. Fingernails, fingertips or plastic pieces are suitable.
- From time to time clean the heads of the light barrier with a soft cloth.

The light barrier works with 4 batteries (AA, LR6). Rechargeable batteries are possible too.

1. Open the back battery cover carefully with a phillips screwdriver.

Unscrew the bolts not completely.



2. Insert the new battery into the battery holder (as indicated on the battery holder or board)



Be careful to observe the correct polarity !

3. Close the back battery cover and screw up the bolts with small pressure only.

Content



DC-Buchse

The light barrier can also be used with an external power supply unit (or storage battery). Output voltage must be between 3V and 9V DC. Power output 500 mW at least.

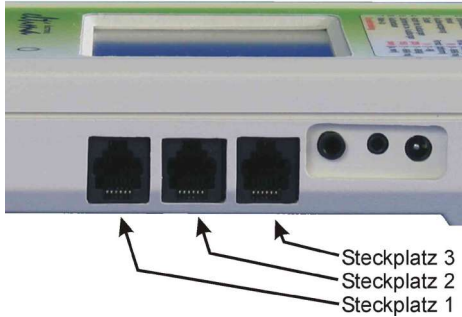
- Connect the power supply unit with a 5 mm male connector (for low voltage) to the DC-plug socket.



Be careful to observe the correct polarity of the connector !



Anschlussbild für Kleinspannungsstecker

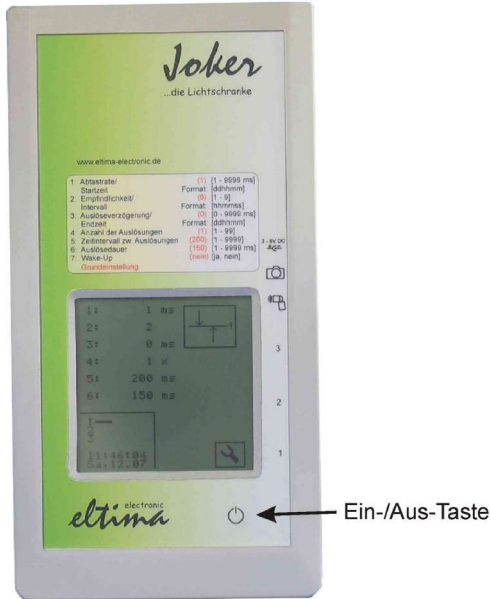


The light barrier system can be used with one up to three light barrier heads.

The following scheme shows the assignment of the light barrier heads:

Type of light barrier	Slot
Simple light barrier	1
Cross-over or direction light barrier	1,2
Curtain(Vorhang), direction depended cross over lighth barrier (Richtungskreuzlichtschranke) //TODO	1, 2, 3

Content



To switch on the device press the on/off button for a short time.

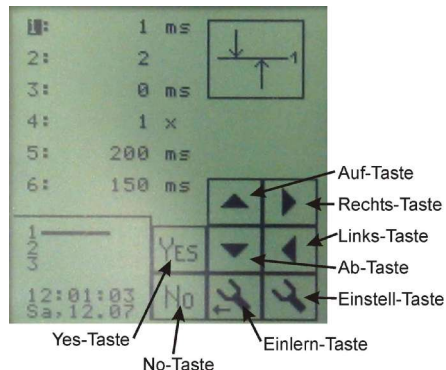
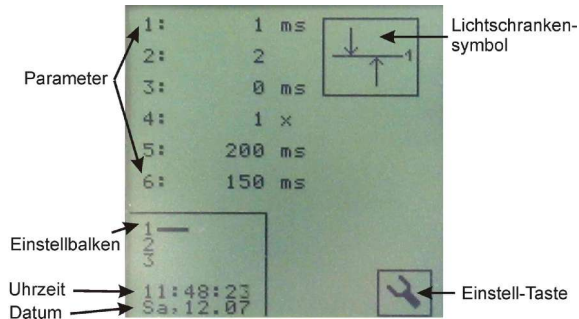
You see the main layer and the symbol of the last used mode of the light barrier with its parameters.

To turn off the device press this button again.



Important!

After switching on the device the light barrier is not activated yet. You have to activate it first!



To adjust the light barrier please use the touchscreen with a piece of plastic, the eraser side of a pencil or simple your fingernail. Be careful and do not activate two buttons at the same time which will cause unwanted effects.

Some symbols are linked with multiple functions.

In the main layer the light barrier mode is shown with its parameters, date and time also. The shown data are not changeable in this layer.

Press the adjustment button shortly to change to the adjustment-layer (mode).

The cursor stands at the left upper corner and can be moved with the up and down buttons from one parameter to another. The assignment of the parameters takes place with the numbers from 1 – 7 which are described in the legend of the display.

To alter a parameter press the right-button. With the up and down buttons it is possible to change the value of the selected parameter.

To save the altered value please press the Yes-Button. Press NO if you want to discharge the changes.

Parameter 7 (Wake-Up) is located in the lower invisible part of the parameter list. To change this parameter it is necessary to press the Down-Button till parameter 7 will get visible.

Content

For changing the type of the light barrier press the button of the light barrier symbol. The selection depends on the number of plugged light barrier heads. For example a mode which need two heads can only be selected if two heads are plugged in. The time-mode (camera release) is always possible.

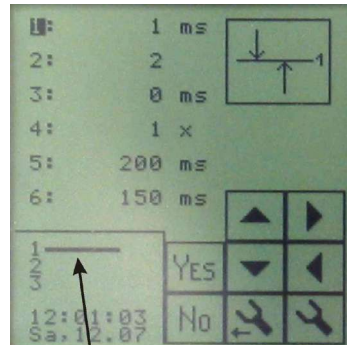


1. Install light barrier head and reflector each on one camera stand.
2. Adjust the head across of the reflector. Justification of the reflector is not critical.
3. Switch the light barrier into the adjustment-mode by pressing the adjustment-button.
4. Now adjust the head exactly towards the reflector. Look at the line (bar) shown at the display (behind the number of the head). The longer the line the stronger the signal (the better the target is found).

The heads of the light barrier and the reflector should be attached securely and do not jiggle. The reliability of the releaser depends on it. An unsteady installation will cause many wrong releases of your camera.

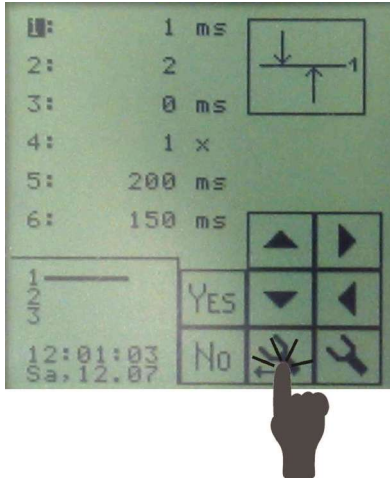
If a steady installation is not possible please adjust a low sensibility (6..9).

For distances less than 1,5 m between the head and the reflector use smaller reflectors (accessory). For distances less than 40 cm a gray paper board can be used instead of a reflector.



Einstellbalken

Content



After the justification of the light barrier heads press the auto-learning button.

In the following the light barrier is adapting to the given situation in a complex process. The adjustment bars (lines) will get shorter and swing nearly into the middle. If the bars are trembling please repeat the process after trying to adjust the heads more accurately.

The light barrier is now active. A break through the light barrier will cause in a release of your camera (etc.).

A release is displayed in the form of a camera symbol at the right part of the display.



The occurrence of the camera symbol is useful to adjust the system without already having connected your camera.

If the results are as desired do connect your camera.



Kameraanschluß

Connect the 3-pole male connector of the adapter cable into the jokers camera plug socket. Connect the other side with your camera.

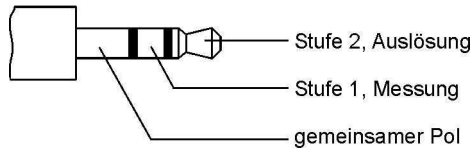


In case of a self constructed release-adapter please refer to the pin assignment.



Camera and flash-light will always be released at the same time.

2,5mm Klinkenstecker, 3 polig



Content



Blitzanschluß

Connect the 3-pole male adapter to the jokers flash-light plug socket. Connect the other side to the flash-light device.

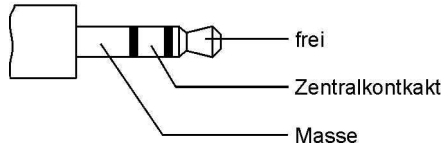


In case of a self constructed flash-light release-adapter please refer to the pin assignment.



Camera and flash-light will always be released at the same time.

3,5mm Klinkenstecker, 3 polig



Basic principle

The single light barriers of the system are working similarly to a reflex light barrier with pulsed infrared light.

The advantages of the reflex light barrier in opposite to the one way light barrier (with separated sender and receiver) are:

- Central electric power supply
- Possibility of synchronisation and calibration of the single light barriers among each other.
- Simple interconnection of two or three light barriers to one system (Cross-over or direction light barrier etc.)
- One side is always passive – that means no need of cables on this side.

The disadvantage of the reflex light barrier is a smaller reach as a one way light barrier constructed in the same way.

The auto-learning process

During the activation of the light barrier the system is adapting to the current situation by doing an auto-adjustment-process (distance, reflections etc.). The incident light will be analyzed to calculate an average value. Every deviation of this given value results in a release of the camera. The dimension of the deviation is determined through the sensibility adjusted.

The advantage of this proceeding is to use the system also with a transparent medium like glass, water etc.

The release

After the auto-adjustment (auto-learning) the light barrier is ready. Every reduction or interruption of the light beam will result in a release of the camera. In doing so the adjusted delay (of the release) will be considered. The duration of the release is adjustable too.

If the number of releases is one the release sequence is finished. After this the light beam has to be free for a short time to be prepared to the next action.

If the number of releases is greater than one, the time-length of the adjusted delay will be observed. After this the next release follows. This cycle will be repeated until all releases are done.

Content

The function-parameters are affecting the behavior of the light barrier and are stored permanently. Every release-mode type (light barrier type) has its own set of parameters.

Sampling rate – parameter 1

The light barrier system works with pulsed light. The sampling rate affects the time interval between the light impulses. It is also the time an object must interrupt the light barrier at least in order to release the camera.

The sampling rate is adjustable between 1 and 9999 ms.

The highest pulse rate will be achieved in the adjustment 0, but 0 is only available for the single light barrier (one head).

To fade out fast objects please adjust a greater sampling rate.

Sensitivity, parameter 2

After the auto-learning process the light barrier responds to the reflecting light. The sensitivity affects the amount of the required changing that results in a release.

The value is adjustable between 1 and 9. A small value means a higher sensitivity. For example to detect objects with a size down to 0,5 mm. However in this case a stable construction is needed. Vibrancies of the head or the reflector will result in unwanted releases.

A greater value means a lower sensitivity in order to suppress smaller objects (for example small insects should not be able to release the camera).

The size (range) of objects which are possible to fade out is between 0,5 mm and 6mm. An object size greater than 6 mm will always cause a camera release.

Sensitivity should be adjusted as low as possible (6..9).

To detect greater insects or birds it is recommended to adjust a sensitivity between 6 .. 9.

Delay of the release, parameter 3

Release-delay is the time between the interrupt of the light barrier and the release of the camera-system.

Possible values are between 0 ms (no delay) and 9999 ms.

Number of releases, parameter 4

The amount of releases means the number of camera-releases caused by only one interrupt of the light barrier.

Adjustable between 1 and 99.

Time interval between releases, parameter 5

Time between multiple releases (parameter 4 must be greater than 1).

Time interval should be always be greater then parameter 6 (release time).

Adjustement range: 1 ms .. 9999 ms.

Release time, parameter 6

Time, the release button of the camera is „pressed“ during one release procedure caused by the joker.

Adjusting the camera in series mode (many pictures per second) it is possible to use the full performance of your camera-system.

Release time should be always smaller than parameter 5 (time interval between releases).

Adjustment range: 1 ms .. 9999 ms.

Wake-Up, Parameter 7

A lot of modern flashes do have a stand-by function. This means the flash is switching into power-save-mode after a few minutes. A camera release will not activate the flash at this moment.

Activating the wake-up function, the first step of the camera-release-button (AF of the camera / half pressed button) will be pressed periodically. Thus the flash is „alive“ for a longer time.

Adjustable: on, off

Example procedure with release repetition

Parameters:

- 3: 100 ms (delay of release)
- 4: 3 x (number of releases)
- 5: 500 ms (time interval)
- 6: 200 ms (release time)

Auslöseverzögerung

Auslösedauer

Zeitintervall zwischen den Auslösungen



Durchbruch der Lichtschranke

Starttime, parameter 1 (second function)

The starttime and the following parameters are needed in the Mode Timer-Release (depends on date and time).

Adjustment format is ddhhmm (day, hour, minute).

Example: 240836, Release time is the 24. day of the current month at the time 8:36.

Intervall, Parameter 2 (second function)

In mode timer-release this parameter means the time interval between single releases.

Adjustment format is hhmmss (hour, minute, second).

For example: 023526, the device will release the camera every 2 hours 35 minutes and 26 seconds. For the first

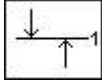
Content

time the camera system will release at the starttime (Parameter 1).

Stoptime, Parameter 3 (second function)

After exceeding the stoptime the camera system will no longer be released.

Adjustment format: ddhmm (day, hour minute). Same format as the starttime.



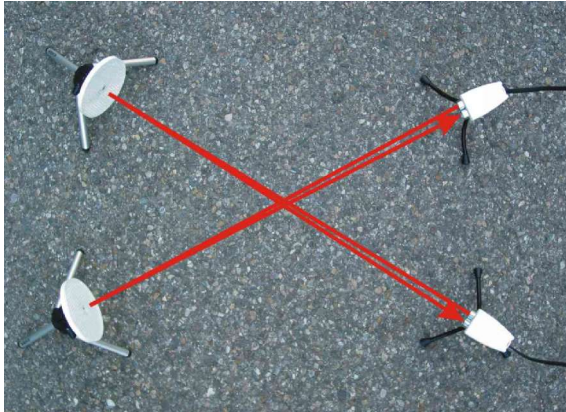
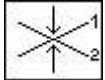
Simple light barrier

The simple light barrier consists of a head standing across from a reflector. The head is connected in socket 1.

After the auto-learning procedure the light barrier will release the camera system if the light beam between head and reflector is interrupted.

In this mode it is possible to adjust the sampling rate to 0. Thus the light barrier reaches its fastest response time of about 350 μ s.

Content



Cross over light barrier

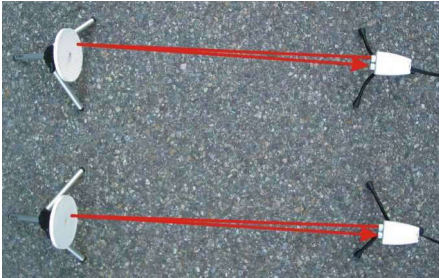
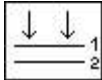
Two simple light barriers will be arranged in the way that its light beams are crossing. The heads will be plugged into socket 1 and 2.

The camera system releases only if the light beams were interrupted in the cross area.

This ensures that the camera releases only if the motive is located at the desired position.



The size of the cross area the camera will be released depends on the angle between the light beams just as the object size. The more acute the angle or the bigger the object the greater the cross area. At a angle of 90° the release-area is the least of all.

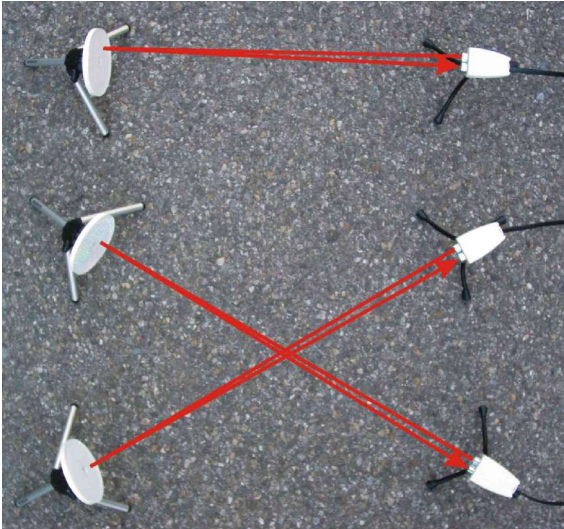
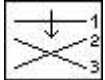


Direction light barrier

The direction light barrier consists of two simple light barriers arranged in parallel. Connect the heads into socket 1 and 2.

The camera release depends on the direction if in the first step light barrier one is interrupted and in the next step light barrier two is interrupted. Only this sequence will cause a release of the connected camera system.

Content

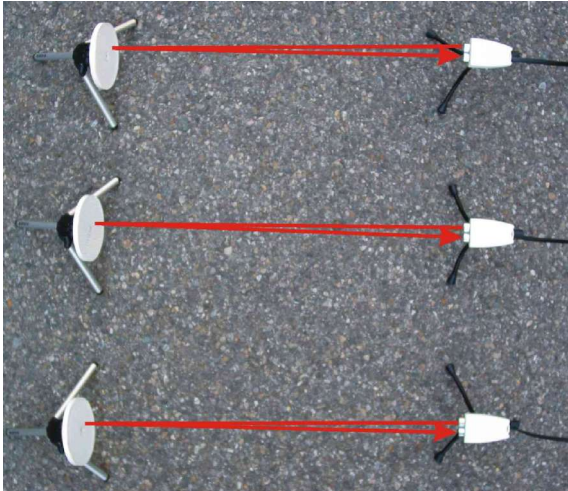
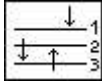


Direction-cross-over light barrier

The direction-cross-over light barrier is a combination of a direction light barrier and cross-over light barrier. Built-on with 3 light barriers the first (socket 1) acts as a device for the identification of the direction. The other two are acting as a cross-over light barrier.

Release signal will be triggered only if in the first step the light barrier 1 will be interrupted before the light barriers 2 and 3 will be interrupted at the same time.

This configuration is useful in situations the movement of the wanted object is surely predictable. The behaviour is very selective.



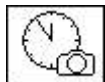
Curtain light barrier

The curtain light barrier consists of three simple light barriers.

The camera system will be triggered if only one of them is interrupted.

The three light barriers could be built-on in different ways: parallel, fan-shaped or warped. Thus it is possible to scan a surface area or rooms for example.

With a vertical adjustment in a fixed frame before the camera an easily insect trap can be built.

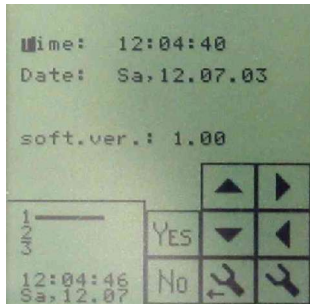


Time-Trigger

With the aid of the time-trigger it is possible to take programmed pictures in fast motion mode. The built in calendar watch acts as a timing circuit.

No light barriers are needed in this mode.

Adjustable are starttime, stoptime as well as a time interval. After leaving the adjustment mode the function is active. This means that after exceeding the starttime pictures will be taken every time-interval till the stoptime is expired.



Date and time (left corner of your display) are used only for the Joker's Time-Trigger function.

Adjustment instructions:

- Press the adjustment-button to get in the adjustment mode.
- Press the adjustment-button again. You get into the date-time-mode to change the current settings.
- With the arrow keys you can adjust date and time. Apply the changes by pressing the YES-Button.
- Pressing the auto-learning button twice you get back to the main layer.

Content

Type and format

Reflex light barrier with pulsed infrared light
Wavelength: 850 nm
Operation: Touchdisplay

Possible modi

simple light barrier,
cross-over light barrier,
direction light barrier,
direction-cross-over light barrier,
curtain light barrier,
time-trigger mode

Dimensions

Handheld (LxWxH): 195 x 101 x 44 [mm]
Heads: (LxWxH): 64 x 36 x 20 [mm]

Length of the cable for the heads

2 m

Weight

Handheld (without batteries): 250 g
Head: 35 g

Power supply

4 Batteries or rechargeable batteries, (AA, LR6)
DC-Power supply 3 – 9 V/0,5W

Power input

about 400 mW

Range

about 8 m

Smalles detectable object

about 0,5 mm diameter

Adjustable parameter

sampling rate,
optical sensitivity,
delay of the releases,
number of releases,
time interval between releases,
duration of a release

Shortest reaction time

about 350 μ s

Accessory

Reflector, D 80 mm
Reflector, D 40 mm
Extension cable for camera connection 2 m
Extension cable for flash connectio 2 m

Runtime with one set of batteries

about 14 to 18 hours depending on the barrery type, (tested with usual alkali-batteries).



Lichtschrankensysteme
für professionelle Fotografie

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