EUCHNER

Operating Instructions

Light Grids/Light Curtains

LCA 4

EN

Contents

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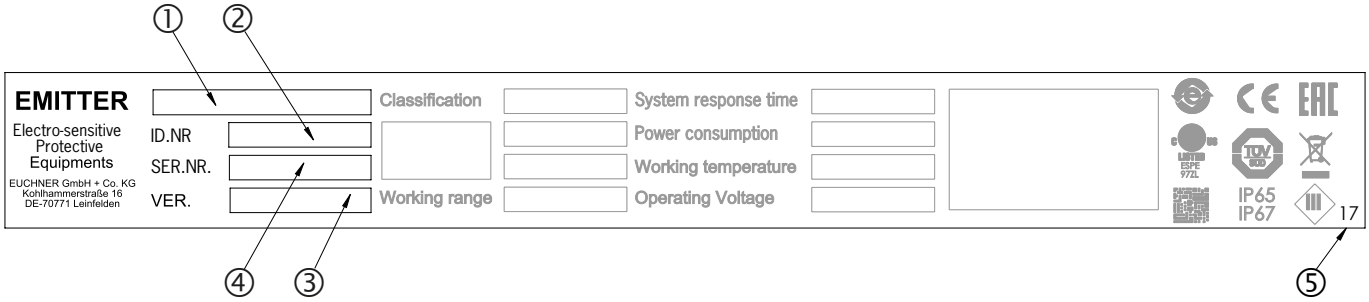
1. About this document

1.1. Scope

These operating instructions are valid for light grids and light barriers of series LCA, type 4, version V1.0.X.

These operating instructions, the document *Safety information and maintenance* and any enclosed brief instructions form the complete user information for your device.

	Important! Make sure to use the operating instructions valid for your product version. The version numbers can be found on the type label of your product. Please contact the EUCHNER support team if you have any questions.



① Item designation

② Item number

③ Product version

④ Serial number

⑤ Year of manufacture

1.2. Target group

Design engineers and installation planners for safety systems on machines, as well as setup and servicing staff possessing special expertise in handling safety components.

1.3. Key to symbols

Symbol/depiction	Meaning
	Printed document
	Document is available for download at www.euchner.com
DANGER **WARNING** **CAUTION**	Safety precautions **Danger** of death or severe injuries **Warning** about possible injuries **Caution** slight injuries possible
NOTICE **Important!**	**Notice** about possible device damage **Important** information
Tip	Useful information

1.4. Supplementary documents

The overall documentation for this device consists of the following documents:

Document title (document number)	Contents	
Safety information (2525460)	Basic safety information	
Declaration of conformity	Declaration of conformity	
Operating instructions Light Grids/Light Curtains LCA 4 (2504709)	(this document)	
Any additions to the operating instructions	Take any associated additions to the operating instructions or data sheets into account.	

Important!

Always read all documents to gain a complete overview of safe installation, setup and use of the device. The documents can be downloaded from www.euchner.com. For this purpose, enter the doc. no. or the order number for the device in the search box.

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2. Correct use

Light grids and light barriers series LCA are opto-electronic safeguards.

As per EN IEC 61496-1, they represent electro-sensitive protective equipment of type 4 for the protection of persons.

This means:

- Starting commands that cause a dangerous machine function must become active only when the safety outputs on the receiver are active.
- The interruption of one or more light beams will trigger a stop command.

Before the device is used, a risk assessment must be performed on the machine, e.g. in accordance with the following standards:

- EN ISO 13849-1
- EN ISO 12100
- EN IEC 61496-1
- EN IEC 62061

Correct use includes observing the relevant requirements for installation and operation, particularly based on the following standards:

- EN ISO 13849-1
- EN IEC 60204-1
- EN IEC 61496-2
- EN ISO 13855-1

Series LCA devices are allowed to be combined only with the intended components in the LCA family.

Several devices are allowed to be connected in series only using devices intended for series connection with series LCA devices. Check the operating instructions for the related device. Combination with light grids or light curtains from other manufacturers is not allowed.

A maximum of 3 devices are allowed to be operated in a series connection.

	**Important!** The user is responsible for the proper integration of the device into a safe overall system.

For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-1.

1. LCA 4 TR (with integrated additional functions)

Series LCA 4 devices consist of a transmitter and a receiver. Additional internal functions permit a check on the feedback from external contactors, the management of manual/automatic operation and the setting of different ranges.

2. LCA 4 TR M/S (MASTER/SLAVE)

Series LCA 4 devices consist of two to a maximum of three transmitter-receiver pairs. The pairs consist of one MASTER device and one to two SLAVE devices. These devices are connected in series. LED displays on the transmitter and receiver make it possible to perform diagnostics on the system state. Internal errors are evaluated by the device.

	**Important!** - The devices of type LCA are intended for use in stop category 1. - Use in stop category 0 is allowed only in compliance with the required safety distances. - The devices do not offer any protection against physical hazards (ejection of parts, heat, radiation). A guard must be used in this situation.

3. Description of the safety function

Devices from this series feature the following safety function:

Safe detection of an interruption of the protective field

Safety function:

The safety outputs are switched off if the protective field is interrupted.

Safety characteristics:

category, Performance Level, PFH, SIL

4. Exclusion of liability and warranty

In case of failure to comply with the conditions for correct use stated above, or if the safety regulations are not followed, or if any servicing is not performed as required, liability will be excluded and the warranty void.

5. General safety precautions

Safety systems fulfill a personnel protection function.

Incorrect installation or tampering can lead to fatal injuries to personnel.

Check the safe function of the safeguard particularly:

- after any setup work
- after the replacement of a system component
- after an extended period without use
- after every fault

Tip

- Observe the notes in chapter 13.1 for testing the device function.
- We recommend carrying out the function test using a suitable test object, such as a test rod.

Independent of these checks, the safe function of the guard should be checked at suitable intervals as part of the maintenance schedule.

Important!

- Prior to use, read the operating instructions and keep these in a safe place.
- Ensure the operating instructions are always available during mounting, setup and servicing.
- You can download the operating instructions from www.euchner.com.

WARNING

- The device is allowed to be installed, connected and put into operation only by an electrically skilled person with safety engineering training.
- Applicable technical standards must be taken into account in the context of the related application.
- The requirements in the standards EN IEC 60204 and EN ISO 13855 must be taken into account during installation.
- If the device malfunctions, contact the manufacturer.
  Changes to the device are not allowed.
- The device must be disconnected externally from the supply of electrical power before the work is started.
  Independently supplied relay load circuits must be switched off.
- A complete function test must be performed after the installation of the system.
- The device is allowed to be used only in the specified ambient conditions.
  Consult the manufacturer about special ambient conditions.

6. Function

Devices of series LCA consist of a transmitter (S) and a receiver (E). The transmitter sends infrared light beams to the receiver. These beams form a protective field for monitoring dangerous areas.

If at least one light beam in the protective field is interrupted, the safety outputs on the receiver switch off.

The size of the protective field is dependent on the range and the height of the protective field.

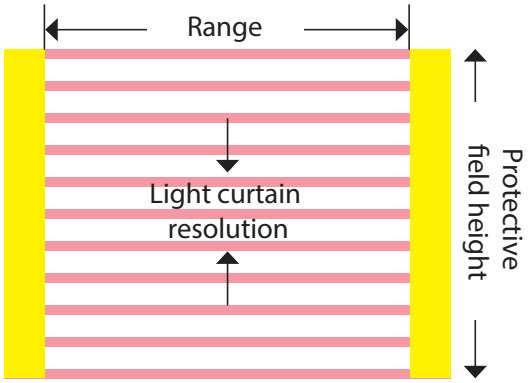
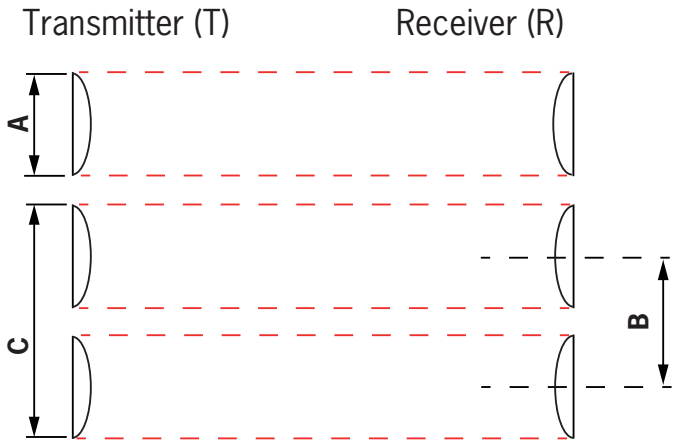


Fig. 1: LCA protective field

The resolution of the device determines the size an object must have so that at least one light beam is interrupted.

The resolution is calculated using the following formula:

Lens diameter + lens spacing = resolution



Variable	Definition
A	Lens diameter
B	Lens spacing
C	Resolution

Fig. 2: LCA Resolution

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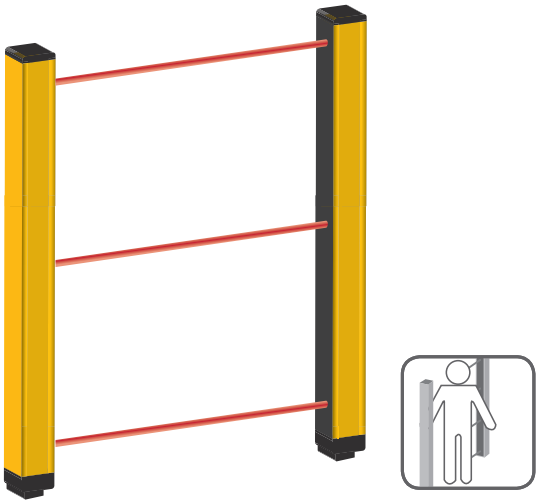
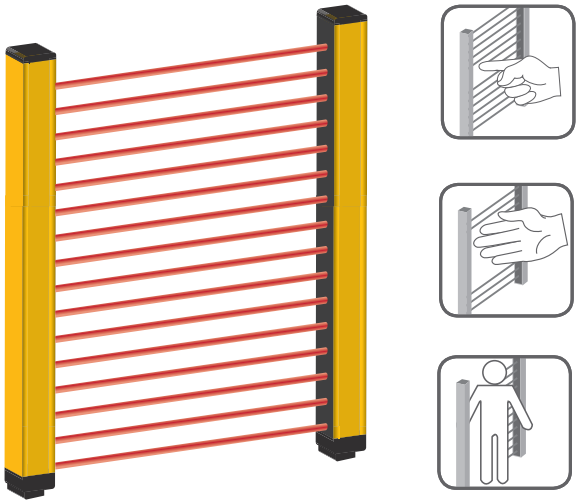
A distinction is made between two device types:

Light grids produce a protective field consisting of 2 – 4 light beams. Due to the large spacing between the individual light beams, these devices can be used only for body protection.

Light curtains consist of a large number of light beams. These devices can detect different body parts depending on the resolution (14 – 50 mm). A distinction is made between finger, hand and body protection.



Light grid
2 - 4 light beams



Light curtain
Large number of light beams, specification as »resolution«

Fig. 3: Light grid, light curtain

6.1. Versions at a glance

Light curtains LCA 4 are available in the following resolutions:

- 14 mm (protected heights from 160 mm to 1,810 mm) ➡ FINGER PROTECTION
- 30 mm (protected heights from 160 mm to 1,810 mm) ➡ HAND PROTECTION
- 40 mm (protected heights from 160 mm to 1,810 mm) ➡ HAND PROTECTION
- 50 mm (protected heights from 160 mm to 1,810 mm) ➡ ARM AND LEG PROTECTION

Light grids LCA 4 are available in the following versions:

- 2 beams (500 mm between the beams) ➡ BODY PROTECTION / ACCESS CONTROL
- 3 beams (400 mm between the beams) ➡ BODY PROTECTION / ACCESS CONTROL
- 4 beams (300 mm between the beams) ➡ BODY PROTECTION / ACCESS CONTROL

Table 1: Terminology

Term	Definition
Resolution	Lens spacing + lens diameter
ESPE	Electro-sensitive protective equipment
FE	Function earth
FO1A/FO1B	Safety outputs
Master	Primary transmitter/receiver pair
Slave	Secondary transmitter/receiver pair
Multiple systems	Use of several LCA systems in parallel

Table 2: Type designations

Designation	Definition
LCA 4 T	Transmitter unit
LCA 4 R	Receiver unit
LCA 4 TR	Transmitter/receiver set
LCA 4 TR M	Transmitter/receiver set in configuration master
LCA 4 TR S1	Transmitter/receiver set in configuration slave 1
LCA 4 TR S2	Transmitter/receiver set in configuration slave 2

6.2. Test function

The test function makes it possible to check the protective function independent of the machine function.

The safety outputs are deactivated via a simulated interruption. An external control unit can check the operation of the overall system by checking the devices connected downstream. The test function remains active until the device is switched to normal operation.

NOTICE

To activate the test function, pins 2 and 4 must be de-energized (0 V) for at least 4 ms.

6.2.1. Activation of the test function

1. Connect pin 2 and pin 4 to 0 V.

➡ The transmitter detects 0 V DC on the pins and simulates an interruption. The safety outputs switch off. The receiver changes to the stop state.

The TEST LED on the transmitter illuminates orange continuously.
The STOP LED on the receiver illuminates red continuously.
See chapter: LED displays

2. To switch back to normal operation after the test, restore the output wiring to the configuration before the test (pin 2 or pin 4 to 24 V).

6.3. Master-slave function

The master-slave function permits the series connection of up to three light curtains. These arrangements consist of one master and up to two slave units.

Series connection permits a combination of different protective functions such as finger, hand and body protection. For this purpose, different LCA 4 types are connected using connecting cables.

The combination options can be seen in *Fig. 4*.

NOTICE

Connecting cables with a length of up to 50 m can be used to connect master/slave modules.

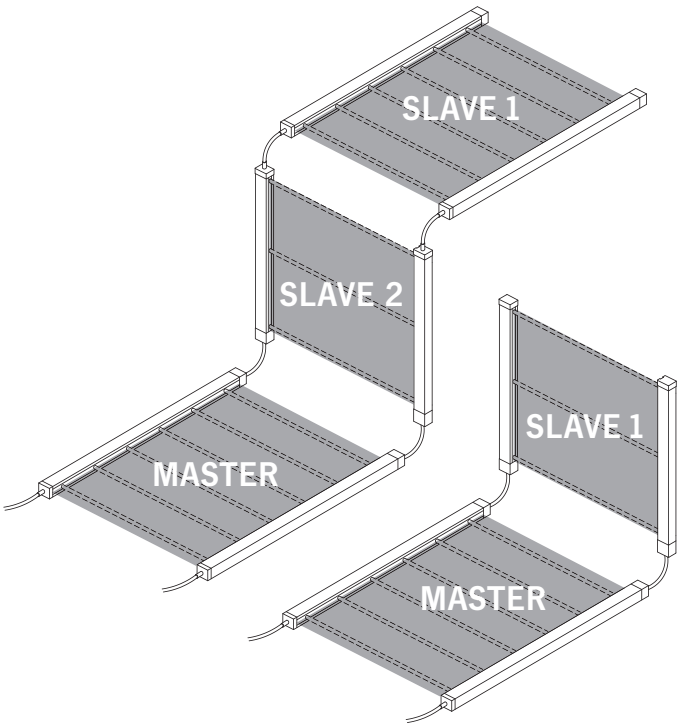


Fig. 4: LCA master/slave modules

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6.3.1. Example application: protection against stepping behind

The master device is used as the primary safeguard. The slave device is used as the secondary safeguard.

When the installation is entered, the light beams of the light curtain are interrupted and the machine movement stopped.

The horizontally installed light curtain detects that there is a person in the danger area because the light beams are also interrupted here. The machine movement remains stopped.

Once the person has left the danger area, the devices (master/slave) change to normal operation. The machine can then be started.

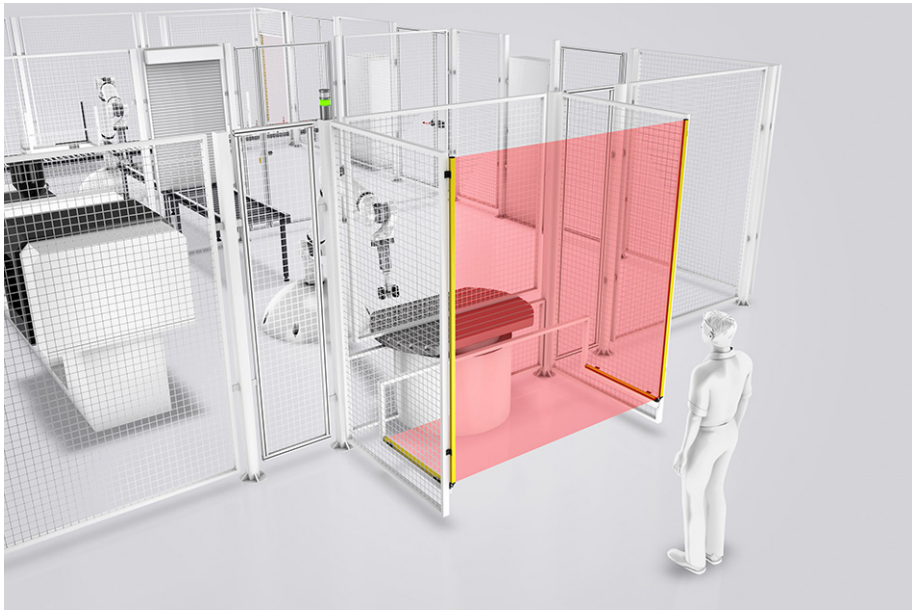


Fig. 5: Protection against stepping behind: danger area clear

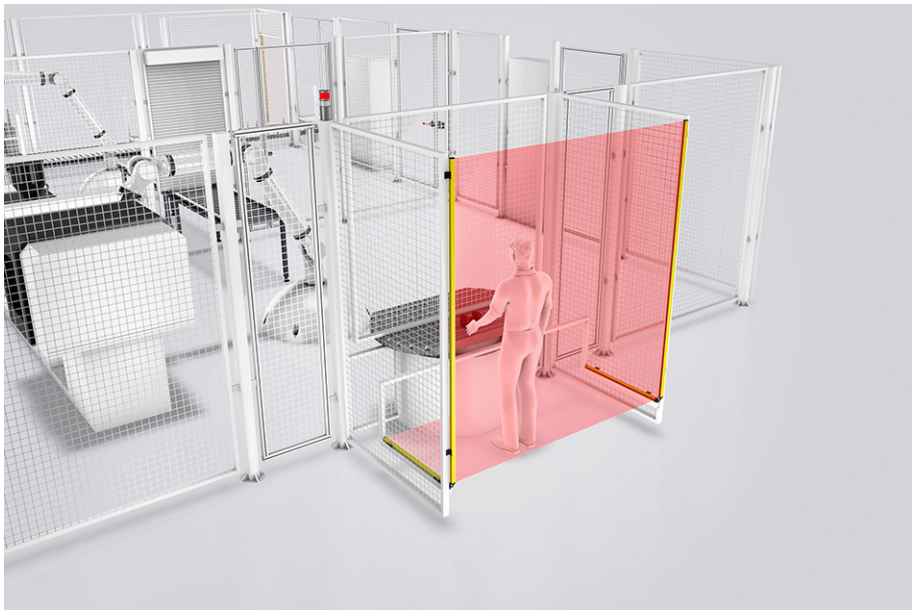


Fig. 6: Protection against stepping behind: danger area occupied

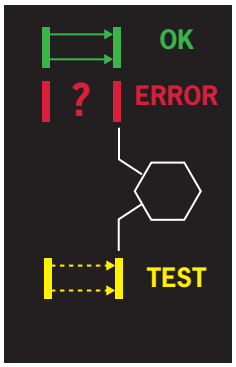
6.3.2. Feedback loop integration

The feedback loop makes it possible to monitor the function of relays or contactors connected externally.
The safety outputs are switched on only if the feedback loop is closed.

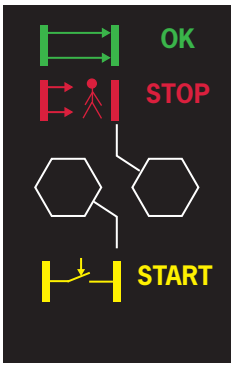
ⓘ	**NOTICE** For further information, see chapter: Setup

6.4. LED displays

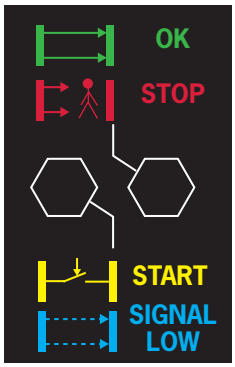
The system states of the transmitter and receiver are shown in the following figures.



Transmitter



Receiver



Receiver
(for 14 mm resolution / increased range)

NOTICE

The related device system state is indicated by the LED displays.

To rectify erroneous system states, see chapter Diagnostics/troubleshooting.

TRANSMITTER LED displays

Figure	System state	LED indicator	Description
OK	Normal operation	Green	The transmitter is in normal operation. The green LED is illuminated continuously.
	Power Up	Green flashing	The green LED briefly illuminates twice during the power-up process ➡ Power-up with selection: High range.
? ERROR	Error	Red flashing	FO1A and FO1B are inactive. The red LED is flashing. ➡ The monitored device is not allowed to be operated.
	Power Up	Red	The red LED illuminates during the power-up process (2 s).
TEST	Test function	Orange	The transmitter test function is active. The LED illuminates orange.

RECEIVER LED displays

Figure	System state	LED indicator	Description
OK	Normal operation	Green	The receiver is in normal operation. No interruption of the light beams. FO1A and FO1B are active. The green LED is illuminated continuously. ➡ The monitored device can be operated.
STOP	Stop	Red	At least one beam has been interrupted. FO1A and FO1B are inactive. The red LED illuminates continuously.
	Error	Red flashing	FO1A and FO1B are inactive (device error). The red LED is flashing. ➡ The monitored device is not allowed to be operated.
	Power Up	Red/yellow	The red and yellow LEDs illuminate during the power-up process. FO1A and FO1B are inactive. ➡ The monitored device must not be operated until it has changed to normal operation.
START	Start/restart	Yellow	Manual start/restart mode. FO1A and FO1B are inactive. The yellow LED illuminates. ➡ The monitored device is allowed to be operated again only once the detection area has been cleared of all objects and the start button has been pressed and released again.
	Power Up	Red/yellow	The red and yellow LEDs illuminate during the power-up process. FO1A and FO1B are inactive. ➡ The monitored device must not be operated until it has changed to normal operation.
SIGNAL LOW	Weak signal	Blue	Weak signal strength The blue LED illuminates. The following can cause a weak signal: ➡ Incorrect alignment of transmitter and receiver. ➡ Dirt on the optical surface ➡ Interference such as mist, rain, smoke or dust

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6.5. Safety outputs

The receiver unit has two safety outputs FO1A/FO1B (PNP outputs). You can find the detailed switching states for your device in the table below.

Any short circuits between the outputs and the 24 V DC or 0 V DC supplies are detected by the device itself.

Table 3: Switching states

Signal name	Conditions	Meaning
FO1A FO1B	24 V DC	‣ Protected area clear
FO1A FO1B	0 V DC	‣ Condition: protected area occupied/faulty or ‣ Fault detected

NOTICE

The maximum load of 400 mA at 24 V DC corresponds to a minimum ohmic load of 60 Ω per safety output. The maximum capacitive load corresponds to 0.82 µF at 24 V DC.

The safety outputs can output a voltage up to 0.5 V DC and an output current up to 0.2 mA in the switched-off state.

Important!

If the protected area is clear, the receiver delivers a voltage of 24 V DC on both outputs. The necessary load must therefore be connected between the safety outputs and 0 V DC (see *Fig. 7*).

To ensure safety, both safety outputs (FO1A/FO1B) must always be evaluated.

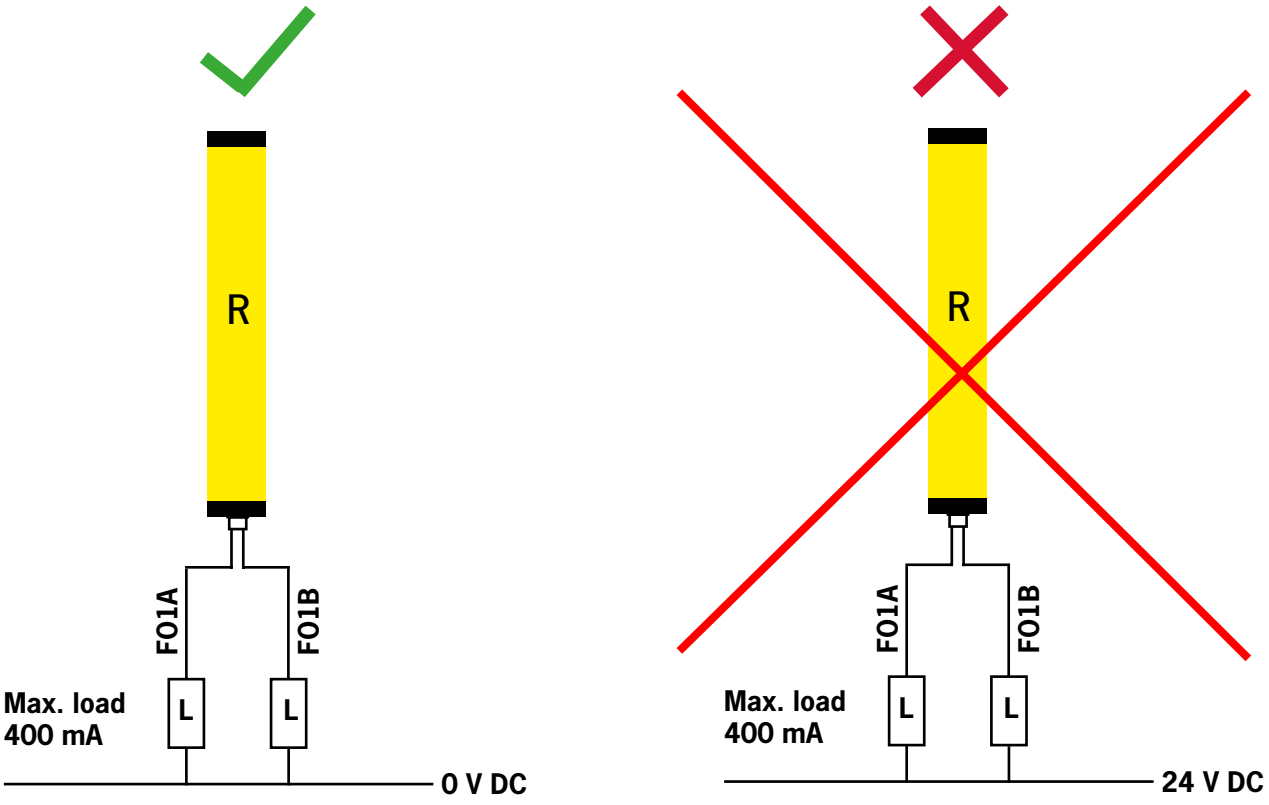

Fig. 7: Connection of the load to the safety outputs and 0 V DC

7. Mounting

Transmitter and receiver must be positioned while maintaining the minimum safety distance **S**. It must not be possible to reach the danger area until the hazardous machine movement stops (see *Fig. 8*). The safety distance for light grids and light curtains must be calculated as per the following chapters.

Fig. 8: Safety distance **S**

The minimum safety distance **S** is calculated based on the following formula:

S = K (t1 + t2) + C

C = 8 (d – 14)

Variable	Definition
S	The minimum safety distance [mm] results from the distance between the start of the detection area and the start of the danger area
K	Approach speed of the body to the danger area [mm/s]
t1	Total reaction time for the item of electro-sensitive protective equipment in seconds [s]
t2	Reaction time of the machine in seconds; this is the time the machine requires to interrupt the dangerous process after a stop signal [s]
C	Additional distance, which varies depending on the application [mm] 1)
d	Resolution [mm]

1) For further information in relation to the additional distance, see EN 13855:2010

Important!

- The minimum safety distance must be maintained because otherwise the protective function of the device will not be ensured.
- If it is possible to access the danger area without interrupting the protective field, a guard must be provided in addition.

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7.1. Safety distance, light curtains (horizontal mounting)

If the protective field is mounted horizontally in relation to the direction of approach, the minimum safety distance **S** is calculated based on the following formula.

S = 1600 (t1 + t2) + 1200 – 0.4 H

H = 15 (d – 50)

ⓘ	**NOTICE** The height **H** is given by the distance from the safeguard to the floor surface **G**.

ⓘ	**Important!** The height **H** must always be less than 1,000 mm. If the height exceeds 300 mm, there is a risk the protective field may be bypassed. ➡ Additional protective measures in the form of a guard are required.

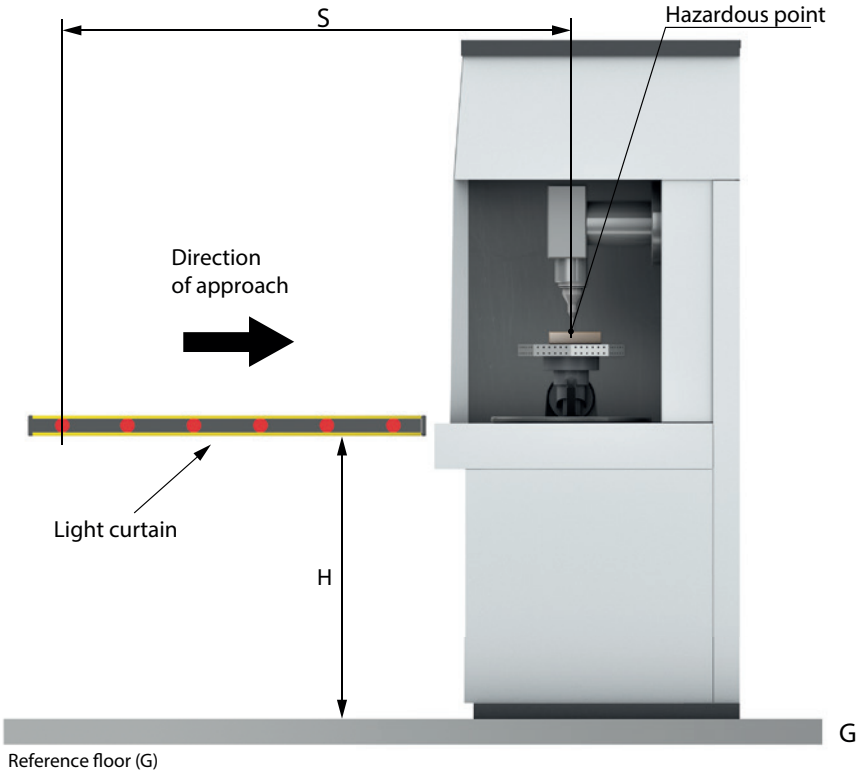

Fig. 9: Horizontal mounting for light curtains

7.2. Safety distance, light curtains (vertical mounting)

For vertical mounting, the resolution of the device must be determined first.

Depending on the result, a distinction is made between two cases:

Case A: resolution ≥ 50 mm

Case B: resolution< 50 mm

The related section must be followed depending on the result.

	**Tip** You can find the resolution of the device in chapter 11: Technical data.

Case A: resolution ≥ 50 mm

The safety distance **S** is calculated using the following formula:

S = 1600 (t1 + t2) + 850

	**Important!** The following distances must be maintained during the calculation: ‣ Distance, floor surface **G** – first light beam = H1 max. 300 mm ‣ Distance, floor surface **G** – last light beam = H2 min. 900 mm

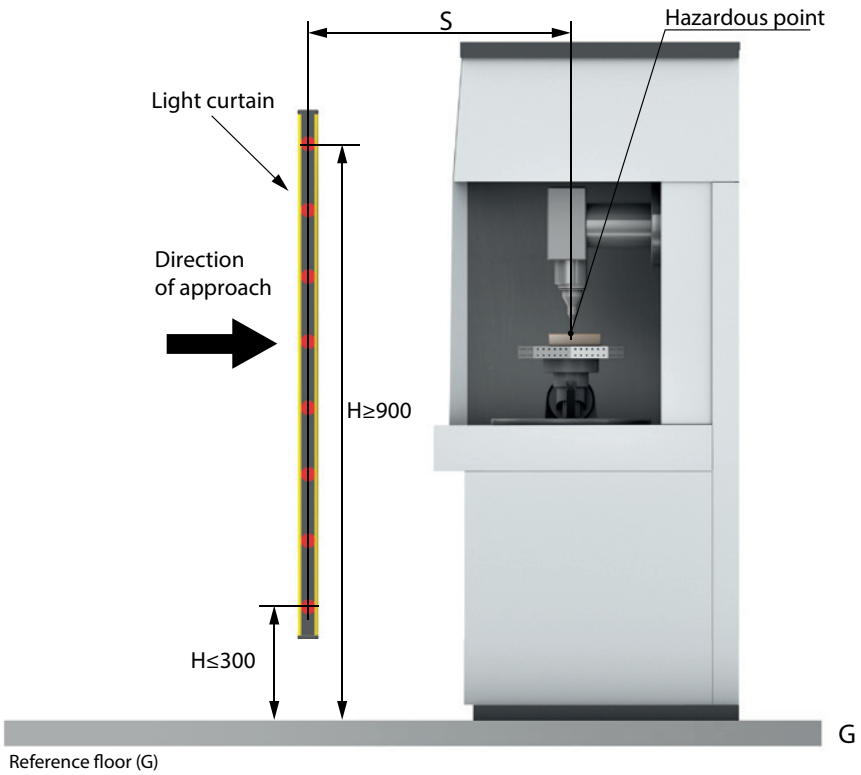

Fig. 10: Vertical mounting for light curtains with resolution from 50 mm

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Case B: resolution ≤ 50 mm

	Important! For a resolution ≤ 50 mm, an additional distance to the danger area must be observed.

The safety distance **S** is calculated using the following formula:

S = 2000 (t1 + t2) + C

➡ If the result of the calculation is in the value range 100 – 500 mm, the value **S** can be used.

➡ If the calculation shows that **S** is greater than 500 mm, the following formula is used:

S = 1600 (t1 + t2) + C

	Important! If it is possible to reach the danger area (e.g. by reaching over), the height **H** must be recalculated based on EN ISO 13855. ➡ It must not be possible to bypass the safeguard under any circumstances.

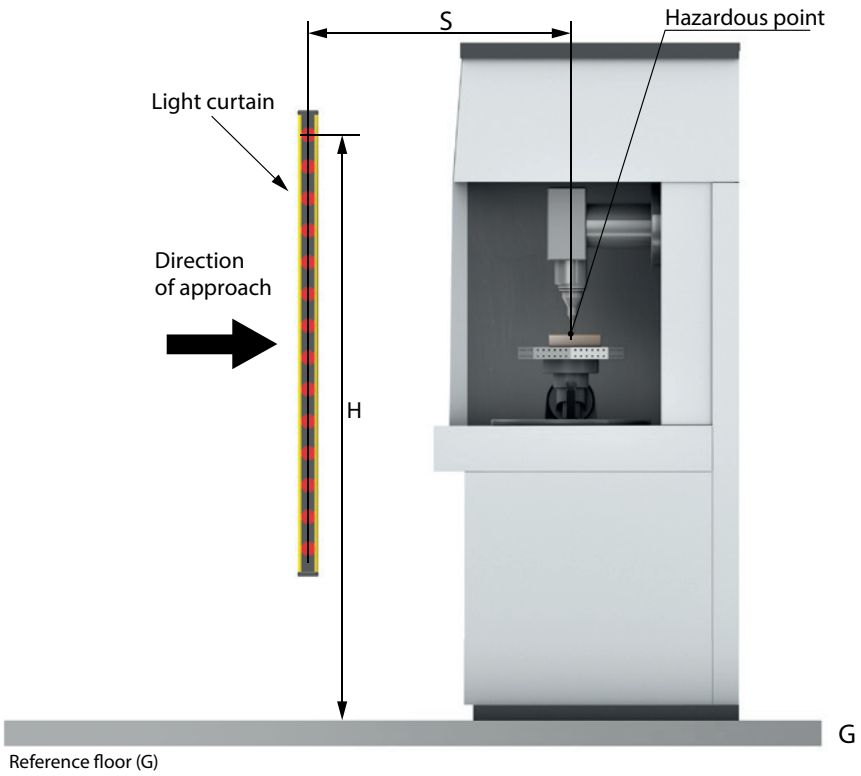

Fig. 11: Vertical mounting for light curtains with resolution of 14 mm, 30 mm, 40 mm

7.3. Safety distance, light grids (vertical mounting)

Important!

Light grids are suitable only for detecting the entire body.

➡ Light curtains must be used for detecting individual parts of the body.

The safety distance **S** is calculated using the following formula:

S = 1600 (t1 + t2) + 850

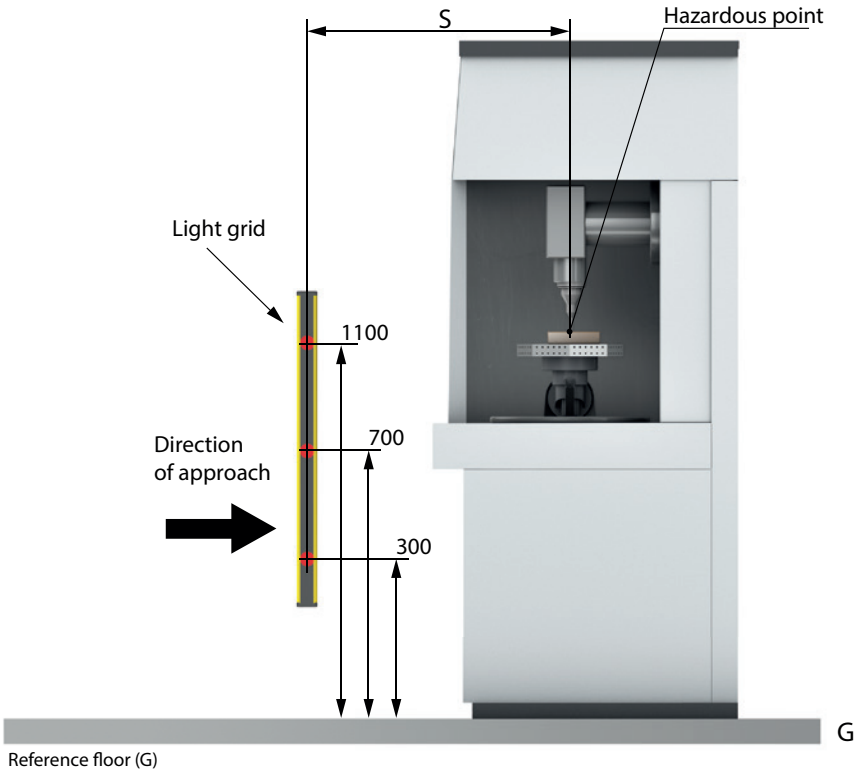

Fig. 12: Mounting for light grids

The recommended beam height **H** to the reference floor **G** is shown in *Table 4*.

Table 4: Height of the light grid beams

Model	Beams	Recommended height H (mm)
LCA 4 2B	2	400/900
LCA 4 3B	3	300/700/1,100
LCA 4 4B	4	300/600/900/1,200

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7.4. Installation

Important!

All the conditions listed below must be checked before the safety system is installed:

- The degree of protection (type 4, SIL3, PLe) of the system must be compatible with the level of danger of the system to be controlled.
- The machine must be operated via a control system.
- It must be possible to control electrically the operation of the machine.
- It must be possible to stop any dangerous process on the machine immediately. In particular, it must be known how long it takes to stop the machine.
- The machine must not generate any physical hazards (ejection of parts, heat, radiation). A guard must be used in this situation.
- The minimum size of the object to be detected must correspond to the resolution of the model selected or be larger.
- The height and width of the danger area must be covered by the protective field of the related model.

7.5. Positioning

Important!

- Check whether the room temperature is compatible with the operating temperature of the device.
- Do not position the transmitter or the receiver in the vicinity of bright or flashing high-intensity light sources.
- The action of light from external sources above 3,000 lx can cause malfunctions. Check the ambient conditions before using the system.

The protective field of the transmitter and the receiver must completely cover the danger area. It must be possible to access the danger area only by interrupting at least one light beam on a light grid or light curtain.

The illustration below shows a few installation examples for the correct positioning of the devices.

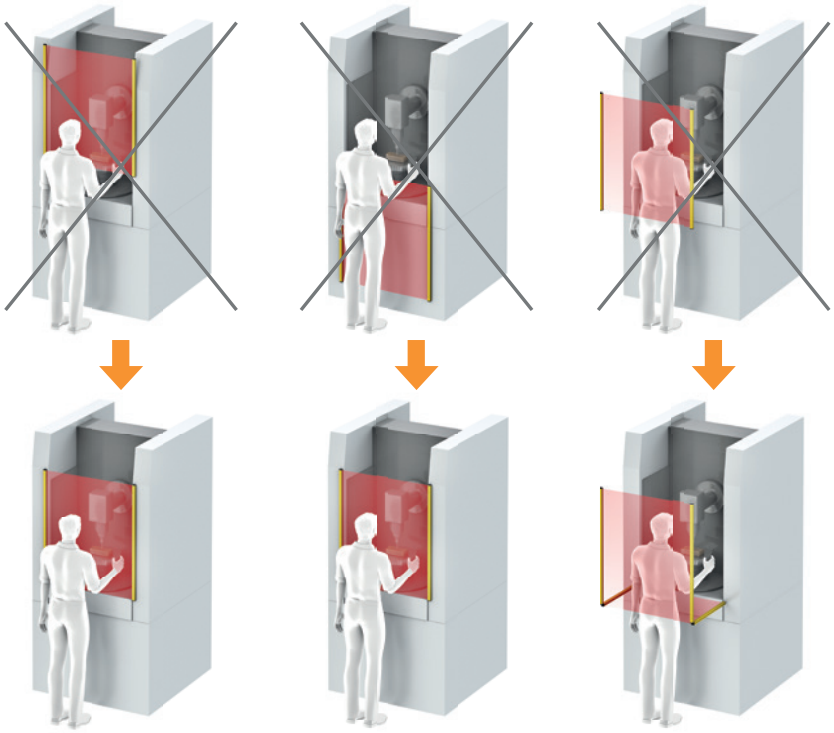

Fig. 13: Positioning the safeguard

7.6. Useful range in special ambient conditions

In ambient conditions in which mist, rain, smoke or dust occurs, the range must be corrected. You can find the correction factors in the following table.

Table 5: Correction factor **Fc**

Ambient conditions	Correction factor Fc
Mist	0.25
Vapors	0.50
Dust	0.50
Dense smoke	0.25

The range correction can be calculated using the following formula.

Pu = Pm x Fc

Table 6: Calculation of the corrected range **Pu**

Acronym	Definition
Pu	Usable range in meters
Pm	Maximum range in meters
Fc	Correction factor

ATTENTION!

Loss of the safety function due to the formation of condensed water

Condensed water can disable the device's protective function

➡ Avoid sudden temperature fluctuations at the place of use

➡ Clean your system regularly.

7.7. Use of several safeguards (multiple systems)

WARNING

Malfunction or loss of the safety function due to optical interference.

Light beams from a different transmitter may be received due to incorrect positioning.

➡ Transmitters and receivers must be positioned such that the beams emitted by a transmitter can be received only by the related receiver.

If several systems are used, it must be ensured that the function of the transmitters and receivers is not degraded.

The following positioning examples can be used:

No.	Description
A	Positioning two systems side-by-side
B	Positioning two systems above each other
C	Positioning two systems in an L shape

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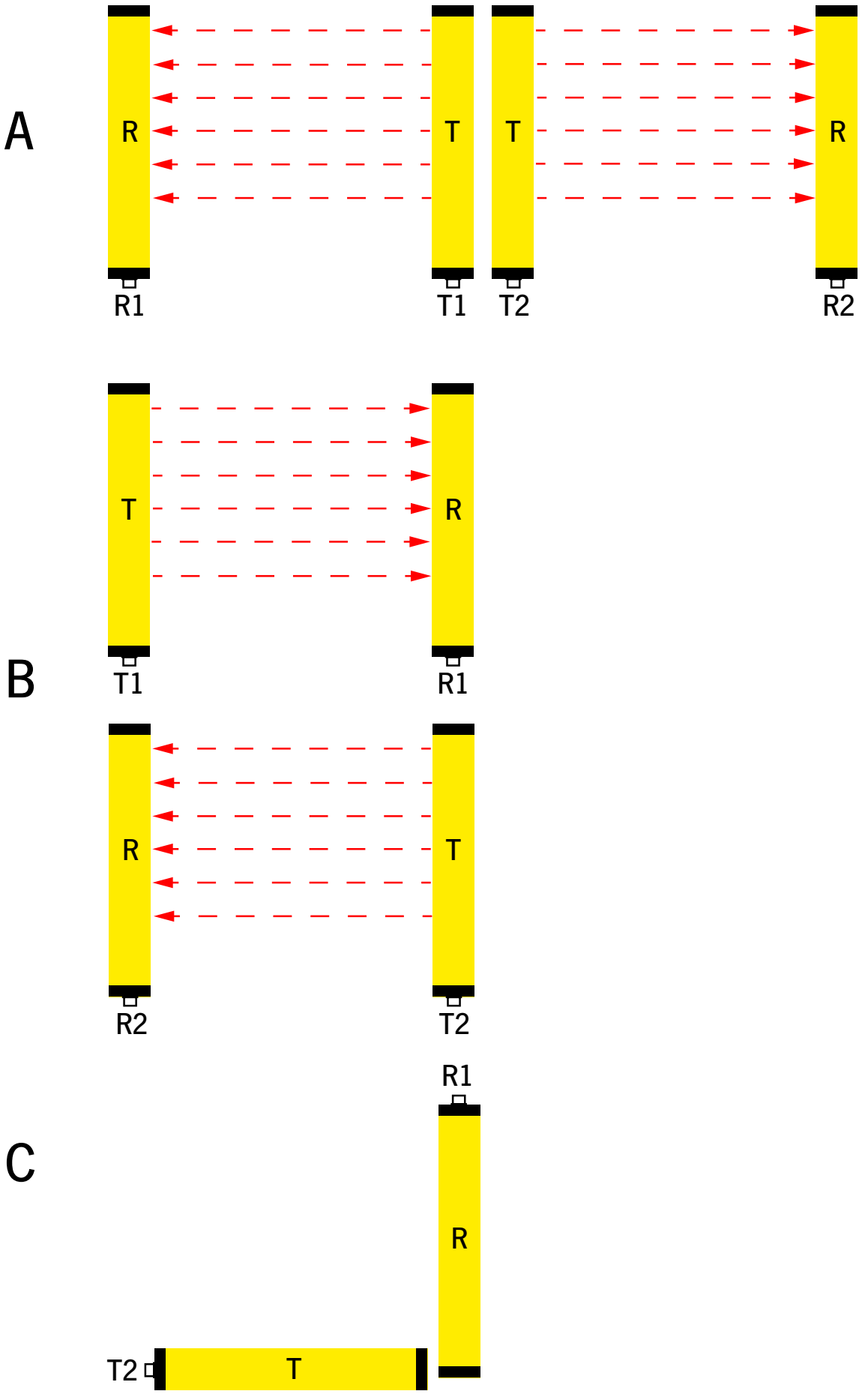


Fig. 14: Use of several safeguards (multiple systems)

7.8. Positioning of master/slave

The master/slave function permits monitoring of several sides of a danger area. Two or three light curtain pairs with transmitters and receivers connected in series are required for this purpose. Only a connection to the supply and control circuits is necessary. The connecting cable between master and slave can be up to 50 meters long.

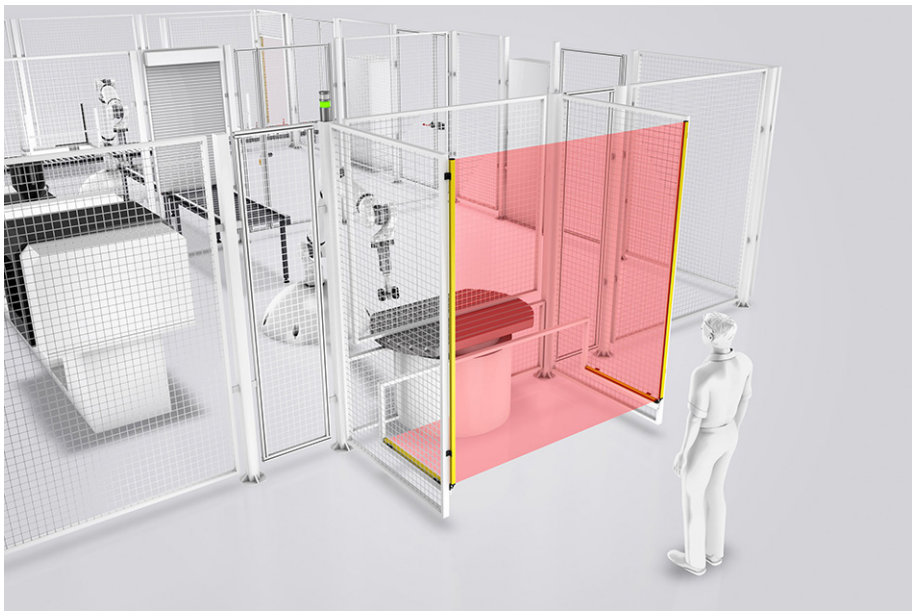


Fig. 15: Master/slave positioning example

7.9. Mounting and aligning

Transmitters and receivers can be mounted using the mounting brackets included.

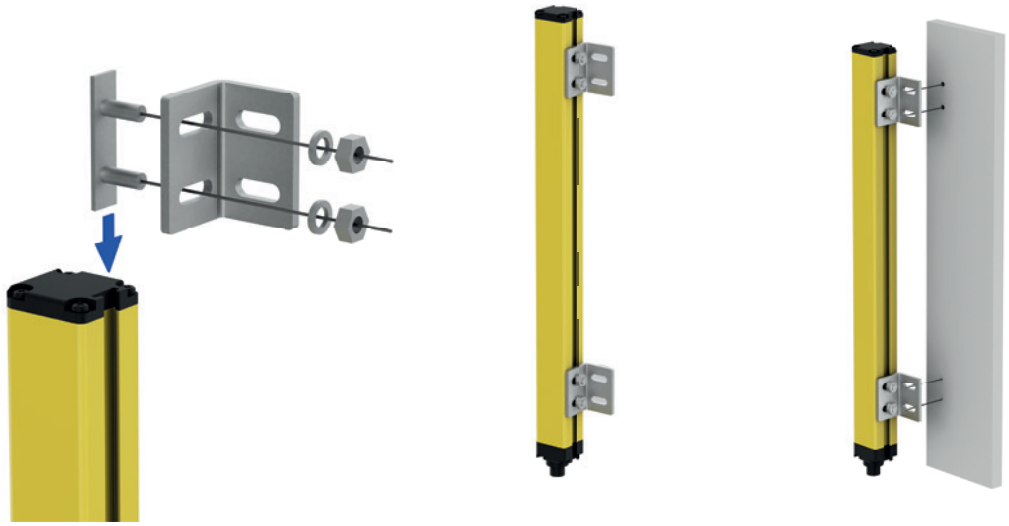


Fig. 16: Mechanical mounting

The following points must be noted when mounting the system:

- Mount the transmitter and the receiver on a flat surface.
- The optical surfaces must be exactly aligned with each other.
- The transmitter and the receiver must be installed at the same height. Use the LEDs for the correct alignment of transmitter and receiver. If the alignment is correct, the LED on the receiver illuminates green continuously.
- Pay attention to the maximum tightening torque for mounting the mounting brackets of 5 to 6 Nm.
- Pay attention to the maximum tightening torque for mounting the transmitter and the receiver on the mounting bracket of 2.5 to 3 Nm.
- Use only accessories from EUCHNER for mounting.

DANGER

Disabling of the safety function

The protective function of the system can be disabled if the system is mounted incorrectly.

- Always mount transmitters and receivers while observing the minimum distance S.
- Make sure that reaching over, reaching under, going around, walking behind, as well as moving the system are ruled out.
- Make sure that the danger area is adequately protected by the system's protective field.

NOTICE

Risk of damage to equipment and malfunctions as a result of incorrect installation

- Make sure not to damage the components while mounting the system.
- Pay attention to the maximum tightening torque.

Important!

If transmitters and receivers are mounted in areas that are subject to heavy vibration, it is necessary to use vibration-attenuating supports.

7.10. Optical alignment

NOTICE

An offset is possible with the beam angle shown.

LCA type 4
Category 4 / PL e or SIL 3

Light beam

± 2.5° max. permissible beam angle

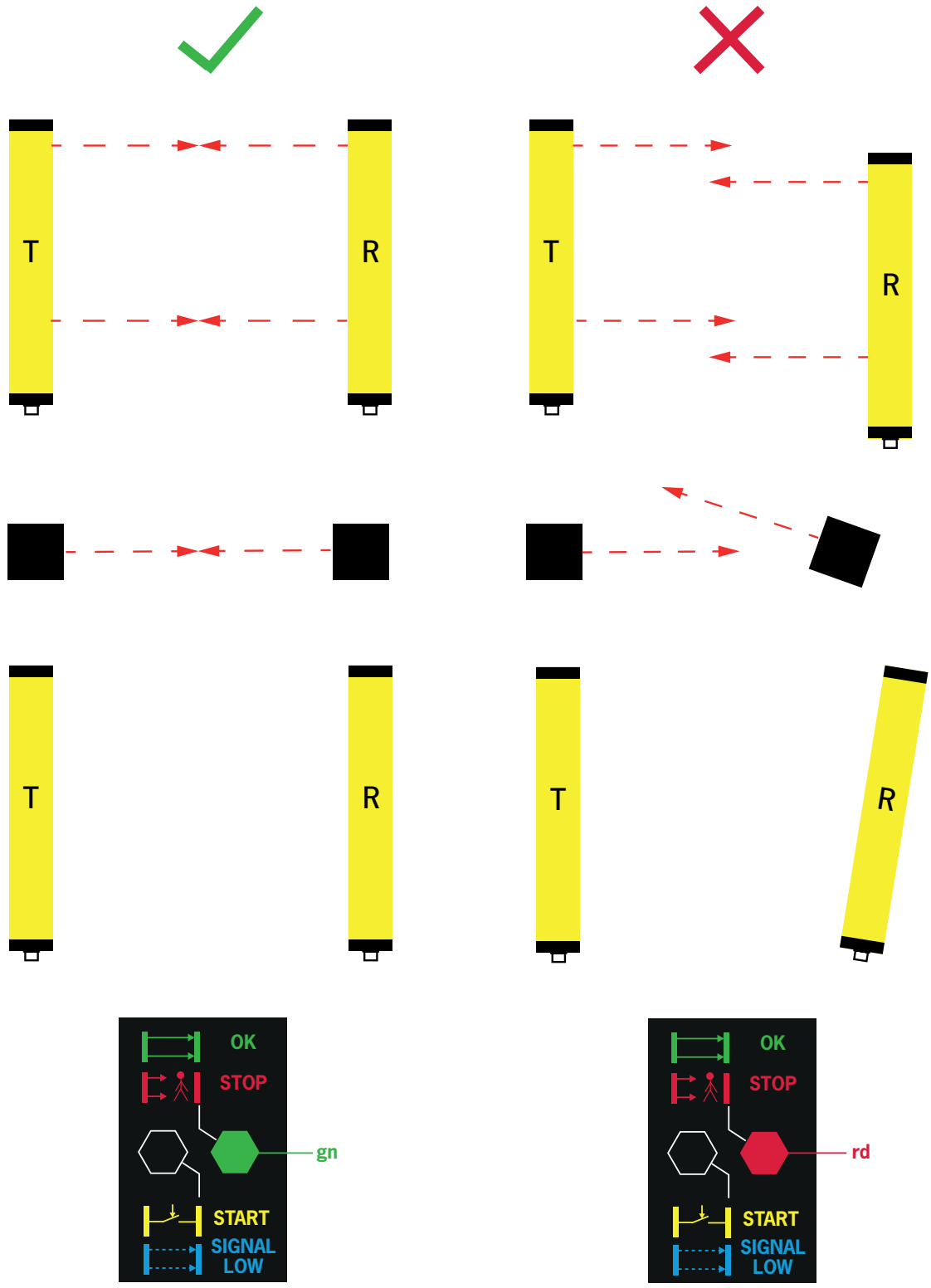


Fig. 17: Optical alignment of transmitter and receiver

EN

Tip

We recommend using the alignment aid of type AY-OS-LSR for the following alignment of the transmitter and the receiver.

1. Align the transmitter and the receiver such that the first and the last beams are on the same axis in each case.
2. Move the transmitter and the receiver until the green LED on the receiver illuminates continuously.

   14 mm models and increased range:

   1. Use the blue LED to check the signal strength.
   2. If the blue LED illuminates continuously, the signal is weak.
   3. Check the transmitter and the receiver for interference and contamination.
   4. Recheck the alignment of both components until the blue LED extinguishes.

   NOTICE

   For further troubleshooting, see chapter “LED displays” and chapter “Diagnostics/troubleshooting”.

3. Fix the transmitter and the receiver in their current positions.

Important!

Pay attention to the maximum tightening torque for mounting the transmitter and the receiver on the mounting bracket of 2.5 to 3 Nm.

7.11. Use of deflection mirrors

Deflection mirrors make it possible to increase the size of the protective field. The light beams generated by the transmitter can be deflected to several sides. The following figure shows an application in which two deflection mirrors are used to obtain protection with a U shape.

DANGER

Disabling of the safety function due to degradation on the mirror.

Dirty or damaged areas on the deflection mirror can disable the safety function.

- ➡ Do not use deflection mirrors if contamination, the formation of condensed water or ice is to be expected at the place of use.
- ➡ Regularly clean the deflection mirrors to prevent contamination and damage.

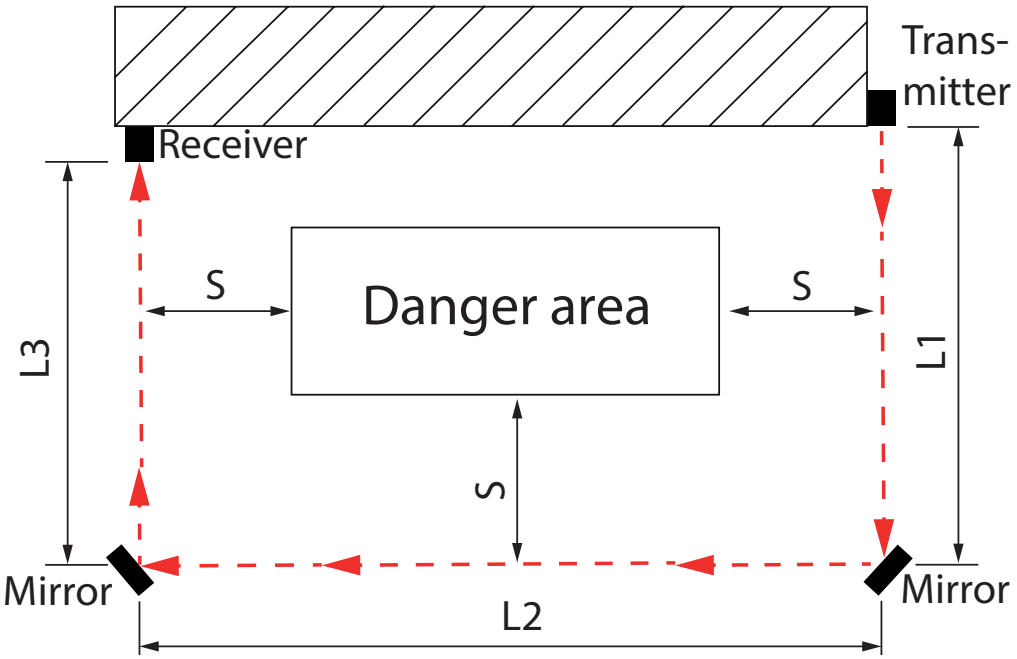


Fig. 18: Use of deflection mirrors

1. Determine the working distance from the sum of the lengths of the protected area.
   (L1 = transmitter – mirror, L2 = mirror – mirror, L3 = mirror – receiver)

➡ Note that on the use of a mirror, the max. range between the transmitter and the receiver is reduced by 15% for each mirror.

NOTICE

On the calculation of the range, the reduction per mirror must be assumed.

The range can be calculated using the following formula:

Eff. range $R_{eff} = R_{max} \cdot 0.85^n$

Variable	Definition
R_{eff}	Effective range
R_{max}	Max. range of the device
n	Number of mirrors

Important!

The signal detection can be checked using the LED indicator.

See chapter: LED displays

2. Position the mirrors taking into account the working distance and the minimum safety distance **S** around the danger area.

➡ Make sure that no distortion is caused along the longitudinal axis

Tip

It is recommended not to use more than three deflection mirrors.

EN

7.12. Distance from reflecting surfaces

Reflecting surfaces in the vicinity of the device can affect the detection of the light beam. The cone of light from a beam increases in size with increasing distance between the transmitter and the receiver. This light can be deflected by reflecting objects and sent to the receiver. In certain circumstances, an interruption of the protective field would not have any effect on the safety outputs. The protective function of the LCA system is then no longer ensured.

➡ For this reason, a minimum distance **d** must be maintained between any reflecting surfaces and the protected area.

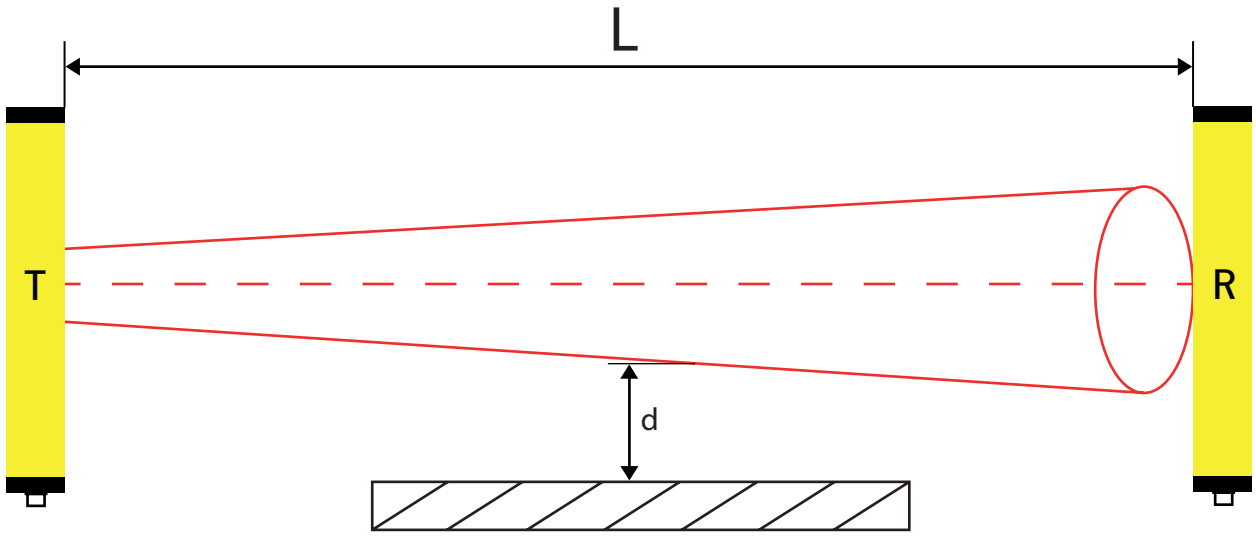
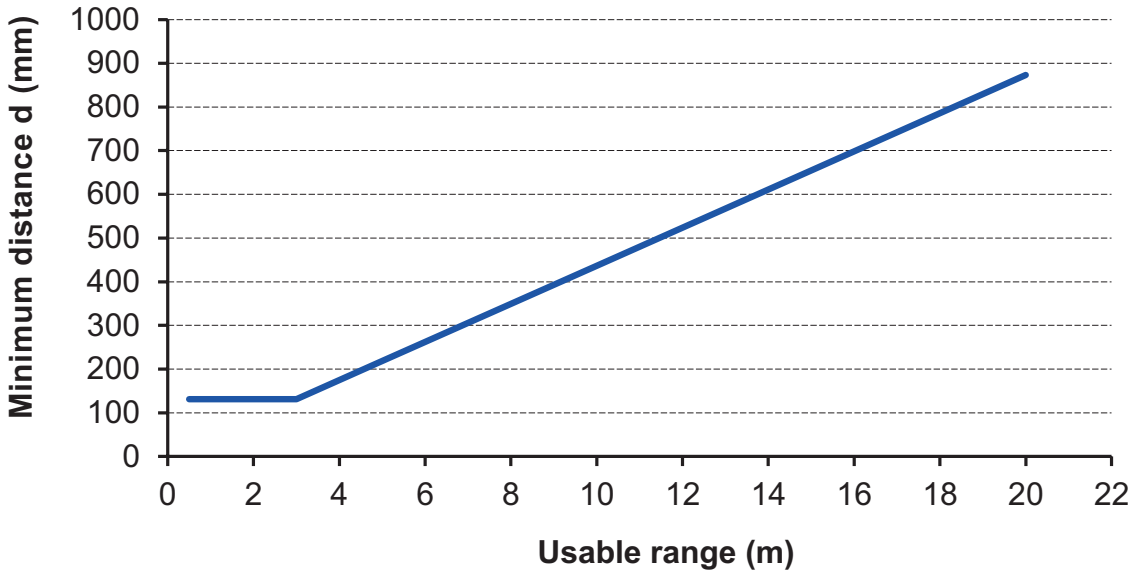


Fig. 19: Minimum distance **d** to reflecting objects

The minimum distance **d** can be read on the following diagram.

Alternatively, it can be calculated based on the standard EN IEC 61496-2.



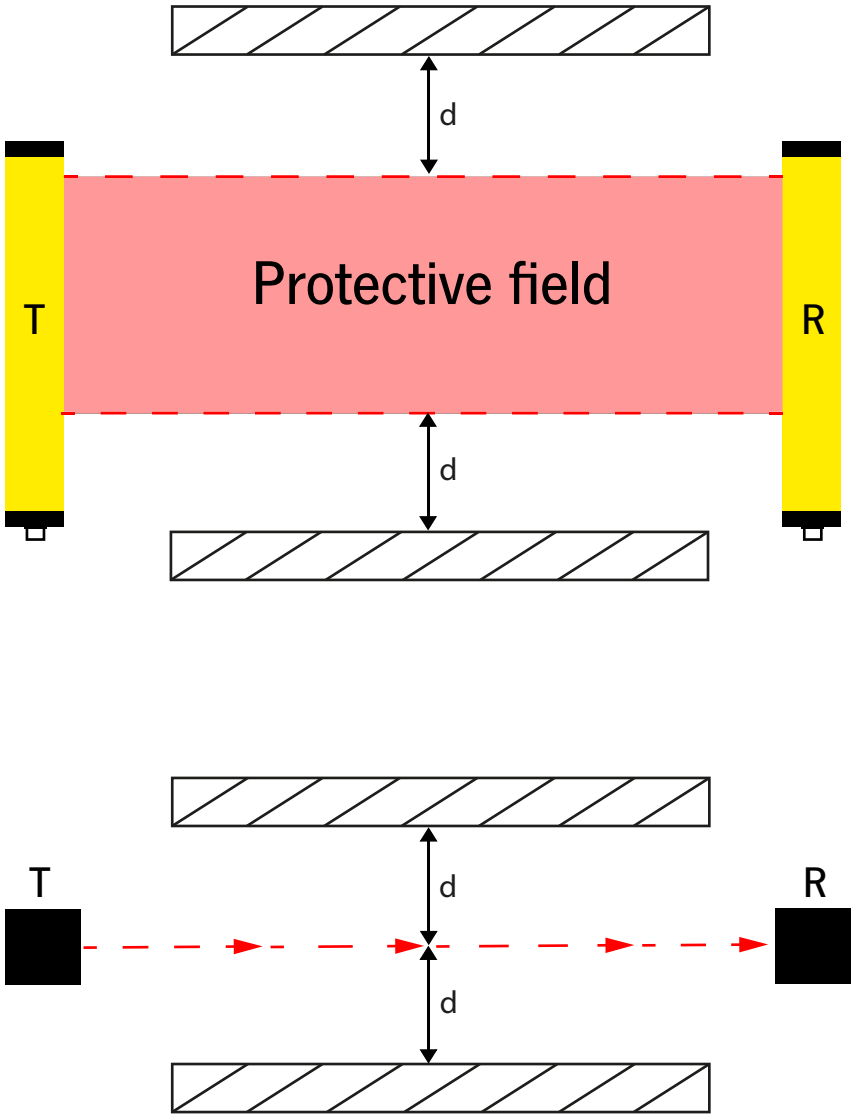


Fig. 20: Minimum distance **d** / usable range

8. Electrical connection

CAUTION

Risk of damage to equipment or malfunctions as a result of incorrect connection

- Before making the electrical connections, make sure that the available supply voltage matches the voltage stated in the technical data.
- The transmitter and the receiver must be supplied with a voltage of 24 V DC ±20% (PELV; must correspond to EN IEC 60204-1 (chapter 6.4)).
- The electrical connections must be made while following the wiring diagrams in these operating instructions. No other devices are allowed to be connected to the plug connectors on the transmitter or the receiver.
- On the use of a power supply unit with diode bridge, the output capacitance must be at least 2,000 µF for each ampere drawn.
- Power devices which are a powerful source of interference must be installed in a separate location away from the input and output circuits for signal processing. The cable routing for the safety circuits should be as far away as possible from the cables for the power circuits.
- The function earth must be connected to comply with the EMC requirements.
- To avoid EMC interference, the physical environmental and operating conditions at the installation site of the device must comply with the requirements according to the standard EN IEC 60204-1:2006, section 4.4.2 (EMC).

WARNING

To ensure safety, both safety outputs must always be evaluated.

8.1. Notes about UL

Important!

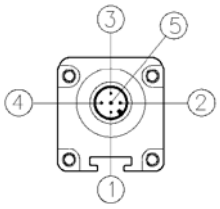
- This device is intended to be used with a Class 2 power source.
  As an alternative an LV/C (Limited Voltage/Current) power source with the following properties can be used:
  This device shall be used with a suitable isolating source in conjunction with a fuse in accordance with UL248. The fuse shall be rated max. 3.3 A and be installed in the max. 30 V DC power supply to the device in order to limit the available current to comply with the UL requirements. Please note possibly lower connection ratings for your device (refer to the technical data).
- For use and application as per the requirements of UL [1)] a connecting cable listed under the UL category code CYJV/7 must be used.

1) Note on the scope of the UL approval: the devices have been tested as per the requirements of UL508 and CSA/ C22.2 no. 14 (protection against electric shock and fire).

8.2. Transmitter connections

8.2.1. LCA 4 (with integrated control functions) – LCA 4 master primary connector M12, 5-pin

Table 7: M12, 5-pin - master/standard/with integrated control functions TX



Pin	Color	Name	Type	Description
1	Brown	24VDC	INPUT	Supply 24 V DC
2	White	RANGE0		Device configuration Corresponds to the standard EN IEC 61131-2 (see *Tabelle 8*)
3	Blue	0VDC		Supply 0 V DC
4	Black	RANGE1		Device configuration Corresponds to the standard EN IEC 61131-2 (see *Table 8*)
5	Gray	FE		Function earth

Table 8: Selection of range and TEST

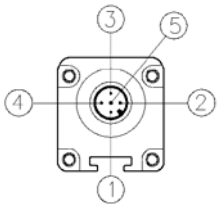
Selection of range and test - (primary connector, 5-pin)		
Pin 4	Pin 2	Meaning
24 V	0 V	Selection of HIGH range
0 V	24 V	Selection of LOW range
0 V	0 V	Transmitter in TEST
24 V	24 V	Selection error

NOTICE

For a correct device operating mode, pins 2 and 4 of the transmitter must be connected according to the information in *Table 8* .

8.2.2. LCA 4 slave 1 / LCA 4 slave 2 – primary connector M12, 5-pin

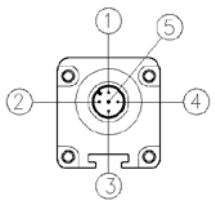
Table 9: M12, 5-pin, primary slave TX



Pin	Color	Name	Description
1	Brown	24VDC	Supply 24 V DC
2	White	LINE_A	MASTER-SLAVE communication
3	Blue	0VDC	Supply 0 V DC
4	Black	LINE_B	MASTER-SLAVE communication
5	Gray	FE	Function earth

8.2.3. LCA 4 master – secondary connector M12, 5-pin
LCA 4 slave 2 – secondary connector M12, 5-pin

Table 10: M12, 5-pin, secondary TX



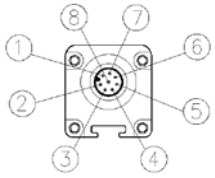
Pin	Color	Name	Description
1	Brown	24VDC	Supply 24 V DC
2	White	LINE_A	MASTER-SLAVE communication
3	Blue	0VDC	Supply 0 V DC
4	Black	LINE_B	MASTER-SLAVE communication
5	Gray	FE	Function earth

EN

8.3. Receiver connections

8.3.1. LCA 4 (with integrated control functions) – connector M12, 8-pin
LCA 4 master – primary connector M12, 8-pin

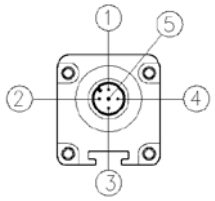
Table 11: M12, 8-pin, RX



Pin	Color	Name	Type	Description	Operating mode
1	White	FO1A	OUT	Safety output 1	Active PNP high
2	Brown	24VDC	-	Supply 24 V DC	-
3	Green	FO1B	OUT	Safety output 2	Active PNP high
4	Yellow	K1_K2/ RESTART	INPUT	Feedback from external contactors	Corresponds to the standard EN IEC 61131-2 (refer to sect. "Configuration and operating modes" *Page 33*)
5	Gray	SEL_A	INPUT	Device configuration	
6	Pink	SEL_B	INPUT		
7	Blue	0VDC	-	Supply 0 V DC	-
8	Red	FE	-	Function earth	-

8.3.2. LCA 4 slave 1 / LCA 4 slave 2 – primary connector M12, 5-pin

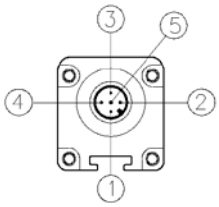
Table 12: M12, 5-pin, primary slave RX



Pin	Color	Name	Description
1	Brown	24VDC	Supply 24 V DC
2	White	LINE_A	MASTER-SLAVE communication
3	Blue	0VDC	Supply 0 V DC
4	Black	LINE_B	MASTER-SLAVE communication
5	Gray	FE	Function earth

8.3.3. LCA 4 master – secondary connector M12, 5-pin
LCA 4 slave 2 – secondary connector M12, 5-pin

Table 13: M12, 5-pin, secondary RX



Pin	Color	Name	Description
1	Brown	24VDC	Supply 24 V DC
2	White	LINE_A	MASTER-SLAVE communication
3	Blue	0VDC	Supply 0 V DC
4	Black	LINE_B	MASTER-SLAVE communication
5	Gray	FE	Function earth

CAUTION

Risk of damage to equipment or malfunctions as a result of incorrect connecting cables

- Use connection components from EUCHNER.
- On the use of cables with a length of more than 50 m, a cross-section of at least 1 mm² must be used.
- If possible, keep the LCA 4 power supply separate from other high-current devices (such as electric motors, inverters, frequency converters) or other sources of interference.
- The transmitter and the receiver must be connected to a function earth.
- Connecting cables must not pass near high-current cables.

9. Operating modes/setup

9.1. Configuration and operating modes (models master/with integrated control functions)

The operating mode to be selected depends on the results of the risk assessment. Based on the degree of protection required, the system can be configured for automatic or manual operation.

The operating mode of the device can be defined by controlling the pins. The following table shows how these can be controlled.

Table 14: Manual/automatic operating mode

Connections			Operating mode
K1_K2/RESTART (PIN 4)	SEL_A (PIN 5)	SEL_B (PIN 6)	
Connection to: 24 V DC	Connection to: 24 V DC	Connection to: 0 V DC	AUTOMATIC (*Fig. 22*)
Connection to: 24 V DC (via row of normally closed contacts of K1K2)	Connection to: 24 V DC	Connection to: 0 V DC	AUTOMATIC with K1K2 control (*Fig. 22*)
Connection to: 24 V DC (via RESTART button)	Connection to: 0 V DC	Connection to: 24 V DC	MANUAL (*Fig. 23*)
Connection to: 24 V DC (via RESTART button and row of normally closed contacts of K1K2)	Connection to: 0 V DC	Connection to: 24 V DC	MANUAL with K1K2 control (*Fig. 23*

9.1.1. Manual operating mode

The safety outputs FO1A and FO1B react to the status of the device. If the light beams are interrupted, the safety outputs switch off. The machine movement is stopped.

Once the protected area has been cleared, restarting must be initiated manually. The restarting of the machine must be confirmed manually using a pushbutton or a command on the input K1/K2 Restart. In order for the safety outputs to be activated, the transition 0 V DC -> 24 V DC -> 0 V DC must have taken place at the input K1/K2 Restart within 100 ms to 5 s.

DANGER

Severe injuries or death due to the machine restarting.

- The safeguard shuts down the machine if interrupted.
  In this state, the danger area can be entered undetected.
  (Use as trip device as per EN IEC 61496)

➡ Before manual reactivation, make sure that there are no persons in the danger area.

Important!

The command for restarting may be issued only from outside the danger area, in a location from which the entire danger area and work zone can be viewed.

The restart button must not be reachable from inside the danger area.

EN

9.1.2. Automatic operating mode

Important!

This operating mode is allowed to be used only in special cases.

- The safety outputs FO1A and FO1B react to the status of the device. If the light beams are interrupted, the safety outputs switch off. The machine movement is stopped.
- Once the protected area is cleared, the safety outputs are activated automatically and normal operation established (after 2 seconds). The machine starts automatically.

DANGER

Severe injuries or death due to the machine restarting.

- If the protected area is interrupted, the safety outputs switch off. Once the protected area is cleared, the safety outputs are activated. The machine is restarted automatically.

➥ Make sure that the automatic operating mode matches the safety level required by the risk analysis and is allowed to be used.

CAUTION

In the automatic operating mode, there is no interlocking circuit available after a restart.
(Start / restart interlock).

➥ Pay attention to the results of your risk analysis before configuration.

9.1.3. Connection of external contactors K1 and K2

External contactors (K1/K2) can be connected via a row of contacts in both operating modes. For this purpose, the plug connector on the receiver must be connected to the normally closed contacts of the external contactors.

▷ Connect pin 4 of the 8-pin M12 plug connector via the power supply (24 V DC) to the normally closed contacts of the external contactors.

Table 15: Automatic operating mode

Safeguard status	Behavior of safety outputs
Area clear	FO1A/FO1B activated
Area interrupted	FO1A/FO1B deactivated

Important!

In the manual operating mode, it must be ensured that the restart button is connected to the normally closed contacts of the external contactors K1/K2 (*Fig. 23*).

If necessary, the response time of the external contactors must be checked using an additional device.

9.1.4. Connection examples with safety modules

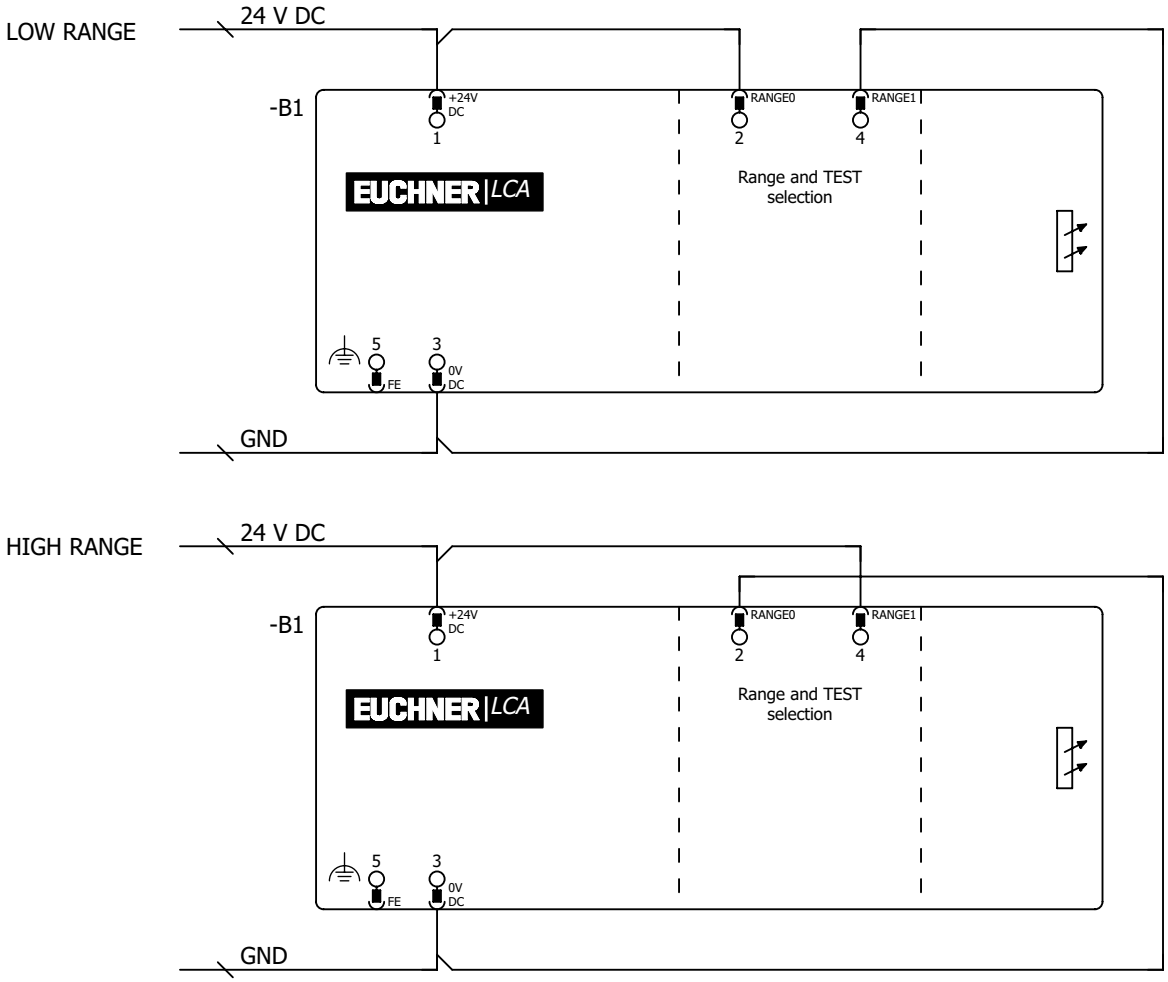
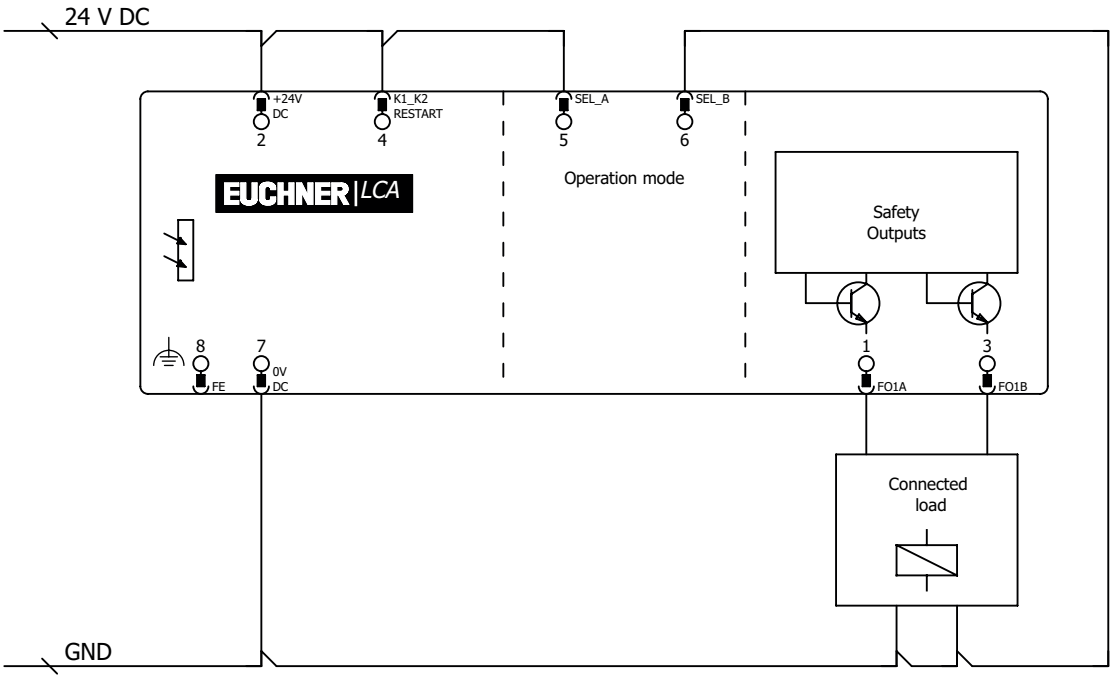


Fig. 21: Transmitter

EN

AUTOMATIC



AUTOMATIC WITH FEEDBACK

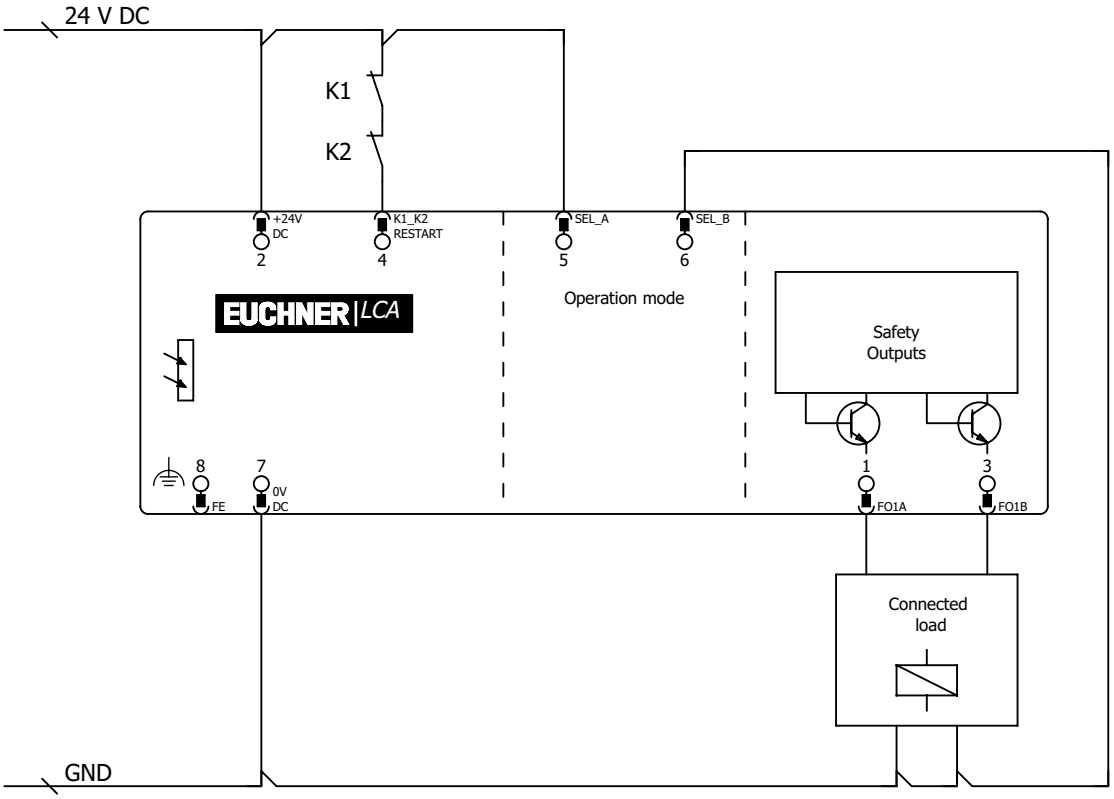
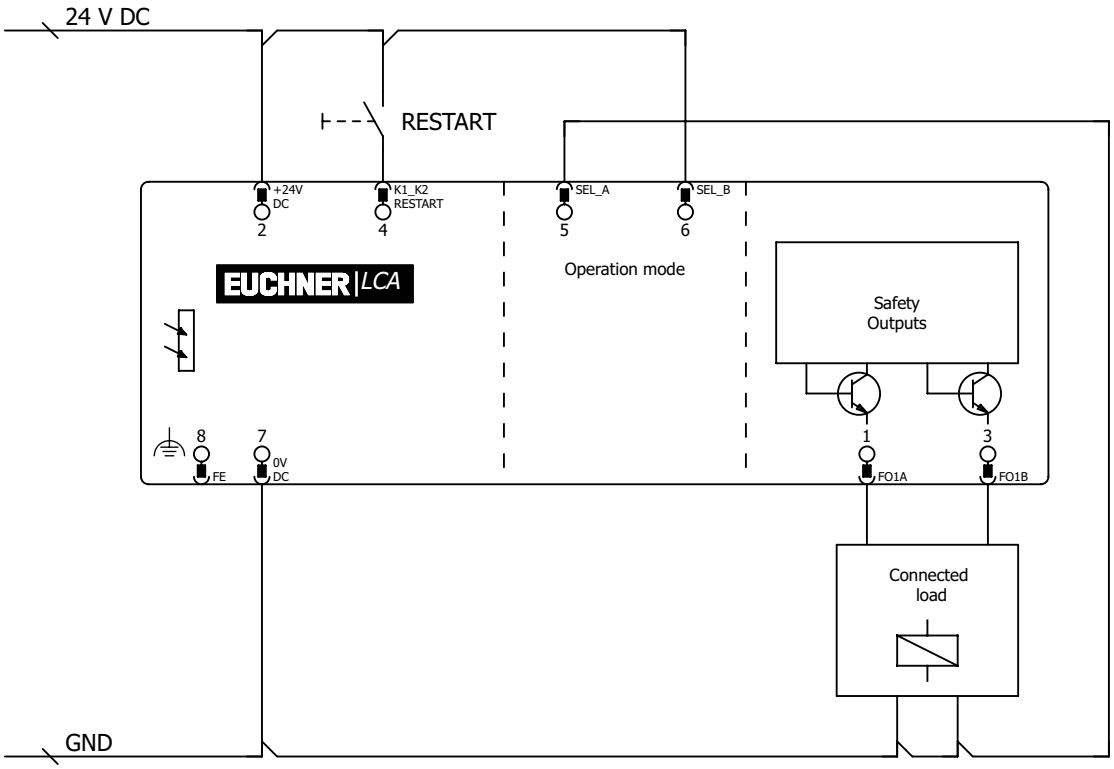


Fig. 22: Receiver automatic operating mode

MANUAL MODE



MANUAL MODE WITH FEEDBACK

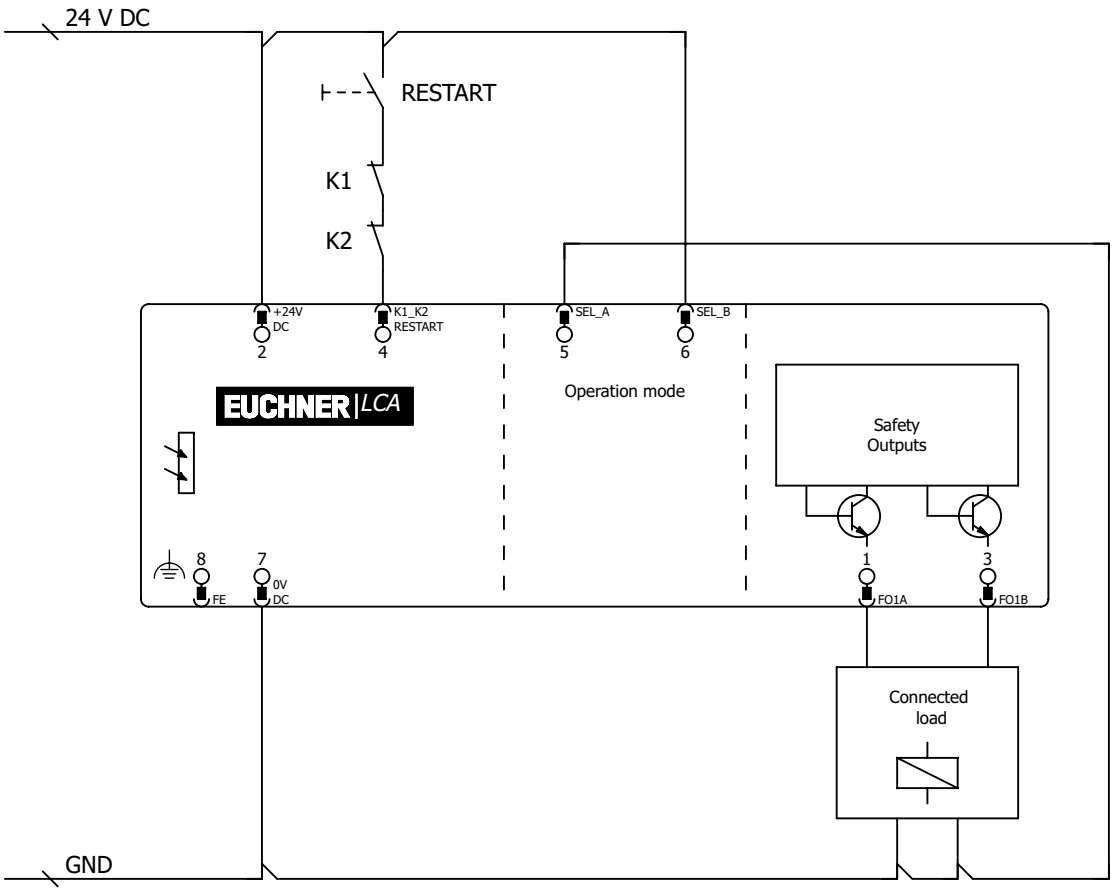


Fig. 23: Receiver manual operating mode

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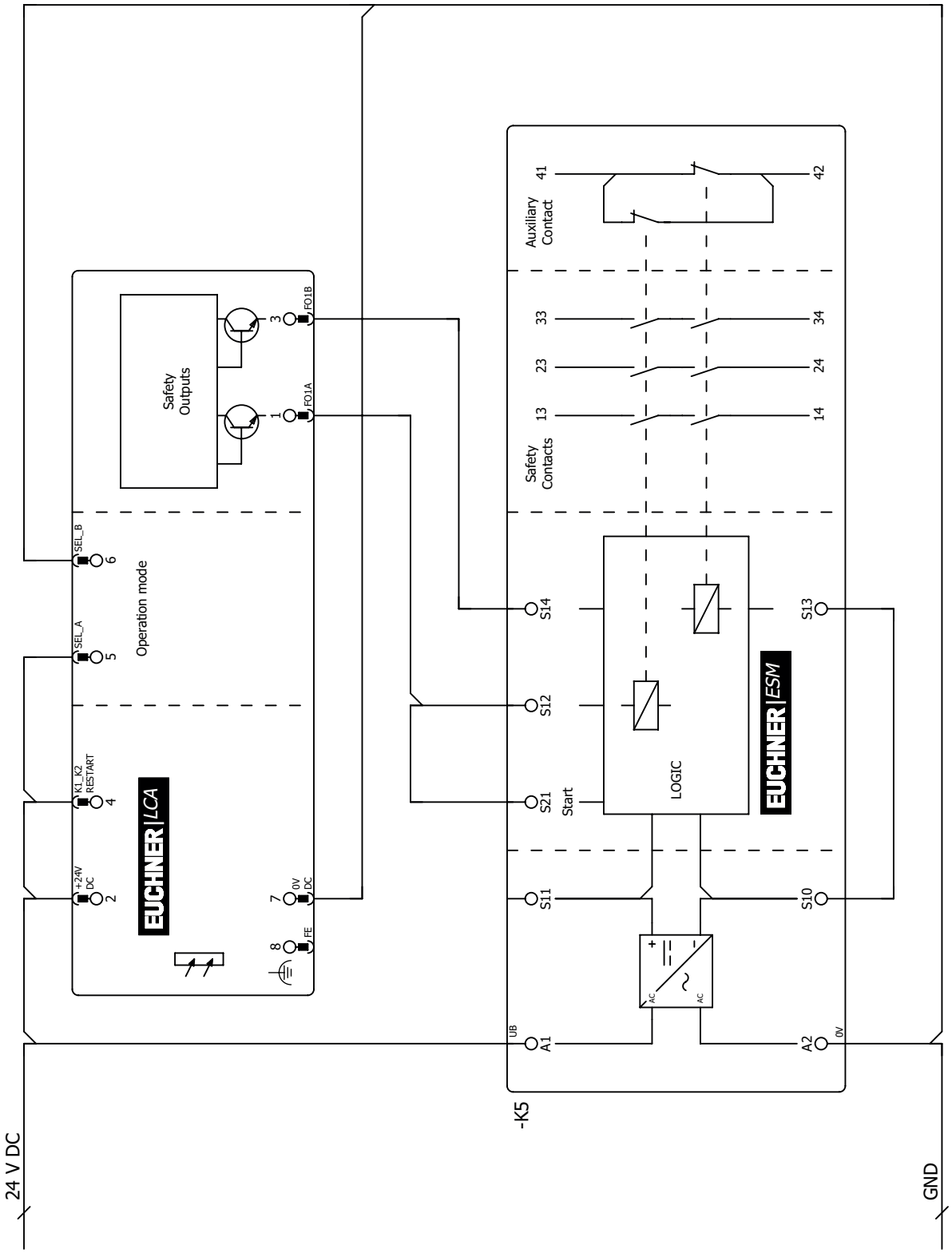

Fig. 24: Receiver ESM connection diagram

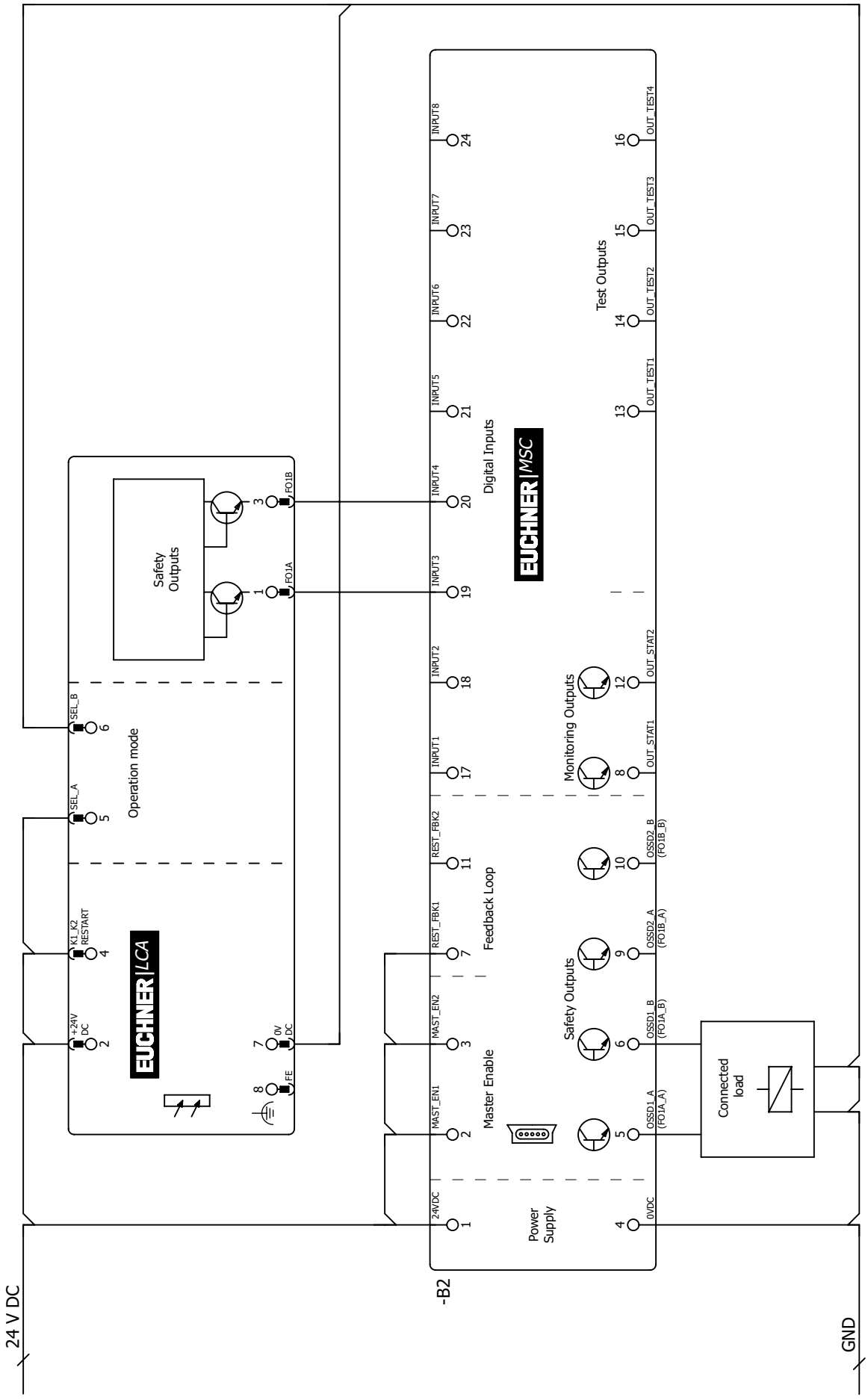

Fig. 25: Receiver MSC connection diagram

EN

10. Diagnostics/troubleshooting

The chapter on LED displays provides information on different system states. Faults can be identified and rectified using the table below.

DANGER

Severe injuries or death due to machine malfunction.

If the fault is not clearly identifiable, it must be reported to the manufacturer.

➡ Immediately stop the machine and contact the manufacturer.

Table 16: Transmitter fault diagnostics

Meaning	Three-color LED (Red/Green/Orange)	Flashing sequence	Solution
Incorrect connection of pins 2 and 4	Red	2 pulses in succession	Check the connections on pins 2 and 4.
Internal fault	Red	3/4 pulses in succession	Contact the manufacturer.
Master and slave not compatible	Red	5 pulses in succession	Check compatibility of the models.
Waiting time for master/slave communication [1]	Orange	Flashing	Check the state of the master. ‣ If it is in the error state, check the error. ‣ If the error persists, send the device to the manufacturer for repair.
Loss of master/slave communication [2]	Orange	2 pulses in succession	Check master/slave connections. Reset the system. ‣ If the error persists, send master and slave to the manufacturer for repair.

Table 17: Normal operation of the receiver

Meaning	LED1 (RED/GREEN)	LED2 (YELLOW/BLUE)	Flashing sequence	Solution
MASTER: Light barrier clear SLAVE: Light barrier(s) occupied	Red	Yellow flashing		Waiting for feedback K1_K2 OK
BREAK_K condition [3]	Yellow flashing	Yellow flashing		Waiting for feedback K1_K2 OK
BREAK_K condition with weak signal reception [3]	OFF	Blue (flashing)	Blue alternating	Waiting for feedback K1_K2 OK
	Yellow	Blue		

Table 18: Receiver fault diagnostics

Meaning	LED1 (RED/GREEN)	LED2 (YELLOW/BLUE)	Flashing sequence	Solution
Configuration incorrect	Red	OFF	2 pulses in succession	Check connections.
Interference due to transmitter	Red	OFF	4 pulses in succession	Find the interfering transmitter and take one of the following actions: ‣ Reduce the range on the interfering transmitter from High to Low ‣ Swap the position of the transmitter and the receiver ‣ Move the interfering transmitter to prevent it from affecting the receiver ‣ Shield the beams coming from the interfering transmitter using matte guards
Error on safety outputs	Red	OFF	5 pulses in succession	Check connections. ‣ If the fault persists, contact the manufacturer.
Internal fault	Red	OFF	6/7 pulses in succession	Contact the manufacturer.
Incorrect master/slave connections [4]	Red	OFF	8 pulses in succession	Check master/slave connections. Otherwise: contact the manufacturer.

1) Flashing sequence only on slave light curtain 2) Flashing sequence only on master and slave light curtain 3) LCA clear – outputs deactivated 4) Flashing sequence only on master and slave 2 light curtain

Always perform a restart if the cause of the error is unclear. In this way, electromagnetic interference can be excluded.

If there are malfunctions:

- The good condition and correctness of the electrical connections must be checked.
- It must be checked whether the supply voltage matches the voltage stated in the technical data.
- It must be checked whether the transmitter and the receiver are correctly aligned and the surfaces on the front are clean.
- It is also recommended to keep the supply for the device away from other high-current devices (electric motors, inverters, frequency converters) or other sources of interference.

11. Technical data

NOTICE

If a data sheet is included with the product, the information on the data sheet applies.

Parameter	LCA 4		Unit
Protective field height	160 – 1,810		mm
Resolutions	14/30/40/50		mm
Number of beams (light grid)	2/3/4 beams		
Usable range (selectable)	Light curtains with 14 mm resolution	0 … 3 (low) / 1 … 6 (high)	m
	Light curtains with 30/40/50 mm resolution and light grids with 2/3/4 beams	0 … 4 (low) / 0 … 12 (high)	
	Light curtains with 30/40/50 mm resolution and light grids with 2/3/4 beams, each with extended range	0 … 10 (low) / 3 … 20 (high)	
Safety outputs FO1A/FO1B	2 semiconductor outputs, p-switching, short circuit-proof		
Reaction time	2.5 – 26.5		ms
Operating voltage	24 ± 20%		V DC
Connection	Plug connector M12 (5-/8-pin)		
Max. connectible length	100 (50 between master and slave)		m
Operating temperature	Light curtains with 14 mm resolution and models with extended range	-20 … 55	°C
	Light curtains with 30/40/50 mm resolution and light grids with 2/3/4 beams	-30 … 55	
Degree of protection	IP65, IP67		
Cross-section dimensions	28 x 30		mm
Max. consumption	1 (transmitter)	2 (receiver)	W
Mission time	20		years
Current consumption and test-pulse length			
Output current per safety output, max. value	400		mA
Test pulse length	< 100		µs
Reliability values acc. to EN ISO 13849-1			
Performance Level	PL e		
Category	4		
ESPE (EN IEC 61496-1/EN IEC 61496-2)	Type 4		
PFH	See following tables for values		

Explanation of the abbreviations:

- t_{tot} Total reaction time
- **Nrslave1** Number of beams, slave1
- **Nrslave2** Number of beams, slave2
- **Nrmaster** Number of beams, master

Table 19: LCA-4TR-14-...

Models with resolution 14 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	15	30	45	60	75	90	105	120	135	150	165	180
Reaction time [ms]	4	5.5	7.5	9	11	13	14.5	16.5	18	20	22	23.5
Reaction time [ms]												
- Master + 1 slave	t_{tot} = [0.06 x (Nrslave1 + Nrmaster) + 0.9636] x 2											
- Master + 2 slaves	t_{tot} = [0,06 x (Nrslave1 + Nrslave2 + Nrmaster) + 1.0036] x 2											
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	1.11E-08	1.24E-08	1.38E-08	1.51E-08	1.65E-08	1.78E-08	1.91E-08	2.04E-08	2.18E-08	2.31E-08	2.45E-08	2.57E-08

Table 20: LCA-4TR-30-...

Models with resolution 30 mm	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	8	13	16	23	31	38	46	53	61	68	76	83	91
Reaction time [ms]	4	5	5.5	7.5	9	10.5	12.5	14	15.5	17	19	20.5	22
Reaction time [ms]													
- Master + 1 slave	t_{tot} = [0.11 x (Nrslave1 + Nrmaster) + 0.9376] x 2												
- Master + 2 slaves	t_{tot} = [0,11 x (Nrslave1 + Nrslave2 + Nrmaster) + 1.0508] x 2												
Protective field height [mm]	160	260	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	8.39E-09	9.37E-09	9.52E-09	1.08E-08	1.19E-08	1.32E-08	1.43E-08	1.56E-08	1.67E-08	1.80E-08	1.91E-08	2.04E-08	2.15E-08

Table 21: LCA-4TR-40-...

Models with resolution 40 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	6	11	16	21	26	31	36	41	46	51	56	61
Reaction time [ms]	3.5	4.5	5.5	7	8	9	10	11	12.5	13.5	14.5	15.5
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	8.14E-09	9.07E-09	9.89E-09	1.08E-08	1.16E-08	1.26E-08	1.34E-08	1.43E-08	1.52E-08	1.61E-08	1.69E-08	1.79E-08

Table 22: LCA-4TR-50-...

Models with resolution 50 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	8	12	16	20	24	28	32	36	40	44	48
Reaction time [ms]	3	4	4.5	5.5	6.5	7.5	8.5	9	10	11	12	13
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	7.83E-09	8.46E-09	9.15E-09	9.78E-09	1.05E-08	1.11E-08	1.18E-08	1.24E-08	1.31E-08	1.37E-08	1.44E-08	1.51E-08

Table 23: LCA-4TR-.B-...

Light grid models	2B-510	3B-810	4B-910
Number of beams	2	3	4
Beam spacing [mm]	500	400	300
Reaction time [ms]	2.5	3	3
PFH	8.19E-09	8.85E-09	9.51E-09

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Table 24: LCA-4TR-30-...

Models with increased range, resolution 30 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	8	16	23	31	38	46	53	61	68	76	83	91
Reaction time [ms]	3	4	5	6	6.5	7.5	8.5	9.5	10	11	12	13
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	1.05E-08	1.11E-08	1.19E-08	1.25E-08	1.33E-08	1.39E-08	1.46E-08	1.53E-08	1.60E-08	1.67E-08	1.74E-08	1.80E-08

Table 25: LCA-4TR-40-...

Models with increased range, resolution 40 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	6	11	16	21	26	31	36	41	46	51	56	61
Reaction time [ms]	3	3.5	4	4.5	5	6	6.5	7	7.5	8	8.5	9.5
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	1.04E-08	1.10E-08	1.15E-08	1.20E-08	1.25E-08	1.30E-08	1.35E-08	1.41E-08	1.45E-08	1.51E-08	1.55E-08	1.61E-08

Table 26: LCA-4TR-50-...

Models with increased range, resolution 50 mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	4	8	12	16	20	24	28	32	36	40	44	48
Reaction time [ms]	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7	8
Protective field height [mm]	160	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
PFH	1.04E-08	1.10E-08	1.15E-08	1.20E-08	1.25E-08	1.30E-08	1.35E-08	1.41E-08	1.45E-08	1.51E-08	1.55E-08	1.61E-08

Table 27: LCA-4TR-.B-...

Light grid models with increased range	2B-510	3B-810	4B-910
Number of beams	2	3	4
Beam spacing [mm]	500	400	300
Reaction time [ms]	2.5	2.5	2.5
PFH	1.10E-08	1.15E-08	1.21E-08

11.1. Dimension drawings

LCA 4-TR – LCA 4-TR slave
(transmitter – receiver)

LCA 4-TR master – LCA 4-TR slave 2
(transmitter – receiver)

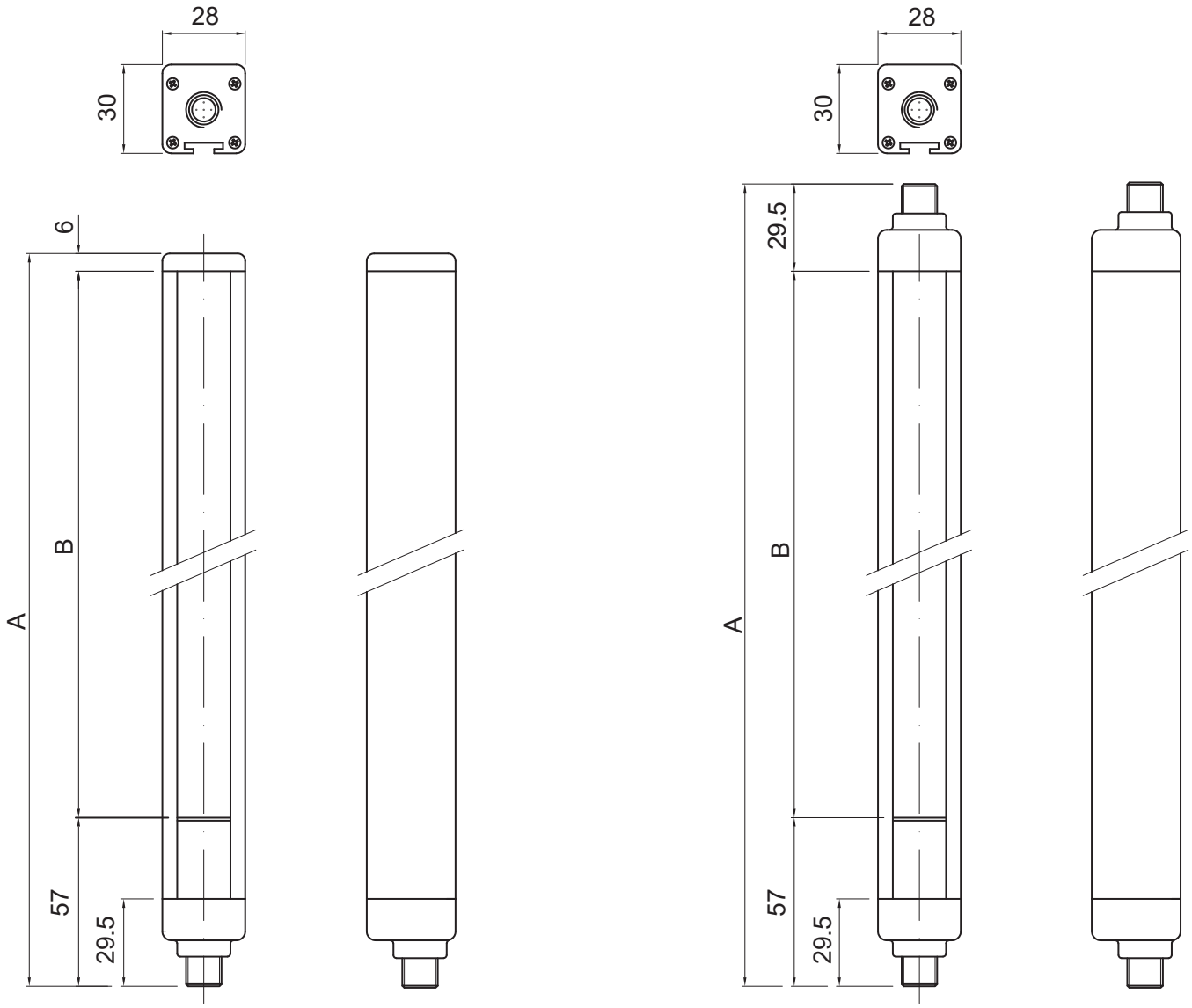

Fig. 26: Transmitter and receiver

Table 28: Dimensions of transmitter and receiver

Height	Model												
	160	260	310	460	610	760	910	1060	1210	1360	1510	1660	1810
A (standard/slave)	213	313	363	513	663	813	963	1,113	1,263	1,413	1,563	1,713	1,863
A (master/slave2)	236.5	336.5	386.5	536.5	686.5	836.5	986.5	1,136.5	1,286.5	1,436.5	1,586.5	1,736.5	1,886.5
B*	150	250	300	450	600	750	900	1,050	1,200	1,350	1,500	1,650	1,800
Mounting	2 holders TYPE LE with 2 inserts								3 holders TYPE LE with 3 inserts				

B* = Distance from label to protective cap

Table 29: Dimension of transmitter and receiver models LCA 4 2B, LCA 4 3B and LCA 4 4B

Height	Model		
	2B	3B	4B
A (standard/slave)	653	953	1,053
A (master/slave2)	677.5	977.5	1,077.5
B	590	890	990
Mounting	2 holders TYPE LE with 2 inserts		

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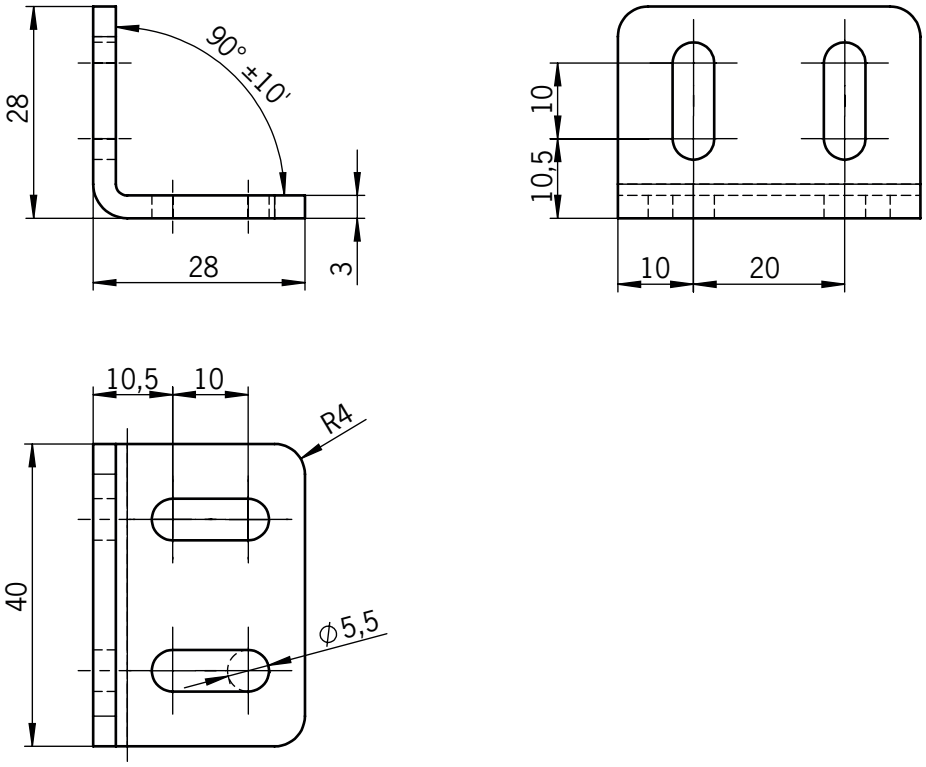

Fig. 27: Fastening bracket

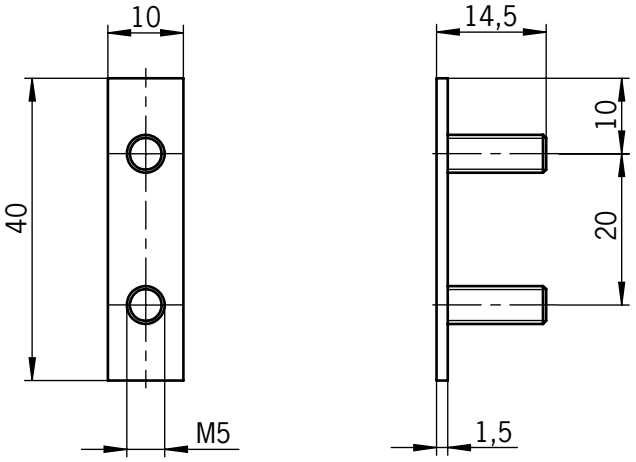

Fig. 28: Mounting plate

12. Ordering information and accessories

Tip

Suitable accessories, e.g. cables or assembly material, can be found at www.euchner.com. To order, enter the order number of your item in the search box and open the item view. Accessories that can be combined with the item are listed in “Accessories.”

13. Inspection and service

13.1. Function test

Important!

Function tests should be performed at certain intervals (e.g. daily). Pay attention to the results of the risk analysis here.

The function test is performed using an appropriate test object.

NOTICE

The test object must be suitable for the resolution of the device.

1. Move the test object into the protected area from above.
2. Observe the red LED on the receiver unit. This LED must illuminate red continuously after the initial interruption. The state of the LED is not allowed to change during the check.
3. Move the test object through the protective field. Follow the dashed line in the graphic.
4. After a successful test, return your system to normal operation.

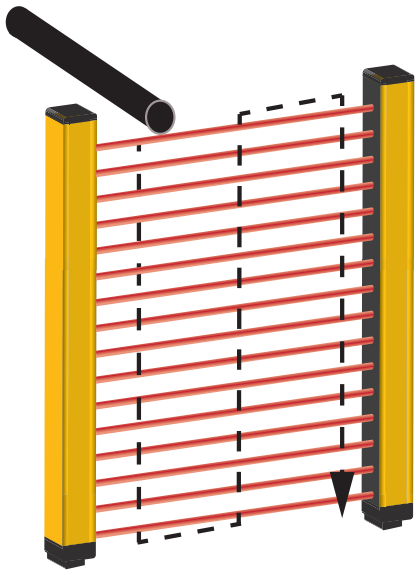

Fig. 29: Checking the protective function

13.2. Cleaning

Regular cleaning of the optical surfaces is recommended. The interval is dependent on the ambient conditions and the degree of contamination at the place of use.

Cleaning must be performed using a clean, damp cloth.

Important!

Do not use any abrasive or caustic products, e.g. solvent or alcohol. These could damage the optical surfaces.

Also avoid woolen cloths to prevent electrostatic charging of the surface.

➡ Ambient conditions with abrasive dust require careful cleaning of the system.

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NOTICE

Damage to the plastic surfaces on the front could increase the scattering angle. The safety function is then no longer ensured. As a consequence, the distances of reflective surfaces from the transmitter and the receiver may need to be recalculated.

13.3. Maintenance

The system does not require any specific maintenance.

Repairs to the device are only allowed to be made by the manufacturer.

Important!

If there is a malfunction that cannot be identified, the machine must be stopped and EUCHNER customer service contacted. See chapter: EUCHNER Support.

For prompt diagnostics and troubleshooting, please state data items 1– 7 with your inquiry.

The following data can be found on the type label:

1. Order number (six-digit number)
2. Designation
3. Firmware version (V X.X.X)

Also state the following data:

4. Date of purchase
5. Operating time
6. Type of use
7. Fault found

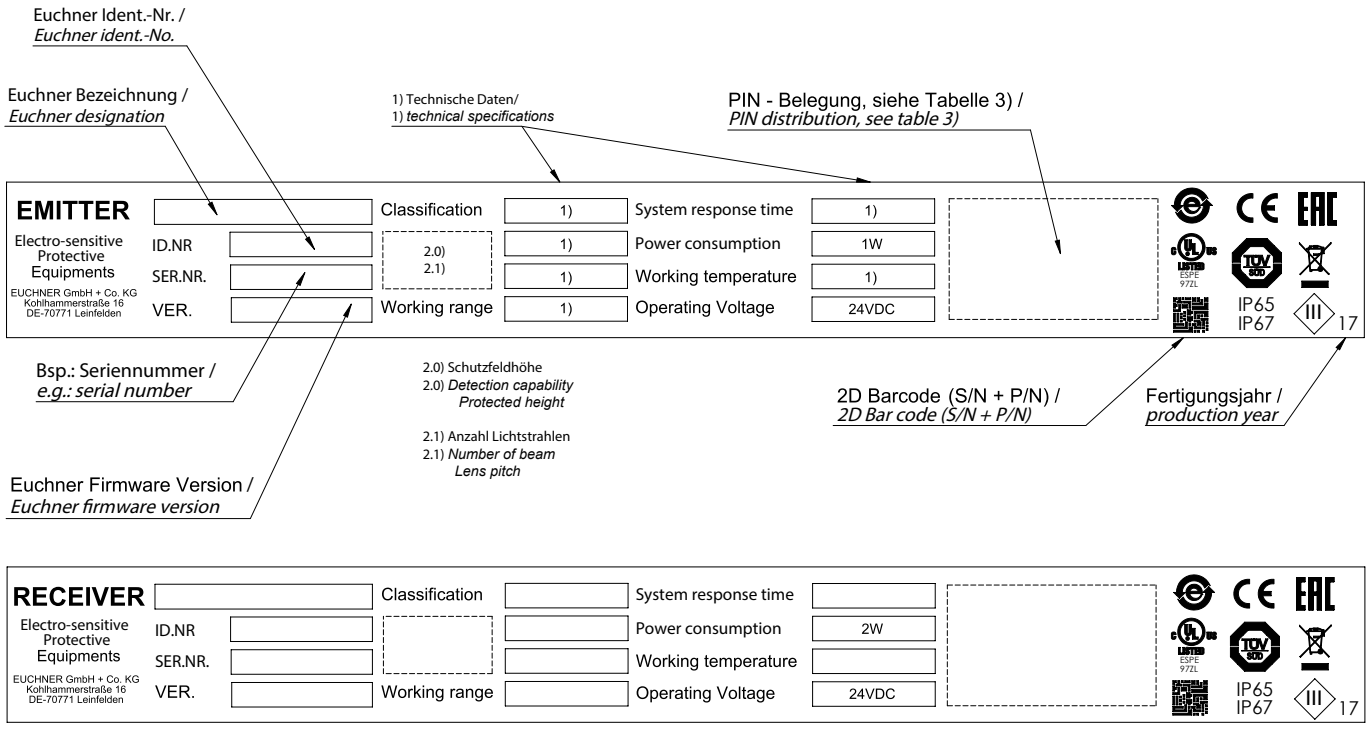

Fig. 30: Type label LCA

14. EUCHNER Support

If support is required, please contact:

EUCHNER GmbH + Co. KG
Kohlhammerstraße 16
70771 Leinfelden-Echterdingen

Support telephone:

+49 711 7597-500

E-mail:

support@euchner.de

Internet:

www.euchner.com

15. Declaration of conformity

The product complies with the requirements according to

- Machinery Directive 2006/42/EC (until January 19, 2027)
- Machinery Regulation (EU) 2023/1230 (from January 20, 2027)

The EU declaration of conformity can be found at www.euchner.com. Enter the order number of your device in the search box. The document is available under *Downloads*.

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