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SAFEREADY

8541716 - Rev.0 - 27/02/26

Original instructions

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General

Disclaimer

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Introduction

Dear customer, ReeR congratulates you on purchasing this product. Refer to this manual before using **SafeReady**; keep this manual (printed or PDF) and the Quick Installation Guide in an accessible place for future consulting when necessary.

Purpose of this document

This manual explains the operation of the programmable safety light curtain with integrated functions, detailing specifically:

General description of the **SafeReady** world
Characteristics of the blanking features
List of **SafeReady** models
Mechanical installation
Electrical connections
Modes of operation
SafeReady programming through dedicated software

Product description

SafeReady is an electrosensitive protective equipment (ESPE) type 4 as specified in the standard IEC 61496-1. Every light curtain is composed of an Emitter Unit and a Receiver Unit. The Emitting and Receiver Units face one another and a protective field is generated between them. Several infrared emitting diodes are arranged in the emitting unit, while a corresponding number of photodiodes is arranged in the Receiver Unit.
A special coded light pulse sequence is sent by the first emitting diode to the first receiving photodiode, to synchronize the scanning of the protective field. When a diode is activated, it sends a light pulse sequence (code); the Receiver unit analyses that the light pulses are detected by the corresponding photodiode at the correct time and that the code is correct, finally energizing or de-energizing the solid state OSSD's depending on the results of such analysis.

The main features of SafeReady are:
Basic models: automatic restart
Standard models: start/restart interlock and EDM
Plus models: totally programmable via SafeApp
Integration of the main safety functions, including self-monitoring of static outputs and Beam coding
Outline dimensions: 28 x 33 mm
Detection zone: 150 to 2200 mm
Degree of protection: IP65/IP67
Operating temperature: -30 > +55 °C (no condensation, max altitude 2000m)
Top cover transparent cap with RGB LED to show the light curtain status indication

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List of the acronyms

In the next pages, the following acronyms are adopted:

BLE	Bluetooth® Low Energy
LLO	Logic level low
LL1	Logic level high
SIL	Safety Integrity Level
PL	Performance Level
MTTFd	Mean Time to Dangerous Failure
PFHd	Probability of a dangerous failure per Hour
DC	Diagnostic coverage
SFF	Safe failure fraction
OSSD	Output Signal Switching Device
PSDI	Presence Sensing Device Initiation

Mechanical Specifications

The **SafeReady** curtain has both the Emitter and Receiver columns constructed from an extruded aluminum profile, painted yellow, with a cross-sectional dimension of 28x33 mm. The length of these profiles varies according to the model's height specifications. The profile is designed in a U-shape, featuring an optical window composed of dark gray semi-transparent Polycarbonate, which is transparent to infrared (IR) light. This allows visibility of the signaling LEDs and display lights through the window.

The ends of the columns are sealed with end caps engineered to withstand exposure to industrial environments, including resistance to oils, solvents, and other harsh substances. These end caps also facilitate field connections, utilizing standard pigtail with M12 connectors for both the Emitter and Receiver units.

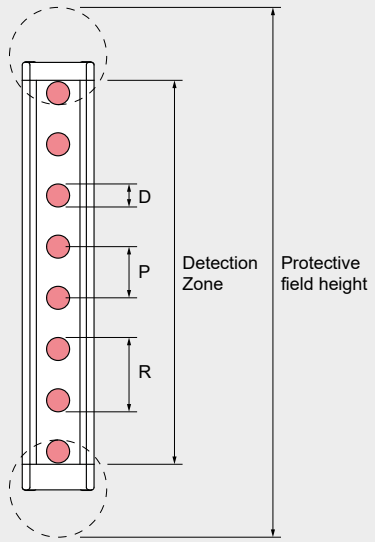
The Receiver is equipped with a transparent cap, used as a display, this is an RGB LED. Mounting of the columns is accomplished via brackets, which can be inserted into a back slot or two side slots on the profile, providing flexible installation options. The columns are rated to IP65 and IP67, ensuring protection against dust ingress and low-pressure water jets from any direction.

Available beam resolutions for the safety light curtain include:
14 / 20 / 30 / 40 / 50 / 90 mm and **2, 3 and 4 beams.**

Principle of operation

If the protected area is clear, the two outputs on the Receiver are active and enable the machine to which they are connected to operate normally. Each time that an object bigger than or equal in size to the resolution of the system intercepts the optical path of one or more beams, the Receiver deactivates its own outputs.

Resolution is the smallest sized object that, passing through the protected area, interrupts at least one of the beams generated by the light curtain (Figure 1), causing certain intervention of the device and consequent stopping of the hazardous movement of the machine.



P = Pitch between two lenses
D = Diameter of a lens
R = Resolution = P+D

Resolution remains constant regardless of working conditions as it depends only on the geometric characteristics of the optics and on the centre distance between two adjacent lenses.

The height of the protective field height is the effective height protected by the safety light curtain. If the curtain is positioned horizontally, this value indicates the depth of the protected area. The working range is the maximum separation distance between the emitter and receiver columns while keeping operation as intended. Some features may vary based on the features selected.

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SafeReady features

The table below lists all the features of the light curtain, indicating their availability in each model and providing references to the corresponding sections in the manual.

The factory-new PLUS models are, by default, functioning as STANDARD models (requiring wiring). After Bluetooth® connection and programming, they become PLUS models.

If the user deletes the configuration and disconnects the light curtain, it reverts to STANDARD (requiring wiring).

Function	Basic	Standard	Plus
Beam coding			
Automatic Restart			
Start / Restart interlock			
EDM Monitoring			
Pre-Reset			
Bluetooth® Configuration			
Blanking Enable			
Fixed blanking			
Floating blanking			
Mixed blanking			
Reduced Resolution			
Configurable Response Time			

Legenda

	**Wired configuration** Device configurable via wiring intervention
	**App configuration** Device configurable via **SafeApp**

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Safety

Simbology

	This symbol indicates an important warning for personal safety. Failure to comply with this warning may result in moderate level risk for exposed personnel.
	This symbol indicates a warning for personal safety. Failure to comply with this warning may result in high level risk for exposed personnel.
	This symbol indicates an important warning for the proper operation of the curtain.

Precautions

The operations indicated in this document must only be carried out by qualified personnel. Such personnel must have the necessary requirements to be able to operate on the electronic equipment to be installed in order to avoid any risky situation. ReeR declines any liability for malfunctioning of equipment installed by unqualified staff.

	This equipment operates in non-harmonized frequency bands and/or may be subject to licensing conditions in the country of use.
	Any use other than those indicated in this manual may be considered as potentially dangerous for the installer and the machine operator.
	For safety reasons, please contact your country's safety authorities or the relevant industry association if necessary.
	For applications in the food industry, consult the manufacturer to verify compatibility between curtain materials and chemical agents used.
	The protective function of optoelectronic safety devices is not effective in cases where: - The machine stopping device cannot be actuated electrically and it is not possible to stop all dangerous machine movements immediately and at any time during the operating cycle. - The hazardous condition is associated with the falling of objects from above or ejection of these from the machine. - Anomalous forms of light radiation are present (for example, use of cablelless control devices on cranes, radiation from weld spatter, etc). In this case additional measures may be necessary to ensure that the ESPE does not fail to danger.
	Any use other than those indicated in this manual may be considered as potentially dangerous for the installer and the machine operator.
	ReeR S.p.A. therefore, declines any liability in case of non-respect, even partial, of these indications.

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⚠	Keep the packaging material (plastic bags, polystyrene parts, small pieces, etc.) out of the reach of children. There is a danger of swallowing and suffocation.
	Read the instructions for use and safety warnings carefully before using this appliance.
	Failure to follow the instructions for use and safety warnings can lead to the danger of electric shock, fire and / or serious injury.
	Keep the instructions for use and safety warnings for future reference and attach them to the device if delivered to third parties.
	The appliance must be used only for the purpose for which it is intended.
	The manufacturer declines all responsibility for injuries to people or animals or damage to property due to failure to comply with the instructions for use and safety warnings.
	Connect the appliance only to a suitable power outlet, with a voltage corresponding to that indicated on the appliance rating plate.
	Do not use the cable for purposes other than those envisaged, such as for example transporting or hanging the appliance. Do not bring the cable close to hot sources, oil, sharp edges and moving parts.
	Do not tamper with or modify the power cord or other components of the appliance.
	Do not open the appliance and do not insert any object into the openings of the appliance.
	Do not use the appliance in case of damage or abnormal functioning. Switch off the power supply. Contact an authorized service center, so that the device is examined, repaired or regulated.
	Have repairs carried out at authorized service centers and use original spare parts and accessories.
	Store the appliance away from rain or moisture. Penetrating liquids into an electrical appliance can result in the risk of electric shock, fire and / or serious injury.
	Do not install or use the product near water or being not perfectly dry.
	Install the product on a stable surface, so that it is firm and safe.

⚠	Periodic cleaning of the frontal protection surfaces of the two devices is recommended. Cleaning should be carried out with a damp cloth; in particularly dusty environments, after cleaning the front surface, it is advisable to spray it with an anti-static product.

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Cautions before installation

Before installing the **SafeReady** Safety System, verify all of the conditions listed below:

⚠	The protection level (Type4, SIL3, maximum SIL3, PLe) of the **SafeReady** system must be compatible with the danger level of the system to be controlled.
	The safety system should only be used as a stop device and not as a device for controlling the machine.
	The machine control must be electrically actuated.
	It must be possible to immediately stop any dangerous operation of the machine. In particular, the machine stopping times must be known and, if necessary, measured.
	The machine must not generate hazardous situations due to projection or fall of materials from above; otherwise it is necessary to provide additional mechanical protections.
	The minimum size of any object to be intercepted must be greater than or equal to the resolution of the selected model.
	The knowledge of the shape and size of the hazardous area allows an estimation of the width and the height of its access area: compare these dimensions with the maximum working range and the height of the area guarded by the model used.

⚠	Before placing the safety device, it is important to consider the following general guidelines: - Verify that the temperature of the environment where the system is installed is compatible with the temperature operating parameters indicated on the product label and in the technical data. - Avoid positioning the Emitter and Receiver near intense or flashing high-intensity light sources.
	Specific environmental conditions may affect the level of detection of photoelectric devices.
	In environments where fog, rain, smoke or dust may be present, it is advisable to use suitable Fc correction factors at the maximum useful values of the working range to ensure the correct operation of the equipment. In these cases: $Pu = Pm \times Fc$ where Pu and Pm are respectively the working range and maximum range in metres. Recommended Fc factors are shown in the following table:

	Environmental condition	Correction factor (Fc)
⚠	Fog	0,25
	Steam	0,50
	Powders	0,50
	Dense smoke	0,25
	If the device is placed in environments subject to sudden temperature fluctuations, it is imperative to take the appropriate steps to avoid condensation on the lenses, which may impair the detection capability.	

List of Applicable Standards

Safeready products are in compliance with the following standards:
2006/42/EC “Machinery Directive”
2011/65/EU “RoHS - Guideline”
2014/30/EU “Electromagnetic Compatibility Directive”

Safety level	Standard	Description
Type 4	EN IEC 61496-1:2020	Safety of machinery, part 1: General requirements and tests.
	EN IEC 61496-2:2020	Safety of machinery, part 2: Particular requirements for equipments using active opto-electronic protective devices.
PL e Cat. 4	EN ISO 13849-1:2023	Safety of machinery: Safety related parts of control systems. General principles for design.

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SIL 3	EN 61508-1:2010	Functional safety of electrical/electronic/ programmable electronic safety-related systems: General requirements.
	EN 61508-2:2010	Functional safety of electrical/electronic/ programmable electronic safety-related systems: Requirements for electrical / electronic / programmable electronic safety-related systems.
	EN 61508-3:2010	Functional safety of electrical/electronic/ programmable electronic safety-related systems - Part 3: Software requirements.
	EN 61508-4: 2010	Functional safety of electrical/electronic/ programmable electronic safety-related systems - Part 4: Definitions and abbreviations
Maximum SIL 3	EN IEC 62061:2021	Safety of machinery - Functional safety of safety-related control systems
Positioning of safeguards	EN ISO 13855:2024	Safety of machinery – Positioning of safeguards with respect to the appro-ach of the human body
RED	2014/53/UE	Radio Equipment Directive

UKCA declaration of conformity

ReeR declares that **SafeReady** photoelectric safety barriers complies with following UK legislation:

S.I. 2008 No. 1597
The Supply of Machinery (Safety) Regulations

S.I. 2016 No. 1101
Electrical Equipment (Safety) Regulations

S.I. 2016 No. 1091
Electromagnetic Compatibility Regulations

S.I. 2012 No. 3032
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

S.I. 2023 No. 1007
The Product Security and Telecommunications Infrastructure (Security Requirements for Relevant Connectable Products) Regulations 2023

S.I. 2017 No. 1206
The Radio Equipment Regulations 2017

To download the complete UKCA Declaration of Conformity:
https://www.reersafety.com/certifications/

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CE declaration of conformity

REER

CE

Dichiarazione CE di conformità
EC declaration of conformity

Torino, 24/02/2026

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Italy

dichiara che le barriere fotoelettriche **SafeReady** sono Dispositivi Elettrosensibili di Sicurezza (ESPE) di :
- **Tipo 4** *(secondo la Norma **EN IEC 61496-1:2020; EN IEC 61496-2:2020)***
- **SIL 3** *(secondo la Norma **EN 61508-1:2010; EN 61508-2:2010; EN 61508-3:2010)***
- **Maximum SIL 3** *(secondo la Norma **EN IEC 62061:2021)***
- **Cat.4 - PL e** *(secondo la Norma **EN ISO 13849-1:2023)***

declares that the **SafeReady** photoelectric safety barriers are :
- **Type 4** *(according the Standard **EN IEC 61496-1:2020; EN IEC 61496-2:2020)***
- **SIL 3** *(according the Standard **EN 61508-1:2010; EN 61508-2:2010; EN 61508-3:2010)***
- **Maximum SIL 3** *(according the Standard **EN IEC 62061:2021)***
- **Cat.4 - PL e** *(according the Standard **EN ISO 13849-1:2023)***

Electro-sensitive Protective Equipments (ESPE)

realizzati in conformità alle seguenti Direttive Europee:
complying with the following European Directives:

- **2006/42/EC** "Direttiva Macchine"
  "Machine Directive"
- **2011/65/EU** "RoHS – Linea Guida"
  "RoHS – Guideline"
- **2014/30/EU** "Direttiva Compatibilità Elettromagnetica"
  "Electromagnetic Compatibility Directive"
- **2014/53/UE** "Direttiva sulle apparecchiature radio"
  "Radio Equipment Directive"

e alle seguenti Norme: */and to the following Standards*:

- **EN ISO 13855: 2024**
- **EN 55032:2015 + A1:2020**
- **FCC CFR 47 Part 15C**

e sono identiche all'esemplare esaminato ed approvato con esame di tipo CE da:
and are identical to the specimen examined and approved with a CE - type approval by:

TÜV SÜD Product Service GmbH – Zertifizierstelle – Ridlerstraße 65 – 80339 – München – Germany
N.B. number: 0123 – Certificates: Z10 024820 0091 Rev. 00 / M6A 024820 0092 Rev. 00

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Amministratore Delegato
Managing Director

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Materials disposal

For Countries in the European Union:

Pursuant to the Directive no. 2012/19/EU on waste electrical and electronic equipment (WEEE). The crossed out wheelie-bin symbol on the equipment or its packaging means that when the product reaches the end of its useful life it must be collected separately from other waste. Proper separate collection of the discarded equipment for later environment-friendly recycling, processing and disposal, helps to avoid any negative impact on the environment and health and encourages re-use and recycling of the materials the equipment is made of.
In each individual Member State of the European Union this product is required to be disposed of in accordance with Directive 2012/19/EU as implemented in the Member State where the product is disposed of. For further information please contact REER or your local dealer.

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Installation

Positioning safeguards

The effectiveness of protection heavily depends on correct positioning of the light curtain with respect to the hazard. The light curtain must be positioned at a distance greater than or equal to the minimum safety distance **S** so that reaching the hazard can only be possible after the dangerous operation of the machine has stopped.
The positioning shall be such that:

	Reaching the hazard is not possible without crossing the detection zone of the light curtain.
	No person or part of a person is allowed in the dangerous area wihout being detected. Otherwise, additional presence sensing devices (e.g. horizontal light curtains) may be required.
	The standard EN ISO 13855: 2024 provides the elements for the determination of the safety distance. If for the machine under consideration a Type C standard is available, reference should be made to this document. If the calculated separation distance **S** appears to be excessive, it may be necessary to: -either reduce the total response time of the machine - or improve the effective detection capability of the light curtain, - or both the above measures

Separation distance

General formula for calculating the safety distance (EN ISO 13855)

	Failure to comply with the separation distance reduces or impairs the protection function of the light curtain. **EN ISO 13855** can not be applied to: - Manually moved safeguards like pendant controls - Hazards from emissions, material ejection, or mechanical failure - Safeguards solely used for presence sensing functions If positioning of the light curtain does not prevent the operator from accessing the dangerous zone without being detected, additional mechanical guards must be installed.
	Any modification to the effective detection capability of the light curtain, made for example by means of a configuration tool, must be taken into account when calculating the required separation distance.

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$S = (K \times T) + D_{DS} + Z$

S	Minimum separation distance between the detection zone and the nearest hazard expressed in mm.
K	Approach speed of the body or parts of the body, expressed in mm/s . Assume the following values for **K**: **K** = 2000 mm/s where hand and arm movements is involved **K** = 1600 mm/s for walking movements
T	**T** = Overall system response time, in seconds, to achieve the intended risk reduction. It Includes the Safeready response time, the control logic response time, the machine response time to stop the hazardous operation, any tolerance factors.
DDS	Reaching distance factor: amount of penetration of the human body through a protection without being detected. Depends on the light curtain effective detection capability, on the location of the detection zone and how the hazard zone is reached.
Z	Application dependent supplementary distance expressed in mm. For Safeready Z=0 for most of the applications.

If it is foreseeable that the current position of the hazard may change in its position during the Overall response time T of the machine, an additional parameter SM (Dynamic separation distance) is added to the formula.

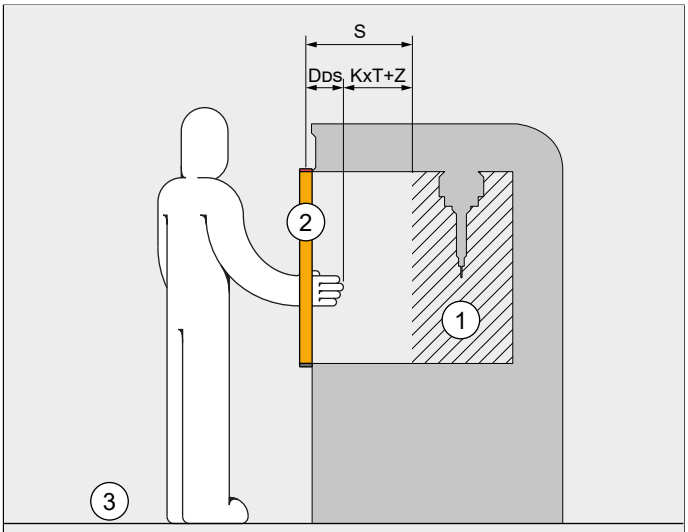
$S = (K \times T) + D_{DS} + SM + Z$ *

Examples for the determination of the separation distance

⚠	The following figures are intended only to show examples for the determination and calculation of separation distance in some representative cases. The figures have been simplified for clarity and are therefore not complete.
→	There are three different directions of approach to the hazard considered in EN ISO 13855: 2024: - Reaching through the detection zone (D_{DT}) - Reacing over the detection zone (D_{DO}) - Reacing under the detection zone (D_{DU}) If it is foreseen that the hazard can be reached from more than one of the three directions the largest value shall be applied: **D_{DS} = max (D_{DO}, D_{DT}, D_{DU}) ***

CASE 01

Detection of fingers/hands



Effective detection capability de:14 / 20 / 30 / 40 [mm] *	
Calculating the minimum safety distance (S)	**Notes**
S = K x T + D_{DT} + Z D_{DT} = 8 x (de - 14) Z = 0 S = 2000xT + 8 x (de - 14) but not less then mm	de=light curtain effective detection capability If S > 500 mm it's possible to use: K=1600 S = 1600xT + 8x(de-14) *but not less then 500mm*
1.Dangerous point **2**.Protected plane **3**.Reference plane	

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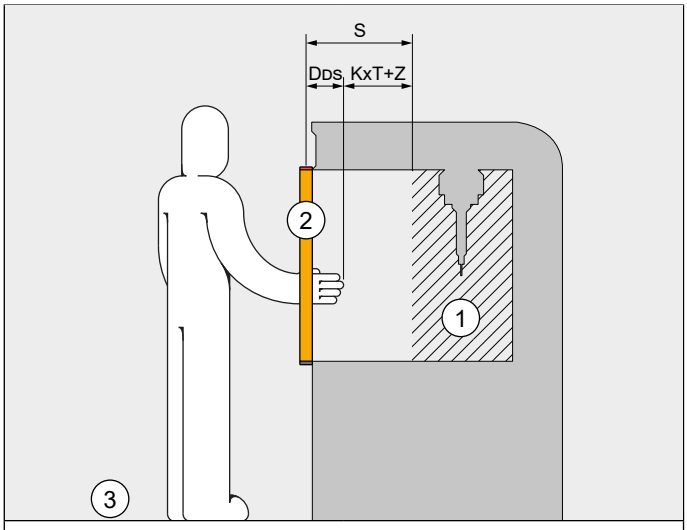
*** For further information on application dependent separation distance Z, refer to standard EN ISO 13855: 2024.**

EXAMPLE 02

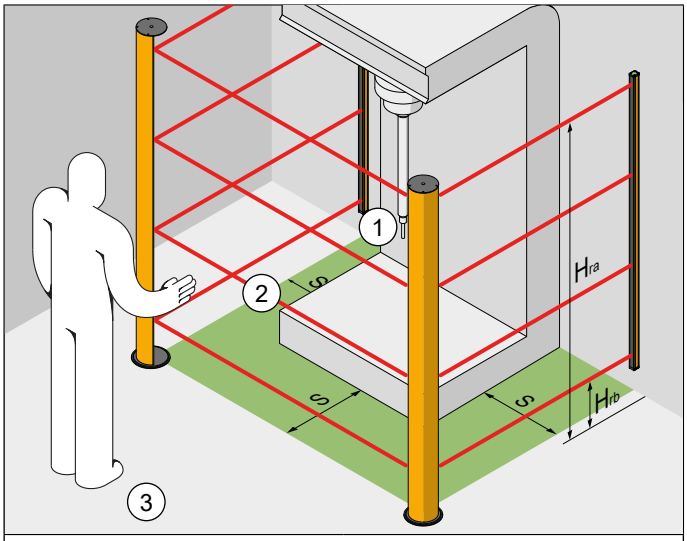
Arms detection.



Effective detection capability 50 [mm] *	
Calculating the minimum safety distance (S)	**Parameters**
S = K x T + DDT + Z DDT= 12 de - 272 Z= 0 S = 2000 xT + 328	K = 1600 T = t1 + t2 C = 850 If the calculated S exceedes 500 mm, it's possible to use K=1600. S = 1600xT + 328 *But not less then 500 mm*
1.Dangerous point **2**.Protected plane **3**.Reference plane	

EXAMPLE 03

Access control in dangerous area.



Effective detection capability 2 / 3 / 4 beams *	
Calculating the minimum safety distance (S)	**Beams height from reference plane**
S = K x T + DDT + Z S = 1600xT + 850	**2 beams** light grid: BEAM 1: 200mm BEAM 2: 400mm **3 beams** light grid: BEAM 1: 200mm BEAM 2: 600mm BEAM 3: 1000mm **4 beams** light grid: BEAM 1: 200mm BEAM 2: 500mm BEAM 3: 800mm BEAM 4: 1100mm
1.Dangerous point **2**.Protected plane **3**.Reference plane	

*** For further information on additional safety distance, refer to standard EN ISO 13855**

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Mutual Interference

Mutual interference refers to the risk that multiple safety light curtains placed in close proximity may interfere with each other's operation, potentially affecting their performance. This type of interference can lead to false alarms or missed detections, thus compromising the safety function.

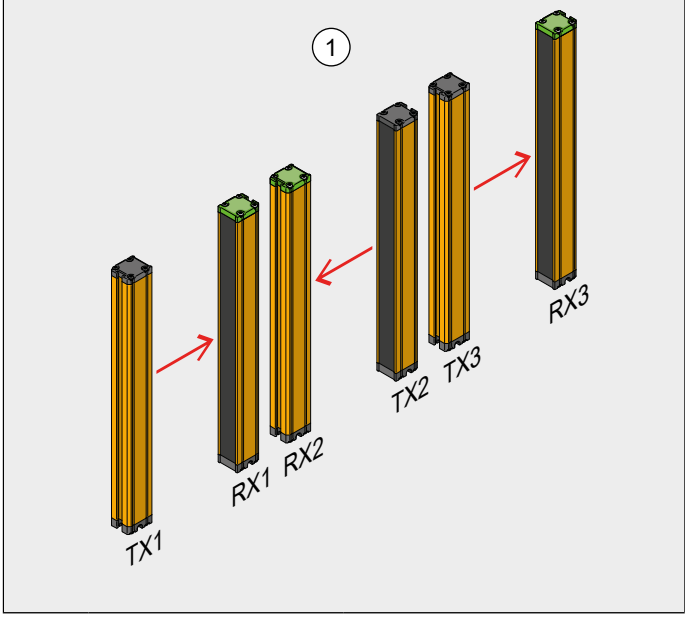
	SafeReady light curtain uses scan codes (Code A and Code B) to manage mutual interference. Each scan code represents a specific modulation pattern and timing sequence used to encode the infrared beams.
	This discrimination allows the system to distinguish between beams from its own Emitter and those of nearby emitters.
	Safety light curtain's receiver will respond only to beams modulated with its corresponding scan code. For example, a Receiver set to Code A will ignore beams modulated with Code B, and vice versa. **SafeReady** curtain can also detect mutual interference with the same scan code. In such cases, the system automatically enters in a fault state to ensure safety.

Multiple Systems

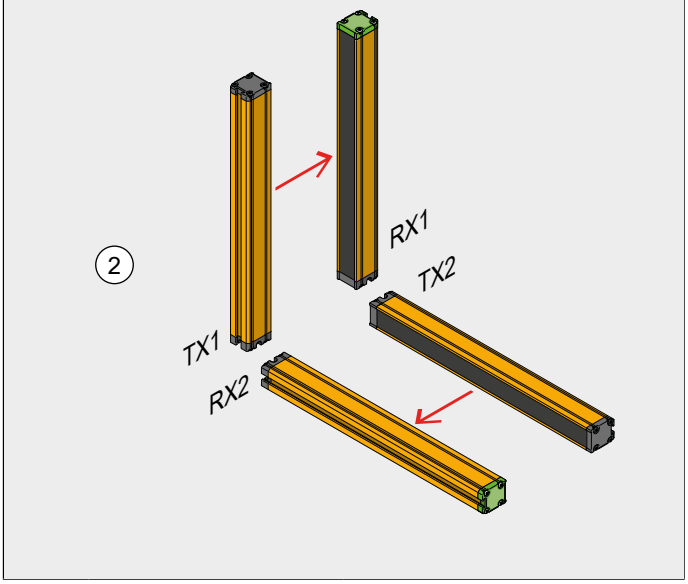
When installing three or more **SafeReady** systems, it is essential to prevent optical interference between them. Ensure the systems are configured so that each Emitter's beam is exclusively detected by its corresponding Receiver. The following figure shows some examples of correct positioning between the photoelectric systems.

	An incorrect positioning may cause interference, leading to an abnormal operation.

1	**Side-by-side system**	Adjacent positioning of two emitters



2	**Overlapping system**	"L" combination



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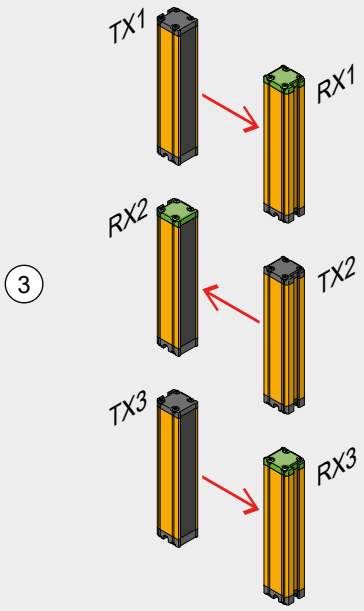
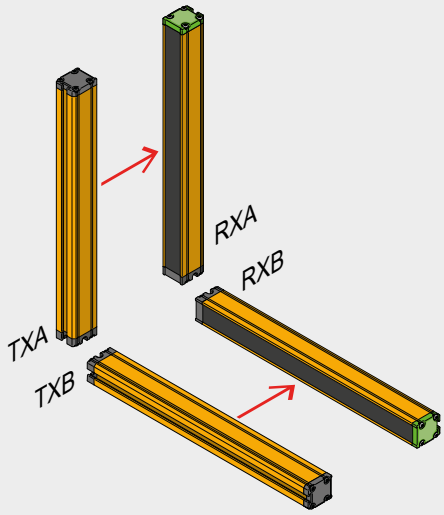
3	**Cross-positioning**	Alternate positioning of TX / RX

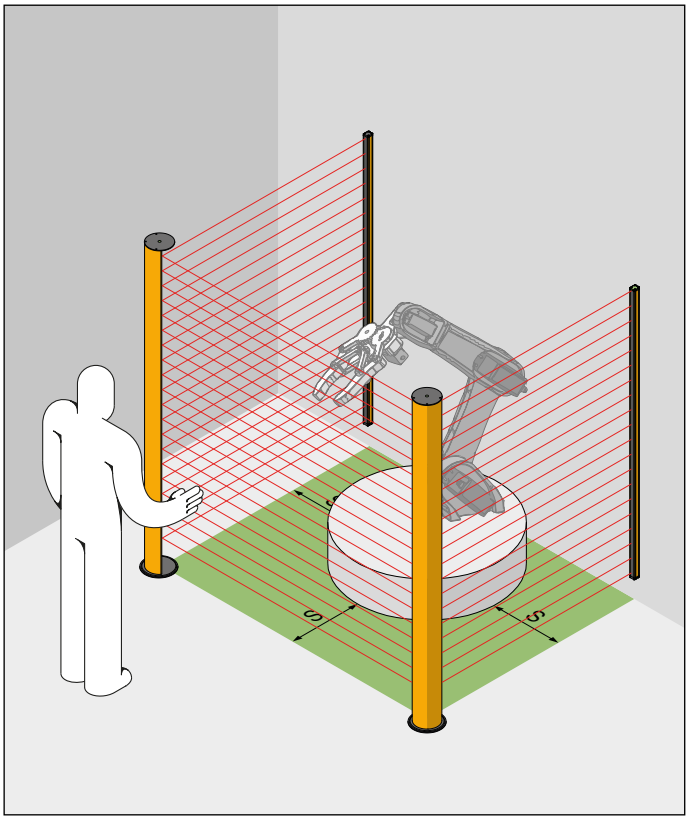


Beam Coding example	Using Beam Coding (refer to chapter *Modes > Beam Coding*), light curtains can be positioned normally.



Use of deflecting mirrors

For the protection or monitoring of multiple access points, one or more deflecting mirrors can be used in conjunction with the Emitter and Receiver. These mirrors allow the optical beams emitted by the Emitter to be redirected toward multiple directions. To achieve a 90° deflection of the optical beams, the mirror's surface normal must be positioned at a 45° angle relative to the beam's original direction. The figure below demonstrates an application where two deflecting mirrors are employed to create a 'U-shaped' protective zone.



	Using deflecting mirrors consider these rules: - Place mirrors to ensure that the minimum safety distance **(S)** is maintained on all sides providing access to the hazardous area. - The light curtain working distance is the total length of all sides of the guarded area.
	Maximum working range between Emitter and Receiver decreases by 15% for each mirror used.
	It is recommended to use no more than three deflecting mirrors. - During installation, ensure that the mirror is not twisted along its longitudinal axis. - Verify alignment by checking, from a position close to and aligned with the Receiver axis, that the entire shape of the Emitter is visible in the first mirror.

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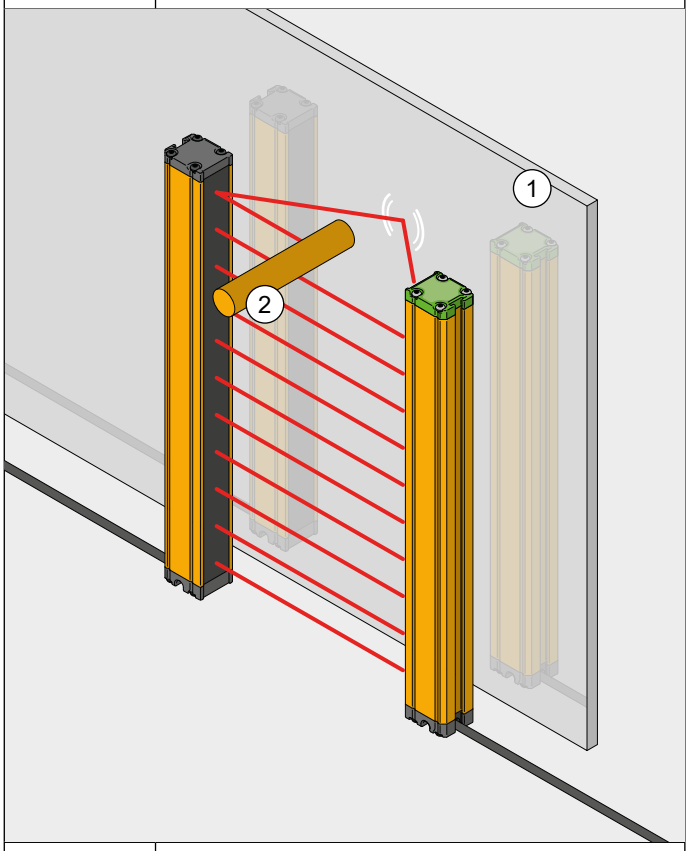
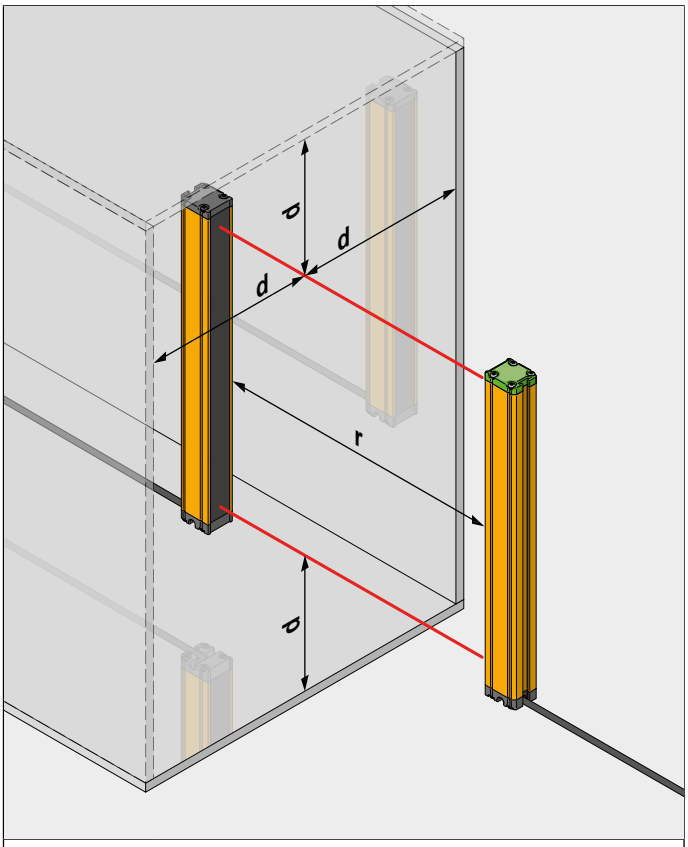
Distance from reflecting surfaces

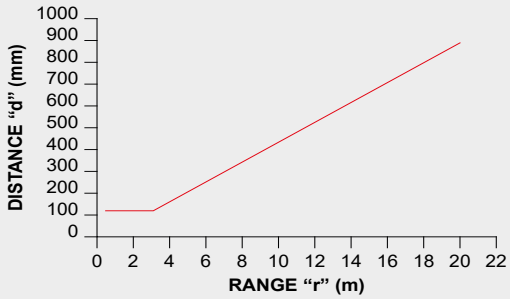
The presence of reflective surfaces located near the light curtain can cause spurious reflections preventing the detection. Referring to the following Figure, object **(2)** is not detected due to the plane **(1)** reflecting the beam and thus closing the optical path between the Emitter and Receiver.



It is therefore necessary to keep a minimum distance **(d)** between any reflecting surfaces and the protected area. For calculating the minimum distance **(d)**, it is recommended to use values set for Type 4 devices according to IEC/EN 61496-2.
The following figure shows the above-mentioned values of the distance **(d)** based on the distance between the Emitter and the Receiver.



Range / Distance table



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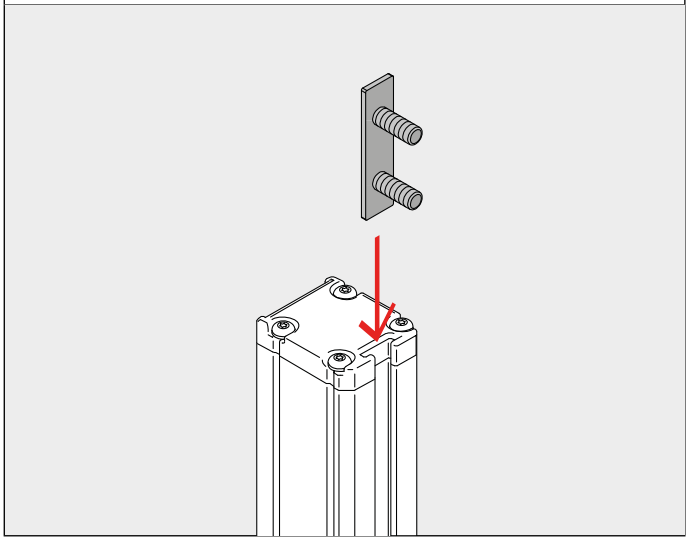
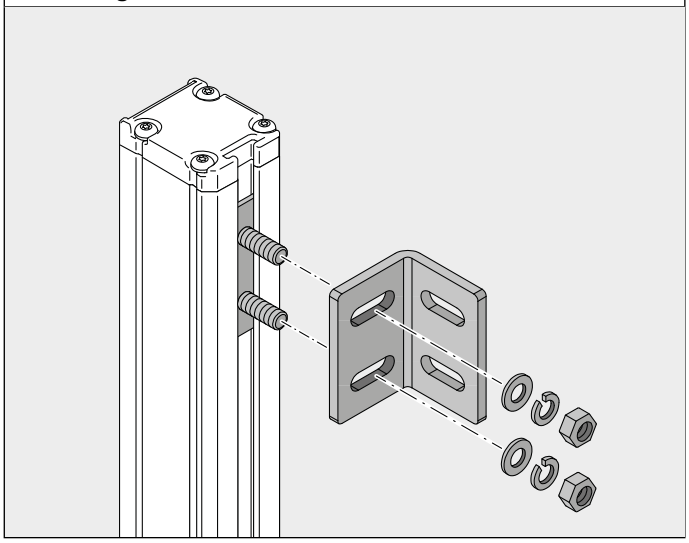
Mechanical installation

⚠	The following operations must only be carried out by qualified personnel, otherwise the machine safety function can be lost.
→	Emitter and Receiver must be installed facing each other, at a distance not greater than the maximum specified in the technical data.
	Using the provided inserts and brackets, position the Emitter and Receiver to ensure they are aligned, parallel to one another, and with their connectors oriented on the same side.

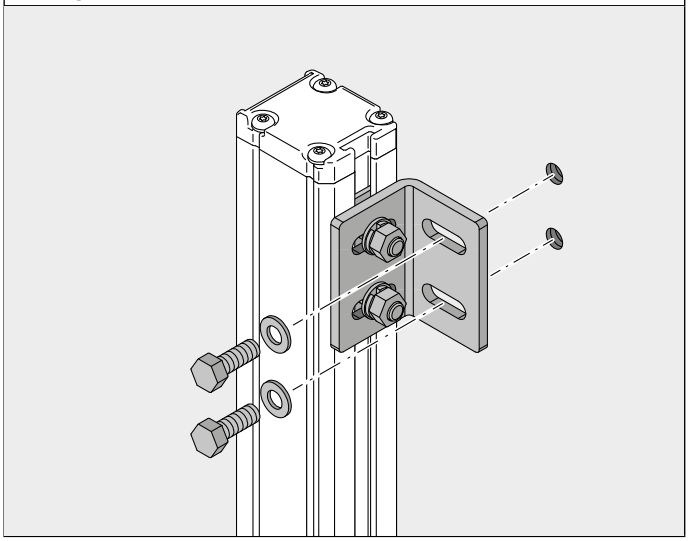
Flat bracket insertion



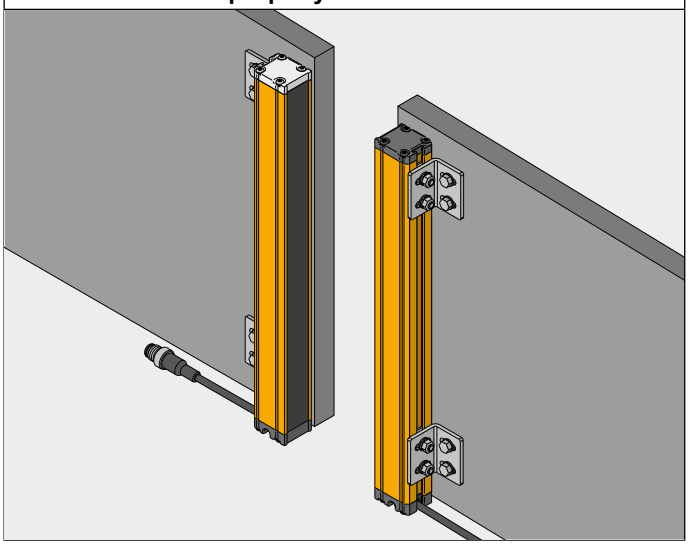
Fastening bracket to device



Fixing bracket to surface



Emitter / Receiver properly installed



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Optical alignment

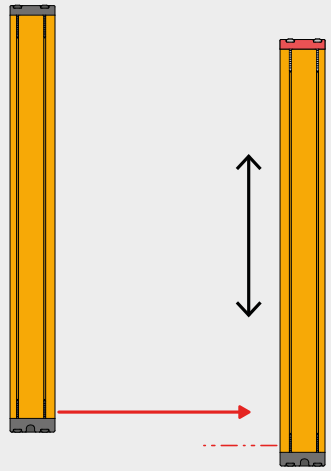
Precise alignment between the Emitter and Receiver is critical to ensure optimal operation of the light curtain system. This process is aided by monitoring the four yellow indicator LEDs on the Receiver.

Perform the electrical connections following the instructions provided in the corresponding chapter >>Electrical connections.

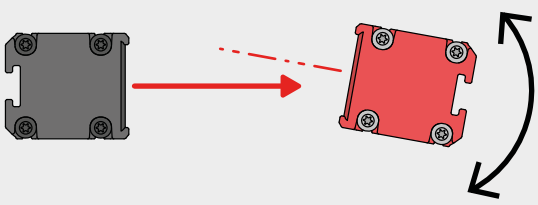
Pay particular attention to the **SafeReady** model you are connecting. Connections may vary depending on the model.

Align the optical axes of the first and last beams of the Emitter with the corresponding beams of the Receiver.

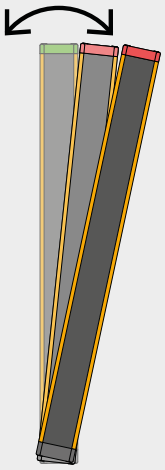
Adjust the Receiver vertical position to identify the area where the first (or first two) yellow LEDs on the Receiver remain illuminated.



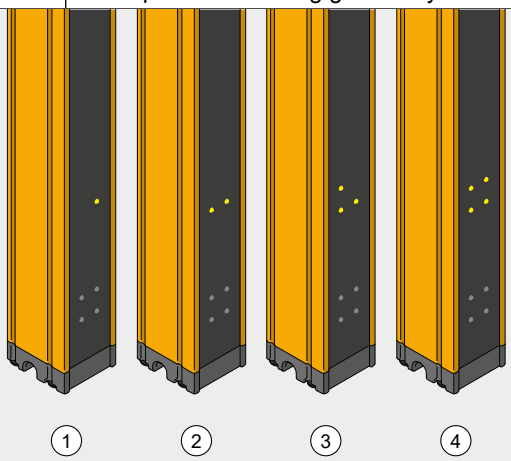
Rotate the Receiver on its vertical axis, centering the first beam (the one closest to the base), with the first beam of the Emitter.
Check the color of the top cap receiver LED:
- Red -> not centered
- Green -> centered



Using the first beam as a reference pivot, make slight lateral adjustments to the opposite end of the Receiver.



Continue until the system reaches the clear guarded area condition, indicated by 3...4 yellow LEDs on the Receiver turning on and the cap LED remaining green or yellow.



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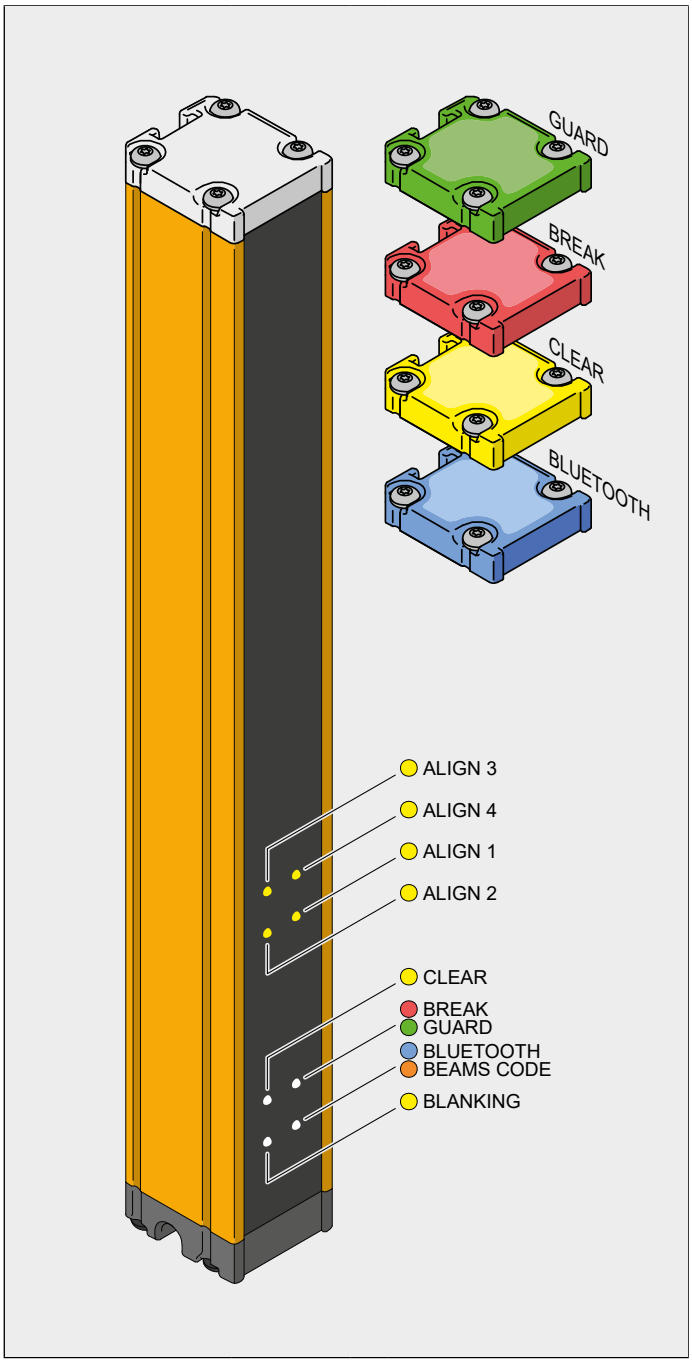
Led Signals

The **SafeReady** safety light curtain receiver unit features:

N.8 LED indicators (four alignment LEDs and four LEDs indicating operation mode indications)

A top LED cap that changes color based on light curtain status

RECEIVER



Receiver Led signals			
LED	**Color**		**Meaning**
Top cap	Red		Light curtain occupied, outputs disabled
	Green		Light curtain free, outputs enabled
	Blue		Light curtain connected via BT *
	Yellow/ Green (blinking)		Light curtain free, outputs disabled, awaiting restart
Align 1	Yellow		Basic alignment
Align 2	Yellow		Stable alignment
Align 3	Yellow		Accurate alignment
Align 4	Yellow		Perfect alignment
Clear	Yellow		Light curtain free, outputs disabled, awaiting restart
Blanking	Yellow		Blanking/Muting function enabled *
Break guard	Red		Light curtain occupied, OSSD outputs disabled
	Green		Light curtain free, OSSD outputs enabled
Bluetooth® Beams code	Blue		Light curtain connected via BT *
	Orange		OFF=code A / ON=code B

Receiver - Start configuration display						
Led	**EDM auto.**	**EDM manual**	**Automat.**	**Manual**	**Blanking function***	**Pre-Reset function***
Beams code						
Clear						
Blanking						
Align 1						

*** PLUS model only**

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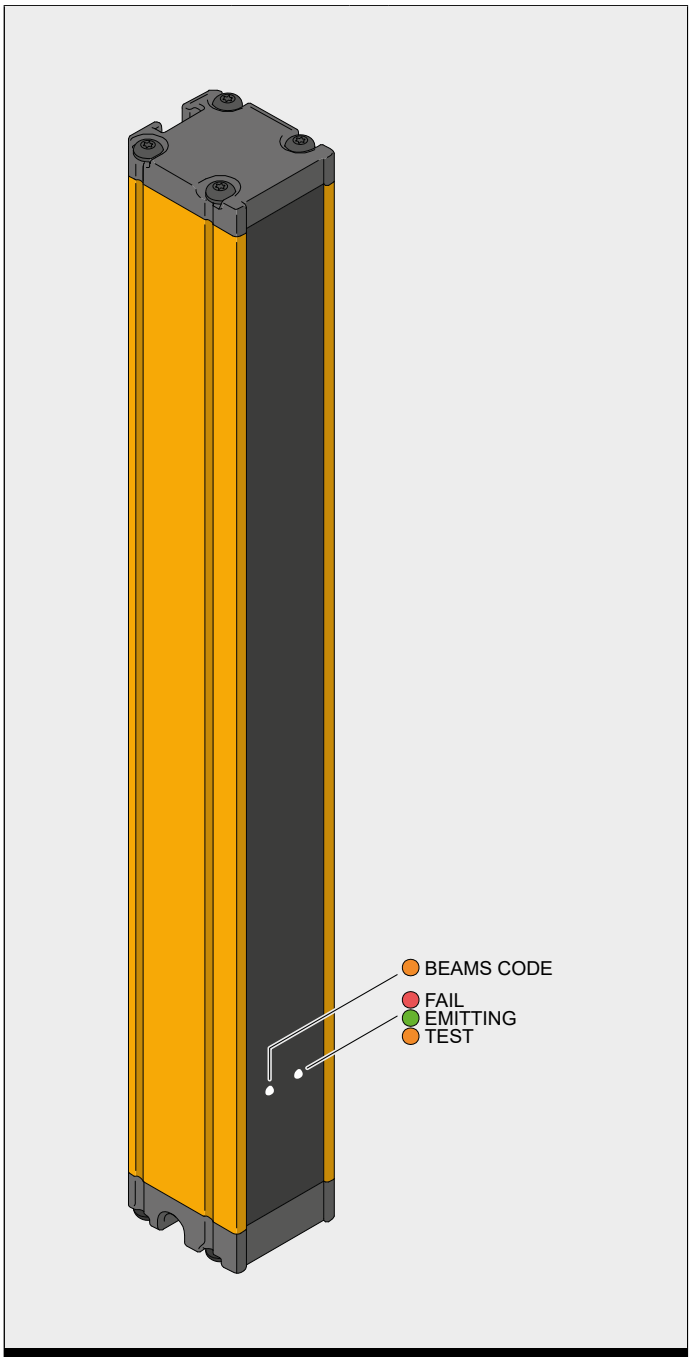
EMITTER



Emitter - Normal operation			
LED	**Color**		**Meaning**
Beam Code selection	Orange		OFF=Code A ON=Code B
Fail **Emitting** **Test**	Flashing Red		Light curtain in Fail
	Green		Normal operating condition
	Orange		Light curtain in test condition

Emitter - Start configuration display			
LED	**Color**		**Meaning**
Fail **Emitting** **Test**	Flashing Red		System startup / Initial TEST
	Green n.1 Flash		System startup. LOW RANGE selected
	Green n.2 Flash		System startup. HIGH RANGE selected.

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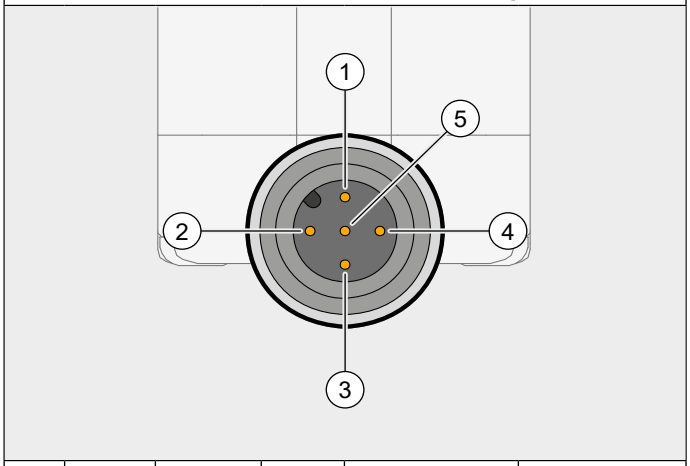
Electrical connections

Connection warnings

⚠	Perform all connections before energizing **SafeReady**. The ground connection (0VDC) must be common to all system components.
⚠	Emitter and Receiver must be powered at a 24VDC±20% (PELV, in compliance with the standard EN 60204-1). Mandatory Conductor Size: 0,25…2,5 mm^2. It is strongly recommended to keep **SafeReady** power supply separate from that of other electrical power equipment (electric motors, inverters, frequency changers) or other sources of disturbance. For connections more than 20 m long, cables with a section of at least 0.5 mm_2 must be used (AWG16), (1 mm_2 for lengths over 50 m).

Emitter connections

Emitter M12 Circular Connector Straight 5 PIN



Pin	Color	Signal	Type	Description	Electrical Level
1	Brown	24VDC	IN	24VDC Power supply	19,2 > 28,8 VDC
2	White	RANGE 0	IN	Beam power selection	Digital input
3	Blue	0VDC	IN	0VDC Power supply	0VDC
4	Black	RANGE 1	IN	Beam power selection	Digital input
5	Grey	CODE	IN	Beam coding selection	Digital input

Range and Test Selection		
Range 0 (Pin 2)	**Range 1 (Pin 4)**	**IR LED Current**
24V	0V	Low
0V	24V	High
0V	0V	Emitter in test mode
24V	24V	Failure

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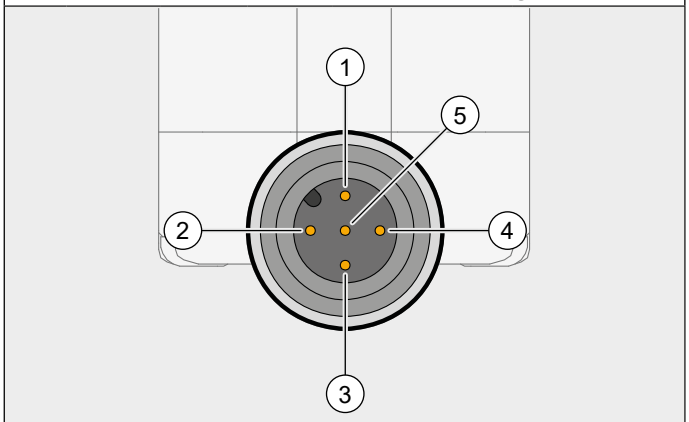
Receiver connections

BASIC Model Pin-out

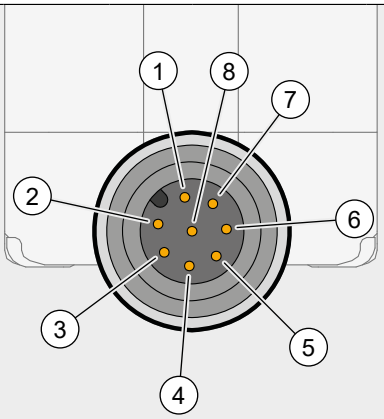
Receiver M12 Circular Connector Straight 5 PIN



Pin	Color	Signal	Type	Description	Electrical Level
1	Brown	24VDC	IN	24VDC power supply	19,2 > 28,8 VDC
2	White	OSSD 1	OUT	Safety output OSSD 1	PNP active high
3	Blue	0VDC	IN	0VDC power supply	0VDC
4	Black	OSSD 2	OUT	Safety output OSSD 2	PNP active high
5	Grey	CODE	IN	Beam coding selection	Digital input

STANDARD Model Pin-out

Receiver M12 Circular Connector Straight 8 PIN



Pin	Color	Signal	Type	Description	Electrical Level
1	White	OSSD 1	OUT	Safety output OSSD 1	PNP active high
2	Brown	24VDC	IN	24VDC Power supply	19,2 > 28,8 VDC
3	Green	OSSD 2	OUT	Safety output OSSD 2	PNP active high
4	Yellow	INPUT 1	IN	Selectable Function	Digital input
5	Grey	INPUT 2	IN	Selectable Function	Digital input
6	Pink	INPUT 3	IN	Selectable Function	Digital input
7	Blue	0VDC	IN	0VDC Power supply	0VDC
8	Red	INPUT 4	IN	Beam coding selection	Digital input

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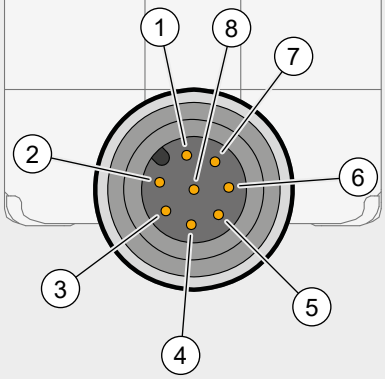
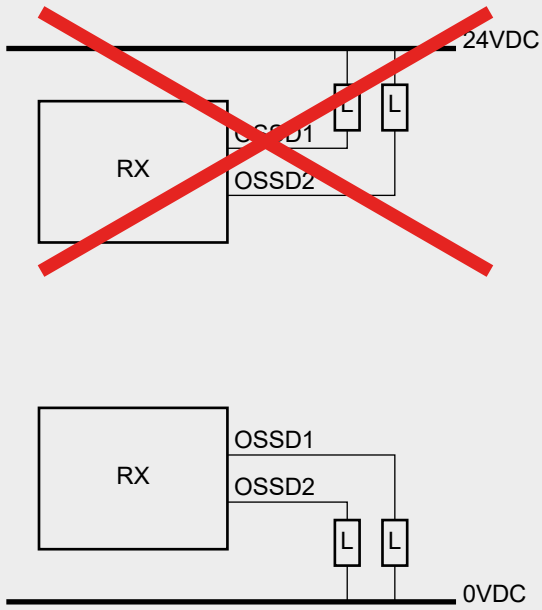
PLUS Model Pin-out
Receiver M12 Circular Connector Straight 8 PIN
Please note that if the barrier has not yet been configured with a valid configuration via the Safeapp application, the device is set to the default standard. Therefore, refer to the STANDARD Model Pin-out table.



Pin	Color	Signal	Type	Description	Electrical Level
1	White	OSSD 1	OUT	Safety output OSSD 1	PNP active high
2	Brown	24VDC	IN	24VDC Power supply	19,2 > 28,8 VDC
3	Green	OSSD 2	OUT	Safety output OSSD 2	PNP active high
4	Yellow	PROG 1	IN	Programmable Function	Digital input
5	Grey	PROG 2	IN	Programmable Function	Digital input
6	Pink	PROG 3	IN	Programmable Function	Digital input
7	Blue	0VDC	IN	0VDC Power supply	0VDC
8	Red	PROG 4	IN	Programmable Function	Digital input

	When connecting high inductive loads to OSSDs, use suitable voltage suppressors on the outputs.
	In free protected area conditions, the Receiver provides a voltage of 24VDC on both outputs. Therefore, the established load must be connected between both output terminals and the 0VDC.

OSSD correct connection



Bluetooth® connection

SafeReady light curtain Plus model allows all the curtain parameters configuration and monitoring through a proprietary mobile and desktop application.

Data exchange is based on Bluetooth® Low Energy (BLE), using a secure and safe protocol.

	Please refer to **App Guide** chapter and follow the connecting steps.

Bluetooth® technical data
Low energy (LE): V5.2 (compatible 4.2 or later)
Operating frequency: 2402 MHz to 2480 MHz (ISM band)
Transmission distance: Approx. 15 m max. (Output power: 6 dBm)

	Please note that BASIC and STANDARD models do not have Bluetooth connection.

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Modes of operation

Beam Coding

Basic	Standard	Plus
		

The Beam Coding function is available to prevent optical interference when multiple safety light curtains are installed in close proximity. It ensures proper operation by reducing the risk of mutual interference between different light curtain systems.

Beam Coding A / Beam Coding B
The emitter and receiver operate using a predefined code (A or B). When two safety light curtains are installed in close proximity, assigning one to Coding A and the other to Coding B ensures independent operation and eliminates the risk of cross-interference.

When Beam Coding should be used

When multiple safety light curtains are installed close to each other.

When light curtains face each other or have overlapping detection fields.

Ensure TX is set to the same coding of RX. Perform a beam interruption test along the entire height of the light curtain and verify that it goes into BREAK condition (OSSDs deactivated).

SEL_CODE input
The **SafeReady** light curtain offers two scan codes (Code A and Code B). Using distinct scan codes enables the installation of multiple systems in close proximity and alignment, minimizing mutual interference between adjacent light curtains.

EMITTER **Configuration via wired setup**

Select Beam Coding A or B.

Connect the system as specified in the following table.

Restart the safety light curtain.

EMITTER Basic / Standard / Plus			
Pin	**Signal**	**Function**	
5	Code	SEL_CODE	
		0VDC = BEAM CODE A	24VDC = BEAM CODE B

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RECEIVER **Configuration via wired / Bluetooth®**

Select Beam Coding A or B.

Connect the system as specified in the following tables.

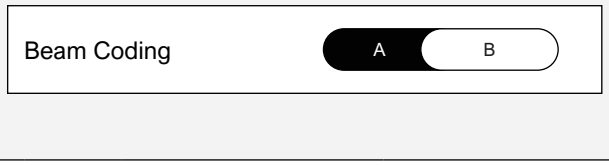
Restart the safety light curtain.

RECEIVER Basic			
Pin	**Signal**	**Function**	
5	Code	SEL_CODE	
		0VDC = BEAM CODE A	24VDC = BEAM CODE B

RECEIVER Standard			
Pin	**Signal**	**Function**	
8	INPUT 4	SEL_CODE	
		0VDC = BEAM CODE A	24VDC = BEAM CODE B

RECEIVER Plus

- Connect to the light curtain using the **SafeApp**.
- Open the app and navigate to **Setup**.
- Select **Beam Coding A or B**.
- Send the new configuration to the light curtain.
- Wait for the light curtain restart process to complete.



EDM

External Device Monitoring

Basic	Standard	Plus

EDM (K1/K2 External Device Monitoring) is a feedback designed to ensure the reliability and integrity of safety circuits. It is commonly used in applications involving safety relays connected to OSSD safety outputs, allowing continuous monitoring of the proper operation of K1/K2 external contactors.

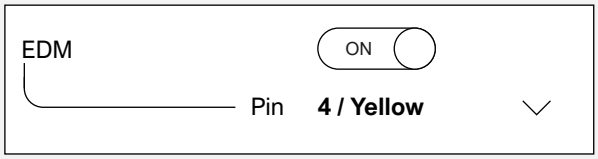
• In both Automatic / Manual operating modes the system can be configured to monitor the external contactors K1/K2 (contact series).

• Enable this monitoring function, **pin 4** of M12 8-pin connector on the Receiver must be connected to the 24V DC power supply through a set of normally closed (N.C.) feedback contacts of K1/K2 external contactors.

⚠	In automatic/manual operation, series of the N.C. contacts (feedback) of external contactors K1/K2, can also be present. **SafeReady** awaits a signal with inverse logic to the condition of the external contactors: **OSSD1 / OSSD2 [ON]** External contacts K1/K2 open **OSSD1 / OSSD2 [OFF]:** External contacts K1/K2 closed
→	Please refer to **Automatic operation**, **Manual operation**, **Pre-Reset** sections to verify wirings.

EDM - PLUS Version

SafeReady's PLUS version EDM setup requires the use of the supplied app.



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Automatic Restart

Basic	Standard	Plus

⚠	If **SafeReady** light curtain is configured to operate in AUTOMATIC mode, it will not include a Start/Restart interlock circuit. In several applications this safety feature is mandatory. Make sure to carefully assess the application's risks to choose and apply the right operating mode.
	The automatic mode can also operate with EDM in Standard/Plus models.

In Automatic operating mode, the OSSD1 and OSSD2 safety outputs follow the status of the light curtain:

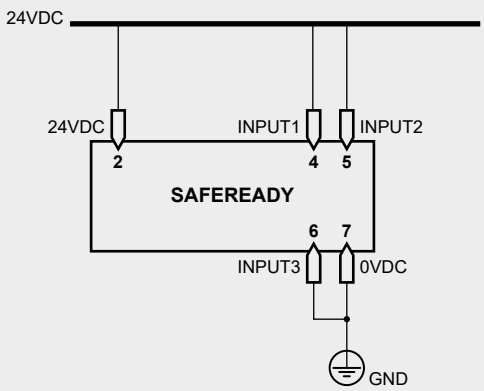
With guarded area free, the outputs are **ON**

With guarded area occupied, the outputs are **OFF**

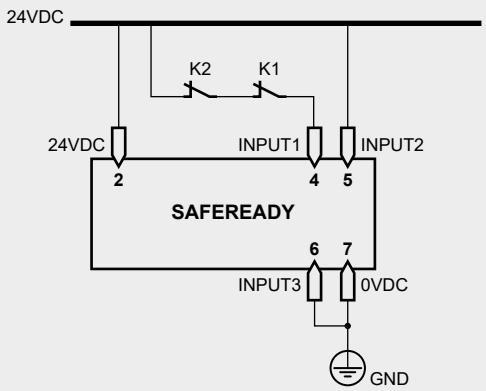
STANDARD Version

	WIRING			Functionality
Connected to	INPUT 1 (PIN 4)	INPUT 2 (PIN 5)	INPUT 3 (PIN 6)	
	24VDC	24VDC	0VDC	Automatic
	24VDC Through N.C. of EDM	24VDC	0VDC	Automatic with EDM control

STANDARD - Automatic



STANDARD - Automatic with EDM Control

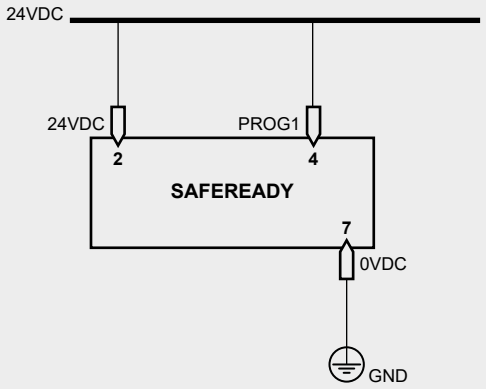


PLUS Version

SafeReady's PLUS version Automatic Restart setup requires the use of the supplied app.

To enable the Automatic Restart function, set the switch to the 'Automatic' position.

PLUS - Automatic



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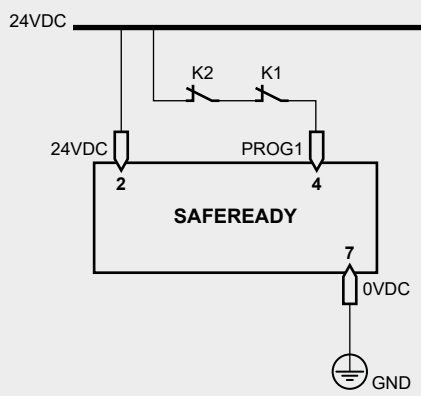
PLUS - Automatic with EDM Control



Manual Restart

Basic	Standard	Plus

	Use in Manual mode (start/restart interlock enabled) is mandatory in case the safety device controls a gate to protect a dangerous area and a person, once crossed the gate, can stay in the hazardous area without being detected by **SafeReady** (use as a 'trip device' according to IEC 61496).
	The Restart command must be located outside the hazardous area, at a point where the hazardous area and the entire working area concerned are clearly visible. It must not be possible to reach the command from inside the hazardous area.
	The Manual mode can also operate with EDM.
	If the application requires it, the response time of the external contactors must be verified by an additional device.

SafeReady Pin 4 provides the Restart function. As a result of occupation of the protected area, OSSDs outputs will be de-activated (OFF) (Manual mode - start/restart interlock enabled).

	To reactivate the OSSDs, press and release the normally open (N.O.) RESTART pushbutton connected to the 24 VDC power supply.

STANDARD Version

	WIRING			Functionality
Connected to	INPUT 1 (PIN 4)	INPUT 2 (PIN 5)	INPUT 3 (PIN 6)	
	24VDC Through RESTART	0VDC	24VDC	Manual
	24VDC Through N.C. of K1/K2 and RESTART	0VDC	24VDC	Manual with K1/K2 control

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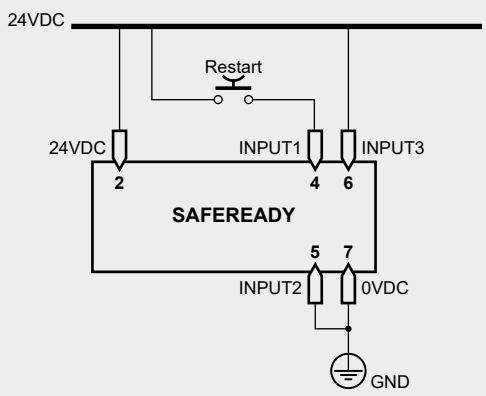
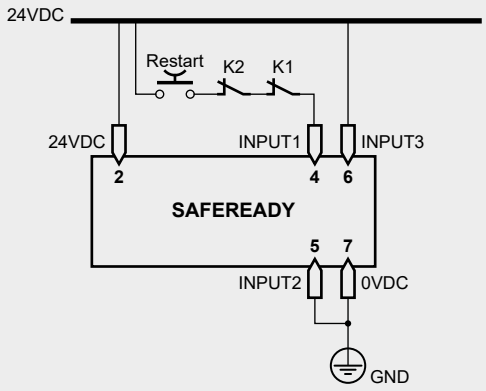
STANDARD - Manual



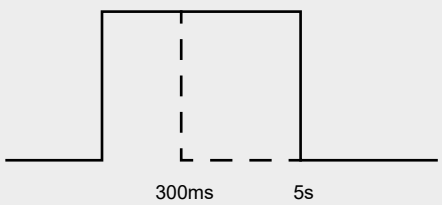
STANDARD - Manual with EDM



Restart Pulse

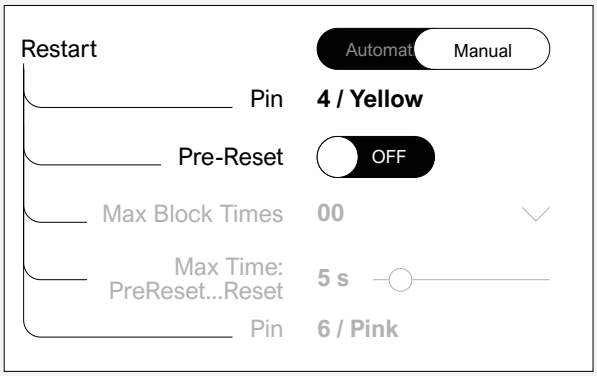
Verify the logical sequence as follows:
0 → 24 VDC → 0.

Make sure the high signal level (24VDC) is mantained for a duration between 300 [ms] and 5 [s].

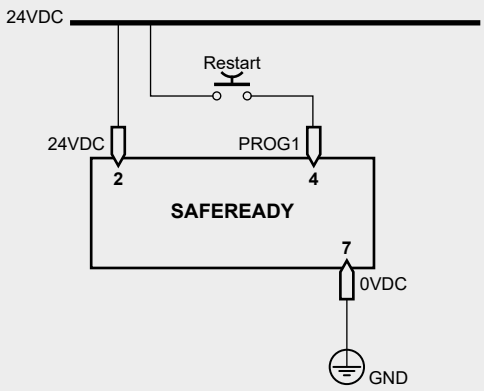


PLUS Version

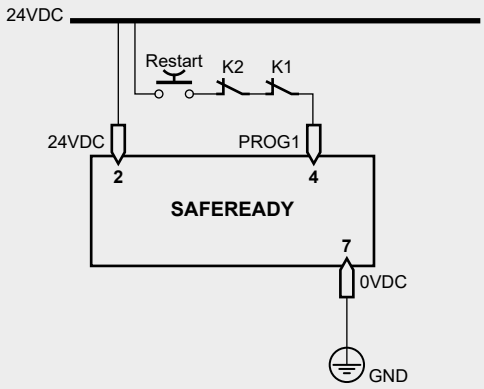
SafeReady's PLUS version Manual restart setup requires the use of the supplied app.



PLUS - Manual



PLUS - Manual with EDM



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Manual Pre-Reset

Basic	Standard	Plus

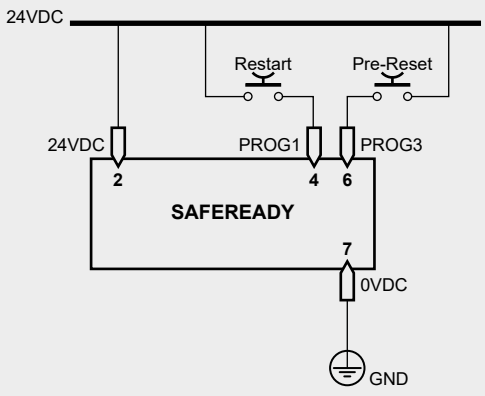
When an operator enters the hazardous zone, a second operator may inadvertently press the Restart command to reset the machine without being aware of the presence of someone in that zone.

The *Pre-Reset* function enhances safety by requiring an additional Restart pushbutton (*Pre Reset* pushbutton) located within the hazardous zone. When this function is active, the operator inside the hazardous zone must first press the *Pre Reset* pushbutton installed in that area. Then, the operator must exit the zone through the safety light curtain, which will result in the protected area being occupied at least once.
Finally, the operator must press the main *Restart* push-button to reactivate the OSSDs.

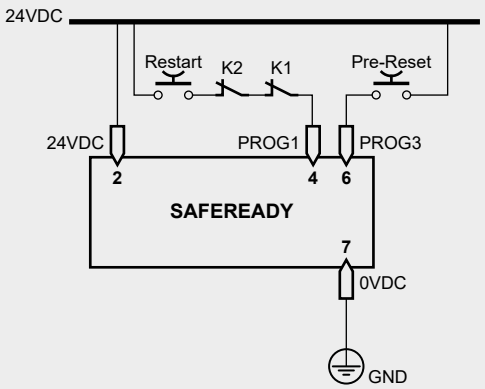
The Pre-Reset mode can also operate with "**EDM**." Refer to the section "**EDM**" to understand how this function works.

WIRING			Functionality
Connected to	**PROG 1 (PIN 4)**	**PROG 3 (PIN 6)**	
	24VDC Through RESTART	24VDC Through PRE-RESET	Manual
	24VDC Through RESTART and serial N.C. of K1/K2	24VDC Through PRE-RESET	Manual with K1/K2 control

Manual



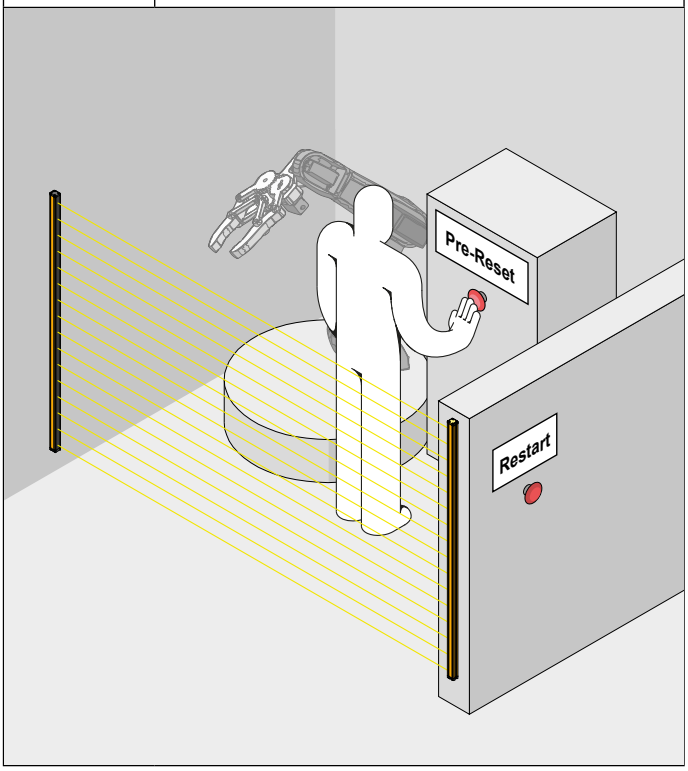
Manual with EDM



Pre-Reset Sequence

The sequence of events is the following:
1. Operator pushes the Pre-Reset pushbutton
2. Operator passes through the protected zone occupying it at least once.
3. Operator pushes the Restart pushbutton to Restart the system

The maximum delay from Pre-Reset and Restart is 60s.



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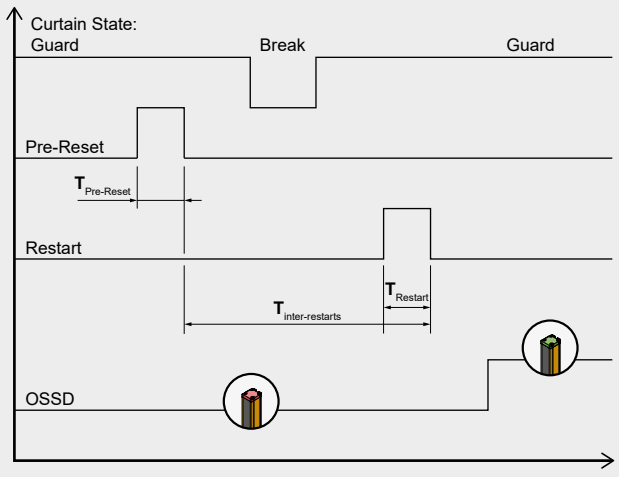
The sequence shall respect a specific timing as shown below.



KEY:
TPRE-RESET: 0.3s to 5s.
TRESTART: 0.3s to 5s.
TINTER-RESTARTS is programmable: 2s up to 60s.

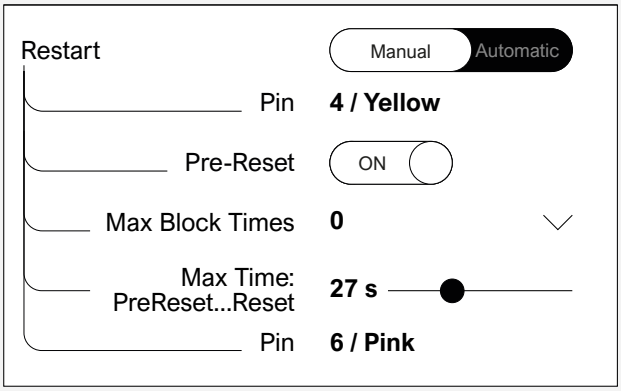
SafeApp / Pre-Reset Setting

SafeReady's PLUS version Manual Pre-Reset setup requires the use of the supplied app.

Pre-Reset Interlock:
use the selector to activate the Pre-Reset.

Max Block Times:
is the maximum number of occupations of the protected zone allowed to the operator after pressing the Pre-Reset button.

Max time Pre-Reset > Restart:
2s up to 60s.



Reduced Resolution

14 / 20 / 30 mm Resolution models

Basic	Standard	Plus

Description

The *Reduced Resolution* function of the **SafeReady** safety light curtain allows deactivation of a predefined number of adjacent beams, reducing the sensitivity of the detection field.
By default, the safety light curtain detects beam interruptions and consequently triggers a safety stop (OSSD in OFF status). However, in certain industrial environments, small objects such as fragments, tools, or wires may inadvertently interrupt a beam, causing unwarranted production stops. The Reduced Resolution function filters out minor obstructions, allowing small objects to pass through the detection field without triggering a safety stop, while maintaining reliable protection against larger, hazardous intrusions.

Key Benefits
Allows objects larger than the physical resolution to pass through the detection field without stopping the machine.
Reduces false detections while maintaining safety for larger objects (e.g., hands or bodies).
Enables multiple objects to pass through the hazardous area, provided they comply with the adjusted resolution.

Operation

The *Reduced Resolution* function is only available on Plus models with nominal resolutions of 14 mm, 20 mm, or 30 mm, and must be configured via **SafeApp** during setup. This setting applies to all beams of the safety curtain.

A predefined number of consecutive beams (1, 2 or 3) can be ignored in the detection logic.

The new effective resolution depends on the physical resolution and the number of beams excluded, as shown below:

		Reduced resolution (mm)		
		1 beam	**2 beams**	**3 beams**
Nominal resolution [mm]	**14**	24	34	44
	20	30	40	50
	30	50	70	90

When using Reduced Resolution, compute the safety distance (**S**) based on the Reduced Resolution value (table above), as required by safety standards (EN ISO 13855, IEC 61496).

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⚠	The Blanking function cannot be used simultaneously with Reduced Resolution. Enabling one disables the other. Increasing the number of ignored beams reduces the system's detection capability and must be assessed through a proper risk analysis. The function should only be activated if all the following conditions are met: • The remaining active beams still detect critical body parts (e.g., fingers, hands). • The safety distance (S) remains compliant with regulations. • The system remains in conformity with applicable standards (EN ISO 13855, IEC 61496), and must take in account the new resolution.

Response Time

Basic	Standard	Plus

Description
The Response Time of the **SafeReady** safety light curtain is the time interval between the moment an object interrupts a beam and the deactivation of the safety output (OSSDs) to stop the machine.
Three different options are available to select a multiple of the response time:

Optimizing the Safety Distance
The safety distance depends on the response time (as per EN ISO 13855).
• Faster response time = shorter safety distance >> more compact working area.
• Slower response time = longer safety distance >> more space needed.

Reducing False Triggers
Slower response times help filter out temporary beam interruptions (e.g., small debris, light interference).

Preventing Interference Between Multiple Light Curtains
If multiple light curtains are installed in close proximity, increasing the response time helps minimize interferences.
The response time is determined by the beam scanning duration; therefore, a higher number of scanning cycles results in a longer response time.

Scanning cycle options

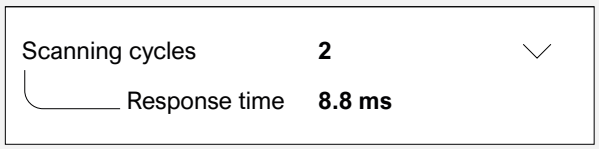
2 Cycles – Standard Response Mode
Suitable for most industrial applications.

3 Cycles – Delayed Response Mode
Could be used when lighting interference or flying objects are present (strobe light, leaves, insects, laser beams from scanners or lidars, etc.)

4 Cycles - Further delayed response mode
Could be used when heavy lighting interference or flying objects are present (strobe light, leaves, insects, laser beams from scanners or lidars, etc.)

⚠	If the response time is increased, the safety distance must also be increased accordingly. Use the formula defined in EN ISO 13855 (§ Installation) to calculate the required safety distance. When a scanning cycle of 3 or 4 is used the response time changed accordingly: **3 Cycles** **New response time = response time x 1.5** **4 Cycles** **New response time = response time x 2** Carefully check that your application accepts the new response time. Safety distances must also comply with the final response time. The new response time must be noted in the machine's technical file.

SafeReady's PLUS version Response Time setup requires the use of the supplied app.



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Blanking

Basic	Standard	Plus
		

Blanking is an auxiliary function of safety light curtains that allows, under specific conditions, the presence of opaque objects within the protected field of the curtain without triggering a stop of the controlled machine.

This function is particularly useful when the protected field must be intentionally interrupted by the material being processed or by a fixed or moving part of the machine.

	Install a protective structure that fully encloses the blanked zone to prevent personnel from accessing hazardous machine parts through this area. When Fixed Blanking, Floating Blanking, or Mixed Blanking functions are activated, the detection capability decreases. In these cases, the required safety distance must be recalculated based on the new value of detection capability provided by these functions. Failure to implement the correct safety distance may result in the machine not stopping in time to prevent a person from reaching the hazardous area, potentially leading to serious injury or death.
	The three blanking areas must not overlap and must be spaced at least one beam

FIXED Blanking

Activate the system's Fixed Blanking function when operating hazardous machinery with non-removable components that obstruct the safety light curtain. This ensures safe operation while preventing unnecessary interruptions.

General Characteristics
This feature enables the exclusion of a specific part of the **SafeReady** detection area from monitoring. OSSDs will stay in ON state even if an object is present in the blanking zone.
At least one continuous beam section must be included in any fixed blanking zone. Up to three fixed blanking zones (Zones 1 through 3) can be defined.

Specific features

	Fixed blanking deactivates one to three zones within the detection field of the light curtain.
	When an object is into a blanking zone (**>>zone definition**), the OSSD outputs remain active.
	The presence of the object is a mandatory requirement to fulfil this blanking condition.
	The synchronization beam cannot be part of a blanking zone.

Parameters related to Fixed Blanking

	After establishing a Bluetooth® connection between the mobile device and the **SafeReady** receiver, the following parameters can be configured via the **SafeApp**.
	Please refer to APP GUIDE and follow connecting steps. **Number of Blanking zones:** 1...3
	Zone definition Specify the fixed blanking zone entering: start beam / end beam.
	Minimum object size Number of beams covered by an object in a defined fixed blanking zone (at least 1).
	Zone tolerance Number of beams acceptable outside the defined zone (symmetrical).
	Object monitoring Object presence in blanking zone. This parameter is fixed and always enabled (ON); it cannot be modified by the user.
	Fixed blanking zones can be consecutive (never overlapped) separated by at least one beam between the two blanking zones. Determine the safety distance considering the extended detection range. Improper calculation could lead to hazardous machine contact and potential injury.

Beam color legenda	
	Clear beam
	Fixed Blanking beam
	Tolerance beam
	Break beam

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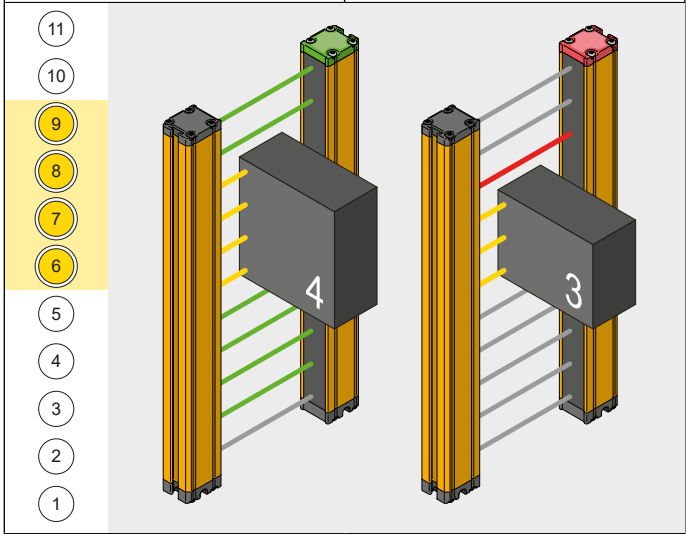
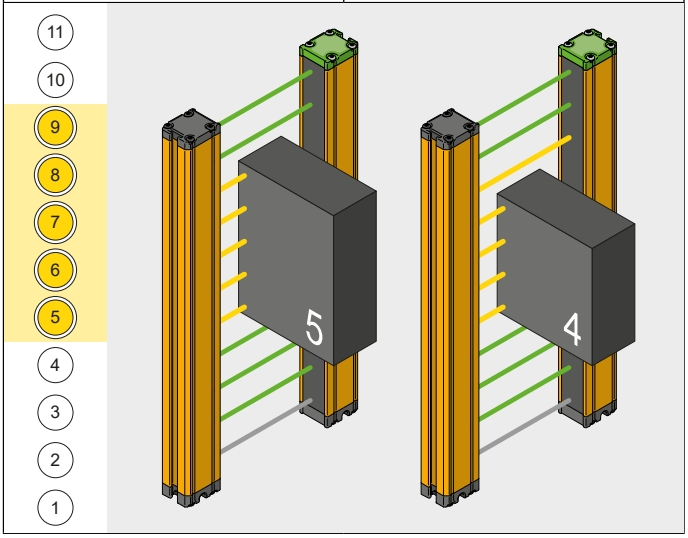
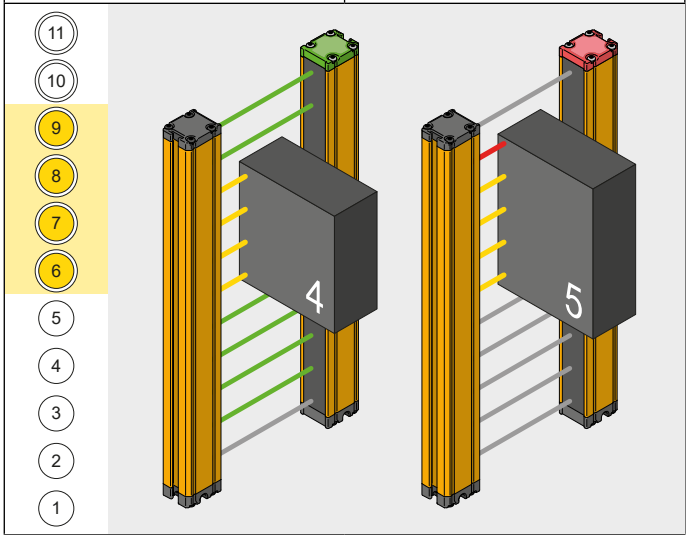
Fixed blanking example 01	
Minimum Beam	4
Tolerance Beams	0



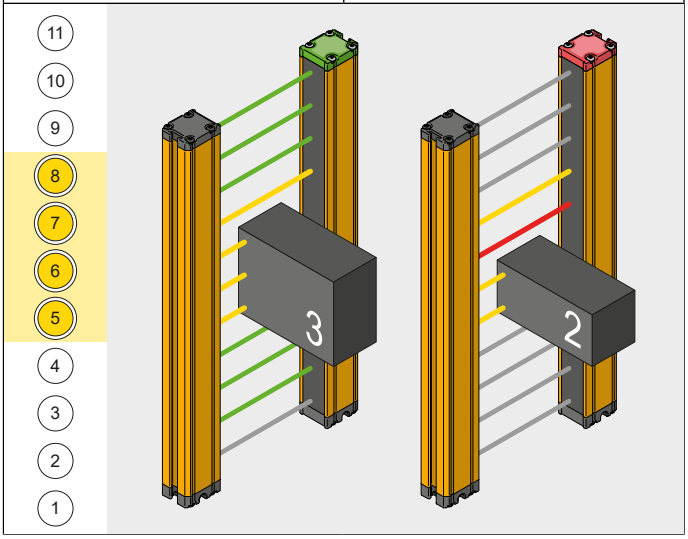
Fixed blanking example 03	
Minimum Beams	4
Tolerance Beams	0



Fixed blanking example 02	
Minimum Beams	4
Tolerance Beams	0



Fixed blanking example 04	
Minimum Beams	3
Tolerance Beams	0



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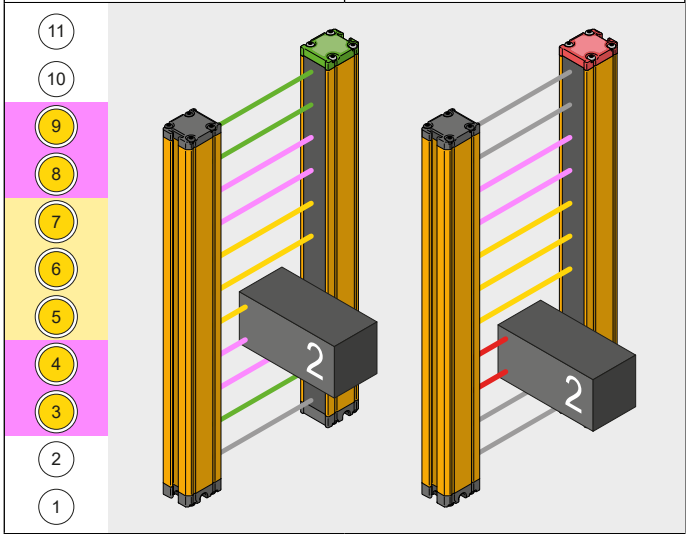
Fixed blanking example 05	
Minimum Beams	2
Tolerance Beams	2



FLOATING Blanking

The Floating Blanking function permits a specified number of beams within the entire detection zone of the light curtain to be interrupted by:

- a part of the machine in motion
- a mechanism in motion
- objects manufactured by the machine.

In this cases the OSSDs remain in the ON state.

Characteristics

→	The synchronization beam can be part of a blanking zone only when the floating area is configured with partial object monitoring.
	The synchronization beam must be free at the start up.
	When the light curtai is activated, the synchronization beam must always be free.
	During setup operation the operator can define max 3 blanking zones.
	The number of beams distinguishing two blanking zones (inter object) is ≥ 1 beam.

Parameters related to floating blanking

	After establishing a Bluetooth® connection between a mobile device and the **SafeReady** receiver, the following parameters must be configured using app.
→	Please refer to ***APP GUIDE*** and follow connecting steps. **Number of Blanking zones:** 1...3
	Zone definition Specify the blanking zone entering: Start beam / End beam.
	Minimum object size Number of beams covered by an object in a defined zone (at least 1).
	Zone tolerance Number of beams acceptable outside the defined zone**. In floating blanking areas, the tolerance must be zero.**
	Object monitoring object presence in floating zone. It could be two different types: - *Complete object monitoring* (object presence is mandatory) - *Partial object monitoring* (object presence is not mandatory) **Only one floating blanking area with Partial object monitoring is allowed.**

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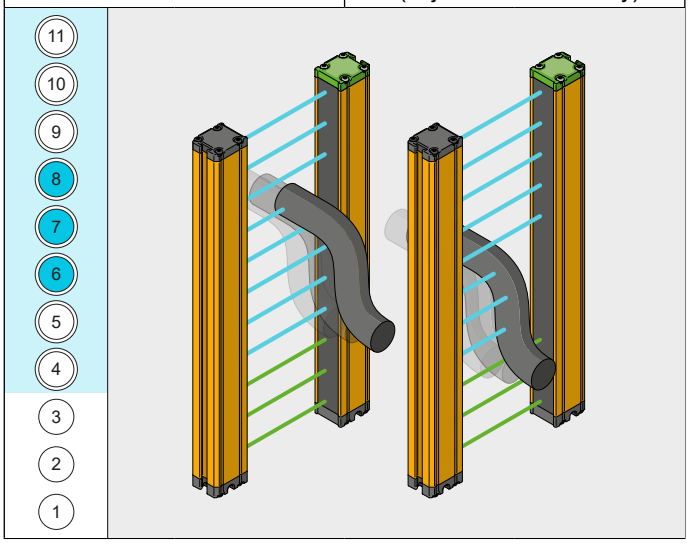
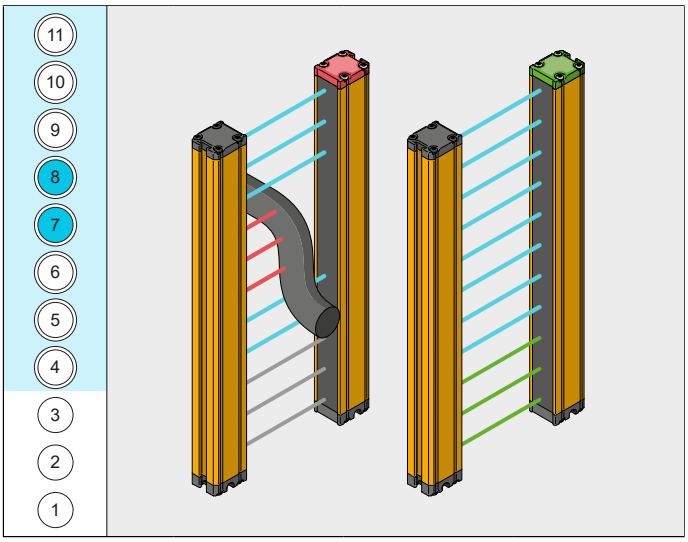
Beam color legenda	
	Fixed Blanking beam
	Break beam
	Clear beam

Floating blanking example 01			
Start beam	4	**End Beam**	11
Object size		3	
Minimum Beam		1	
Partial		ON (object not mandatory)	



Floating blanking example 02			
Start beam	4	**End Beam**	11
Object size		2	
Minimum Beam		1	
Partial		ON (object NOT mandatory)	



Floating blanking example n.03			
Start beam	4	**End Beam**	11
Object size		5	
Minimum Beam		2	
Partial		OFF (object mandatory)	

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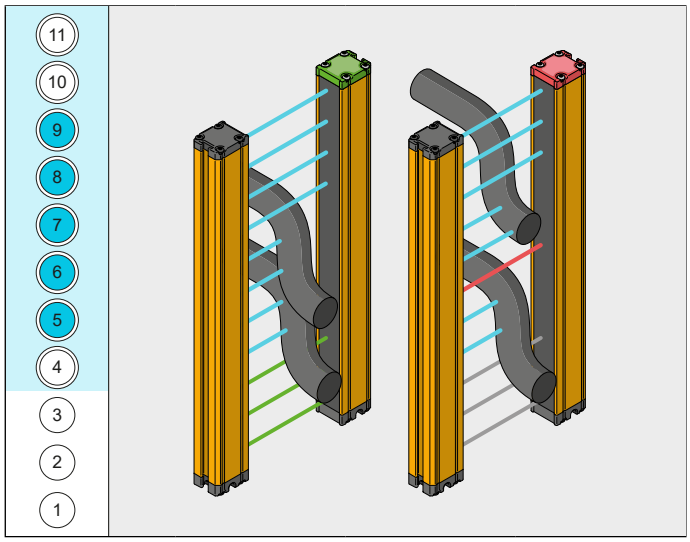

MIXED Blanking

The Mixed Blanking function combines the two previously described modes:

Fixed Blanking
A configurable number of beams within the fixed detection field. When an object occupies this zone, the OSSD outputs remain active.

Floating Blanking
A configurable number of beams within the detection field can be dynamically ignored. When an object occupies and moves within this zone, the OSSD outputs remain active.

	For a detailed explanation of these operating modes, refer to: Fixed Blanking / Floating Blanking

Parameters related to Mixed blanking

	After establishing a Bluetooth® connection between a mobile device and the **SafeReady** receiver, the following parameters must be configured using app.
	Please refer to APP GUIDE and follow connecting steps.
	Zone definition Specifies the blanking area of the zone in the form of beams (start beam, end beam).
	Minimum object size Number of beams covered by an object in a defined zone (Min. 1 beam).
	Tolerance zone Number of beams acceptable outside the defined zone on both sides.
	Object tolerance Acceptable size of the object outside fixed zones (Max. 2 beams).
	Inter-zone/object Number of beams that distinguishing two objects, two zones or a zone and an object of floating zone (Min. 1 beam).

Beam color legenda	
	Floating Blanking beam
	Fixed Blanking beam
	Tolerance beam
	Clear beam

Mixed blanking example n.01	
Object qty	1
Object size	3
Minimum Beam	1
Partial	ON (object not mandatory)

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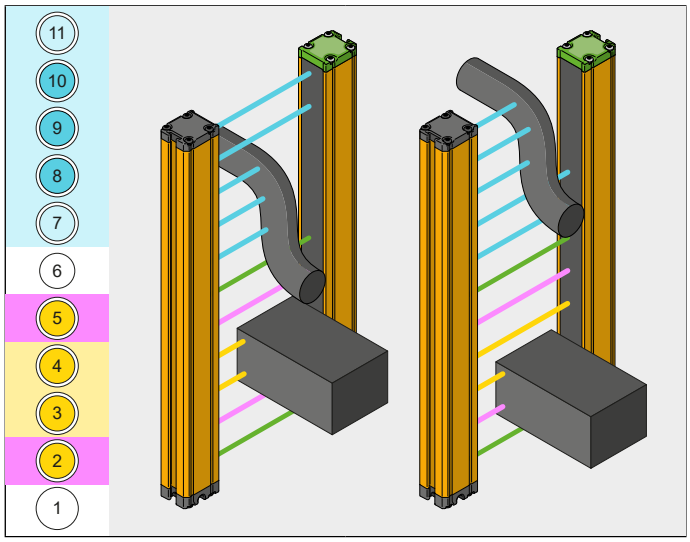
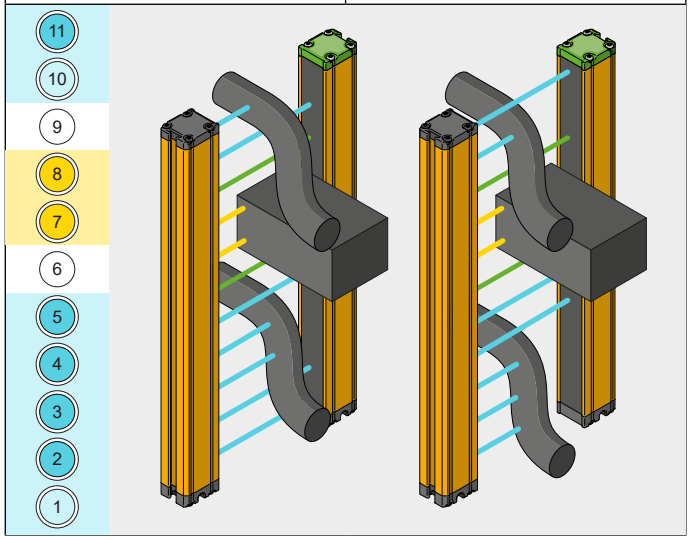
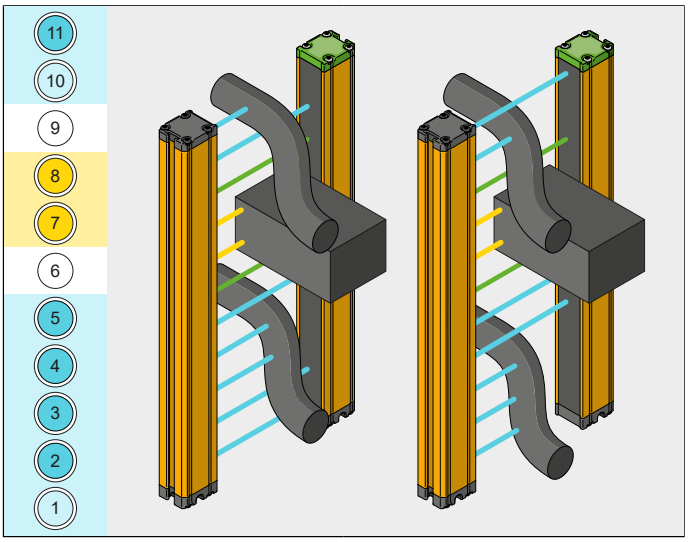


Mixed blanking example n.02	
Object qty	1
Object size	3
Minimum Beam	1
Partial	ON (object not mandatory)



Mixed blanking example n.03	
Object qty	1
Object size	3
Minimum Beam	1
Partial	ON (object not mandatory)



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App Guide

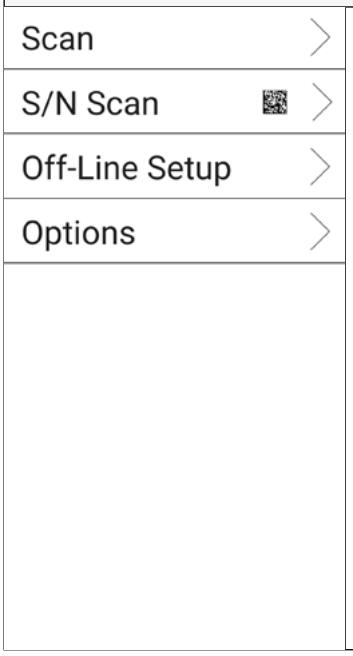
Installation

Install SafeApp on your device from dedicated application store.

	The application is compatible with Android 10 and later, and available on Google Play.
	The device on which the application is installed must have at least 4GB of RAM memory and enough storage space to save user configurations.

Main page

Main Menu



SafeApp features a main page, as illustrated in the following figure.

The ReeR logo acts as a redirect to the main menu.

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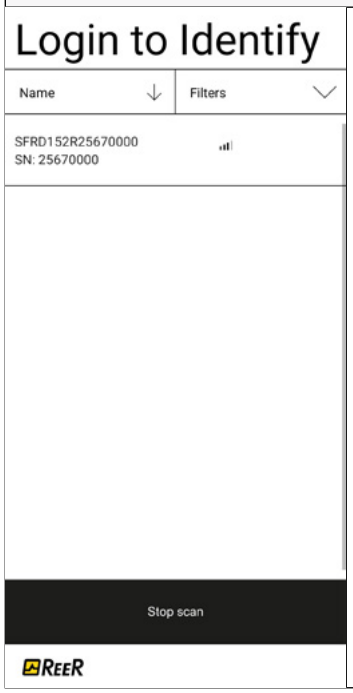
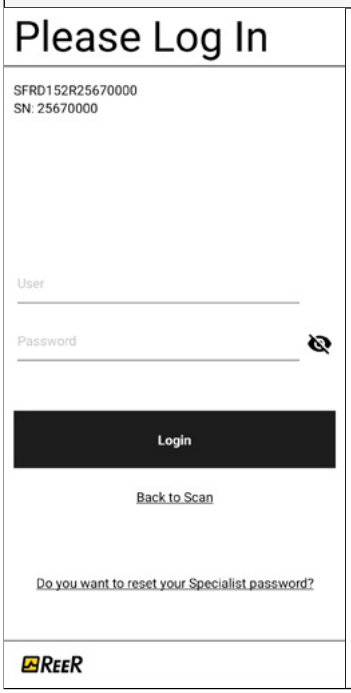
Scan



It allows performing a Bluetooth® scan for **SafeReady** light curtains within a **10m** range for subsequent connection. The App will display a list of identified light curtains in the area, including their name and S/N. The operator must select the light curtain to be connected. Login procedure is the next step.

When the user taps "*Login*", the light curtain blinks for a few seconds to help the operator identify the correct device (no connection is established).

Login to identify



The operator must enter username and password to establish the connection.

First connection default credentials:
USER = admin
PASSWORD = admin

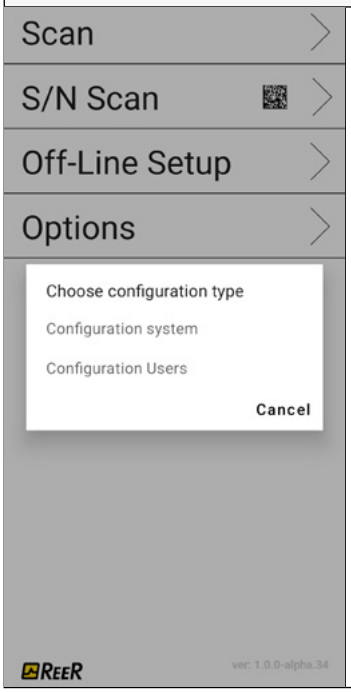
(Please refer to *Credential and Password Management*)

The top LED cap begins blinking blue, alternating with the previous colour, indicating that the light curtain is connected.

S/N Scan

It allows scanning the Data Matrix code printed on the light curtain receiver using the smartphone to establish a connection.
The App will display the detected light curtain's name and relative S/N.
Login procedure is the next step.

Off-line Setup



Select the setup type:

System Setup
Light Curtain Setup
(Refer to Setup mode in *Control panel > Setup).*

User Setup
Configuration and management of individual authorised user credentials.
(Refer to Setup mode in *Control panel.)*

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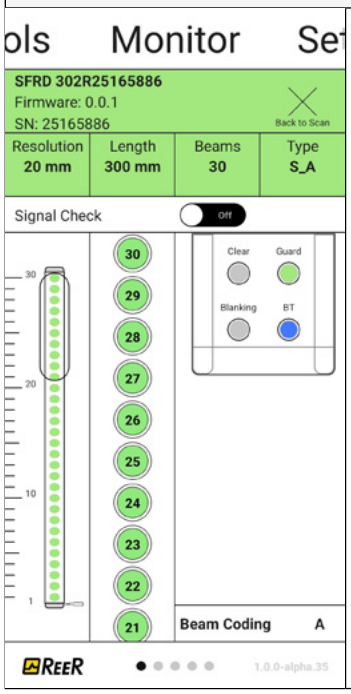
Control Panel

Monitor



Upon successful login, the ***Monitor*** page will be displayed. On this page, the operator is only able to verify the functionality of the light curtain in the following aspects:

- **Device identification**
- **Technical data**
- **Light curtain view**
- **Selected beam details**
- **Receiver status**
- **Blanking**
- **Reduced Resolution**
- **Beam Coding**

Device identification:
Model, type, firmware version, serial number

Technical data:
Resolution, Detection zone, number of beams, and device type

Light curtain view:
Graphical representation of the light curtain in a compact format

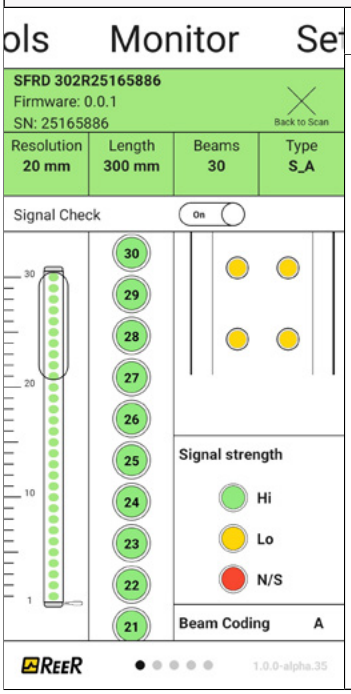
Selected beam details:
Enlarged view of the selected beams, adjustable via the slider on the left.

Receiver status:
Led indicators (copy of the receiver's four bottom signal LEDs) displaying the following parameters:
- Light curtain status
- BLE connection status
- Blanking activation

→	Refer to "LED Signals" section to understand the meaning of the LED colors.

Blanking / Reduced Resolution – Beam Coding:
The right-lower frame of monitor section will show these specific data.

Alignment



Signal Check On

By activating the "***Signal Check***" selector, an aid screen is displayed during the Emitter-Receiver alignment phase:

- **Beam status**
- **Selected beam details**
- **Signal Index**
- **Yellow LED indicators**
- **Individual beams signal level**

By activating the "*Signal Check*" selector, an aid screen is displayed during the Emitter-Receiver alignment phase:

Beam status:
graphical representation of the light curtain in a compact format

Selected beam details:
enlarged view of the selected beams, adjustable via the slider on the left, showing the beams signal strength (refer to *Signal Index*).

Signal Index:
LEDs coloured according to the beam signal strength.

Yellow LED indicators:
(also present on the Receiver) showing the alignment status. The number of illuminated yellow LEDs at the top indicates the alignment quality:
- One LED lighted → poor/insufficient alignment
- Four LEDs lighted → optimal alignment

Individual beams signal level:
With reference to the selected beams (displayed in the central area of the monitoring window), the app will display the received signal strength of each individual beam. Specifically, the beams may be color-coded as follows:

Led Color	Signal Strength
GREEN	STRONG
YELLOW	LOW
RED	NO SIGNAL

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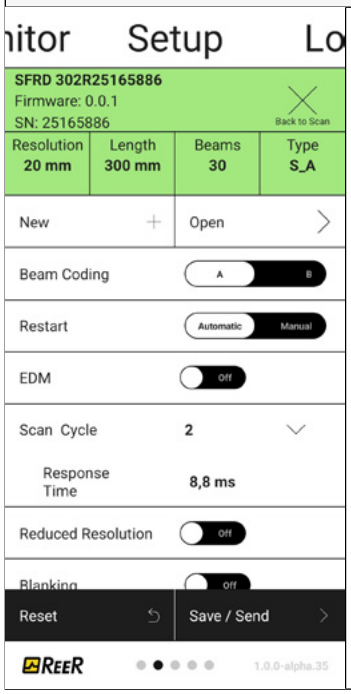
	The operator can navigate through the available pages based on the user type using the carousel menu located at the screen top.

Available operations	
Read-only	Monitor
Maintenance	Monitor
	Logs
	Setup
Specialist	All actions available for Maintenance user
	Monitor
	Logs
	Setup
	Update

	Refer to the "*Users*" section for a detailed description of the operations for the three user roles.

Setup



On this page, the authorized operator, referred to as the "*Specialist*", is enabled to configure the desired operating modes as outlined in the "*Modes of Operation*" chapter.
The configured parameters are then summarized, saved, and sent to the light curtain.

In the Setup page, the operator can configure the **SafeReady** functionality using the following parameters:

Create a new configuration or open a previously saved one

Decide the Beam Coding (A or B)

Set the operating parameters Automatic or Manual (Restart/Pre-Reset enable)

Set the EDM operating parameters

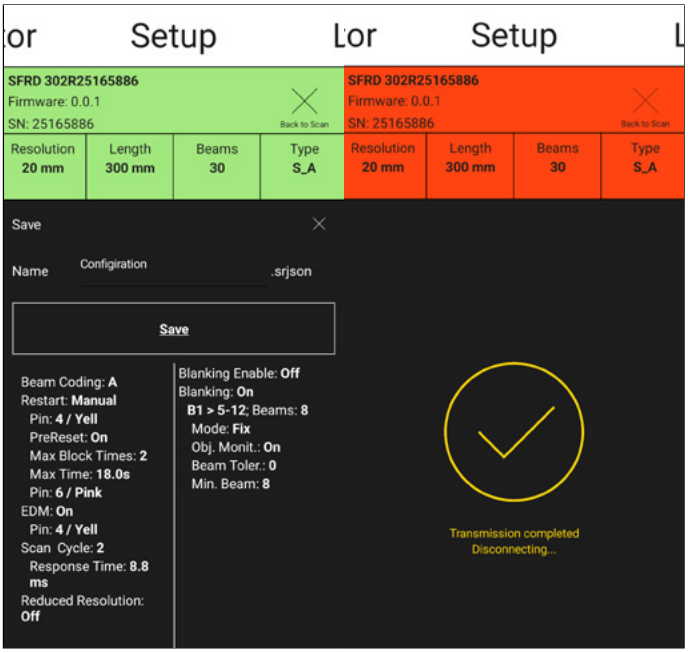
Set the light curtain Response Time

Set the Blanking parameters

	The **SafeReady** functionalities are described in "*Operating Modes*" section.

Once the configuration is complete, the operator can now proceed to save it in the phone memory **(naming xxx.srjson)** and send it to the connected light curtain.

	The top LED cap begins blinking blue, alternating with the previous colour, to indicate that the configuration has been successfully sent.



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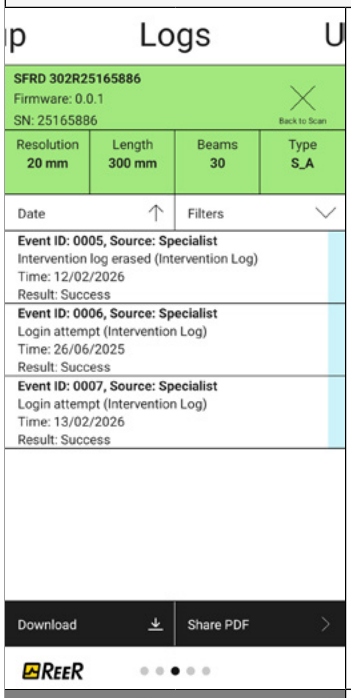
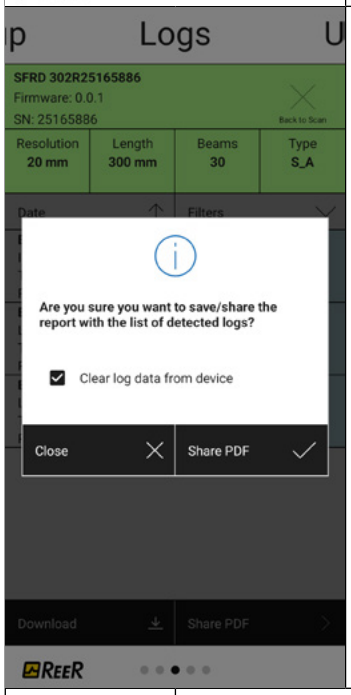
Logs



Within this logbook, are included:
- the creator of a specific event
- the description of a specific event
- the creation date

This logbook can record up to 350 consecutive events, among system logs (max 5) and intervention logs.

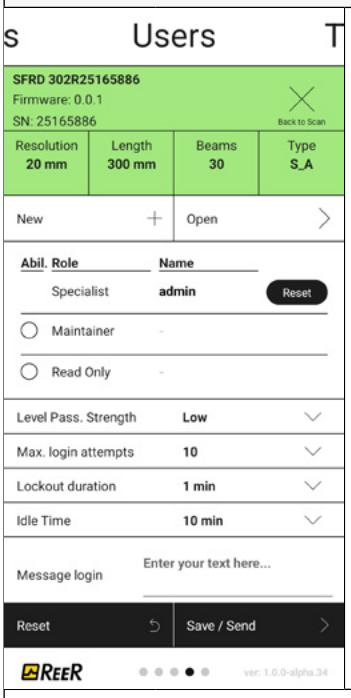


Once downloaded, the logs are saved into a dedicated report.
During this operation, the Specialist user may clear the safety light curtain memory by deleting the data already acquired.

Memory management follows two main steps:
Above 80% occupancy the application recommends deleting the logs to free up memory.
Above 95% occupancy report generation and data deletion become mandatory.

⚠	If the memory is not cleared beyond the 95% threshold, application functions will be limited in order to ensure system stability.

Users



"*Users*" interface is available for managing user accounts with credentials to access the light curtain.
The interface can be accessed in Offline mode or after connecting to the light curtain. In the latter case, only a user with "*Specialist*" privileges can access the interface.
Within the interface, the three users are listed along with their respective roles and names.

The *Specialist* user has authorization to manage user accounts: profiles can be enabled or disabled, usernames can be assigned, and passwords (own or third-party) can be reset to their default values.
These changes take effect immediately and do not require configuration upload to the safety light curtain.

Conversely, global parameters require the configuration to be transmitted to the device.
These parameters include:
- Password robustness requirements.
- Thresholds for login attempts and account lockout duration.
- Inactivity timeout for automatic logout.
- Login message.

Please, see the *Credentials and Password Management* section for initial Maintainer / Read-Only access management.

⚠	Resetting the *Specialist* password and updating the user configuration cause automatic disconnection from the safety light curtain.
	No user role are available for group assignment. (e.g., a group of "*Specialist*" users sharing a password). Each role corresponds to a single user who must be the only one with knowledge of his credentials (username and password).

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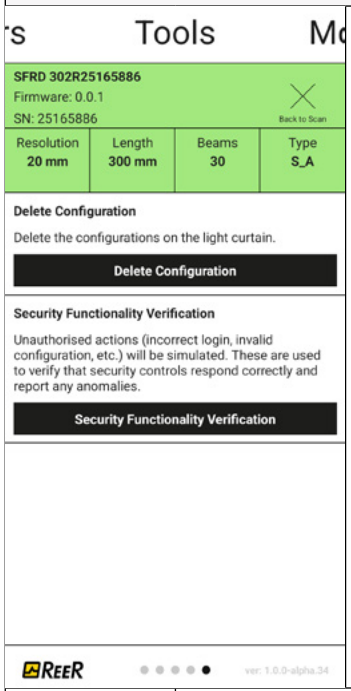
The operations that can be managed by each role are the following:	
Read-only	Monitor
	Setup viewing
Maintenance	Monitor
	Read system logs
	Modify, save and share configuration
	Restart the light curtain
	Send configuration to the light curtain
Specialist	All actions available for Maintenance user
	Monitor
	Read, share and backup incident logs
	Share, delete and backup system logs
	Manage users
	Perform operational tests
	Factory reset
	Update BLE firmware

Tools



The *Specialist* user has access to the *Tools* section, where device memory and security diagnostics can be managed.

Within this section it is possible to:

Delete configurations

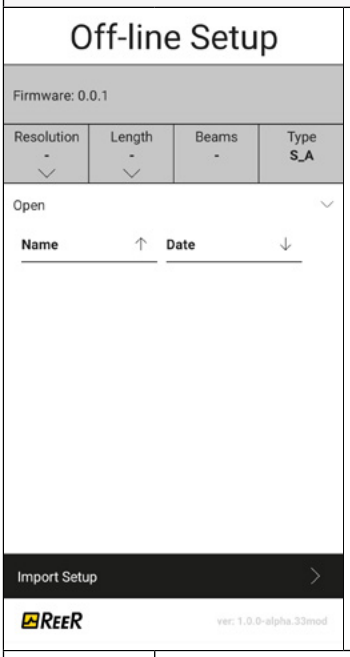
Complete removal of both the *Safety Configuration* and the *User Configuration* from the device.

Run tests

Initiation of security function verification procedures.

Deleting the configurations causes a full reset of user accounts. At the next login, default credentials must be used.

Import



In the Android version, the user can import configuration files stored in the smartphone's internal memory. Within the "*Open*" section, the "*Import Setup*" command allows browsing the device folders to locate files that are not yet available in the application's private memory.

This operation can be performed both offline and online.

The procedure consists of three steps:

01 Folder selection

identification of the directory containing the files, and confirm.

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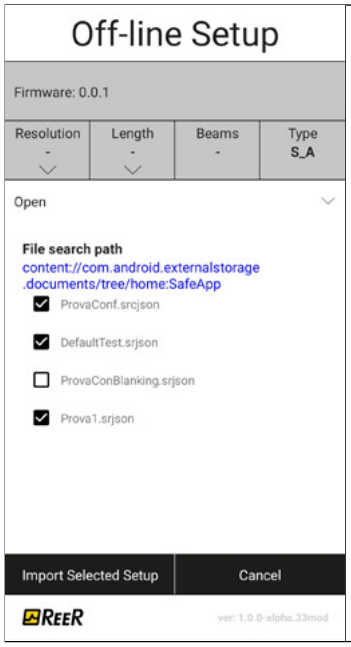


02 File selection
Display of the detected files list and selection of the files to be imported.

03 Import
Once imported, the files become available for opening, editing, and transmission to the safety light curtain.

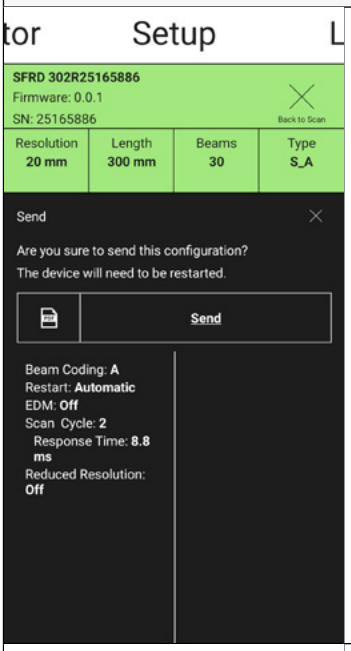
System / Users reports

Reports can be generated directly from the SafeApp for both the *System configuration* and the *User configuration* set and transmitted to the device.

The reports include:
- a summary of the configured parameters
- key configuration file information (creation date, last modification date, and report generation date)
- a hash code that uniquely identifies the configuration

Follow the instructions below to learn how to generate the reports.

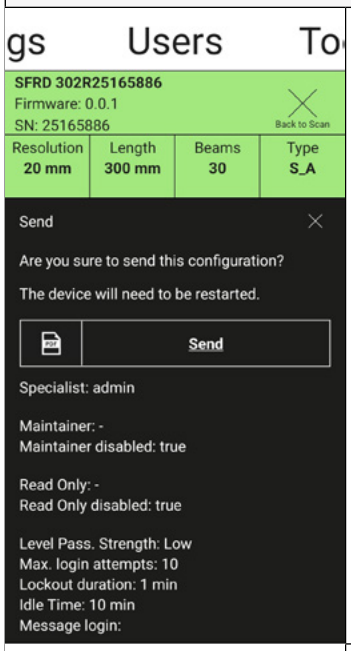
System report download



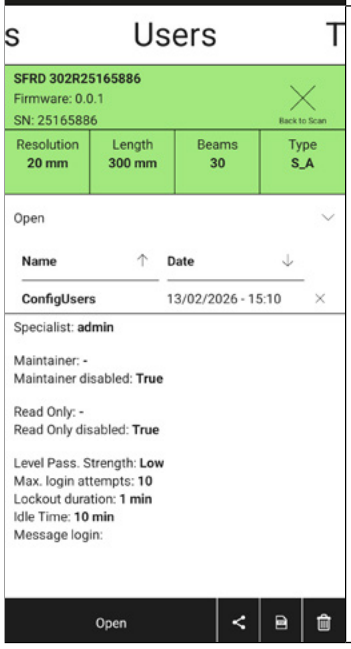
New setup
In the *Setup* panel, after setting the configuration, proceed with saving it.
On the next screen (*Send Configuration* screen), it is possible to download the *System Report* by tapping the corresponding icon.

Saved setup
In the *Setup* panel, tap *Open* and select the required configuration.
Once selected, it is possible to download the *System Report* by tapping the corresponding icon at the bottom of the screen.

User report download



New User setup
In *User* panel, after setting the User configuration, proceed with saving it.
On the next screen (*Send Configuration* screen), it is possible to download the *User Report* by tapping the corresponding icon .



Saved User setup
In the *User* panel, tap *Open* and select the required configuration.
Once selected, it is possible to download the *User Report* by tapping the corresponding icon at the bottom of the screen.

Credential and password management

	Default credentials for "*Specialist*" user are:	
	USER	**admin**
	PWD	**admin**
	When creating a new user, the Specialist assigns a unique username. The first login is performed using default credentials:	
	USER	******** (defined by the *Specialist* user)
	PWD	**main** (for *Maintainer* user)
		read (for *Read Only* user)

When the user logs in for the first time, he/she must set a new password and store it securely.
From the "*Users*" interface, the "*Specialist*" can enable or disable other users, modify their usernames, and reset passwords, both their own and those of other users.
Each user must set a new password upon their first login to access the device.

Password Renewal
The user must renew the password by every six months (possibly three months, depending on regulations and potential changes).
If a user logs in and more than six months have passed since the last password update, a password change will be needed before going ahead.
If a non-Specialist user forgets the password, the *Specialist* can reset it. Upon the next login, the affected user must set a new password.

Password recovery
If the "*Specialist*" forgets the password, operate the recovery procedure. This process will send specific information to ReeR "Aftersales department", allowing them to generate a "time-limited recovery code".

	Aftersales team, depending on Specialist's request, will decide whether to generate a code valid for 24, 48, or 72 hours.

Once the "*Specialist*" receives the code, it can be entered in a dedicated interface. Following, the "*Specialist*" must login using the default credentials and at once set a new password.

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Specifications

Input

Type 2 inputs
The programmable inputs **IN_1**, **IN_4** are Type 2 and fulfill the IEC-61131-2.

Low Level	< 5 Vdc (max 3 mA)
High Level	11…30 Vdc (6…30 mA)

Type 3 inputs
The programmable inputs **IN_2**, **IN_3** are Type 3 and fulfill the IEC-61131-2.

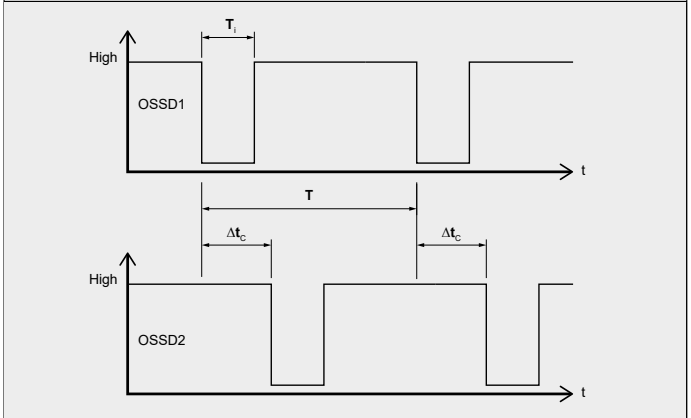
Low Level	< 5 Vdc (max 3 mA)
High Level	11…30 Vdc (2…15 mA)

Output

Safety Outputs OSSD1, OSSD2
The **SafeReady** light curtain is equipped with two static safety outputs (OSSD1, OSSD2) to control the load connected.OSSD1, OSSD2 are safety outputs PNP active high, with the following characteristics:

Output Signal Switching Device OSSD1, OSSD2 technical data	
Maximum admissible load	400mA @24VDC
OFF-State current (leakage current)	≤ 0.5 mA @24VDC
Load resistance	60Ω @19…29VDC
Load capacitance	800nF @24VDC
ON condition	(Uv-0,7V)...Uv
OFF condition	0V...2V r.m.s.
Load inductance	2mH @19…29VDC
Reverse polarity protection	1 A continuous / 30VDC reversing voltage

OSSD Interface type C class 3 (ZVEI CB24I)
The test impulse time is shown in the follow Figure:



T_i (Test impulse duration) = 350 µs
Δt_c (Phase shift) = Response Time / 2
T (Test impulse interval) = Response Time

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Environmental

Operating temperature	-30 °C …+55 °C
Storage temperature	-30 °C …+70 °C
Humidity	50% @70°C / 90% @20°C
Altitude	2000 m
Protection rating	IP 65 / IP 67
Shock resistance	25 g (Class 3M7) (ref. DIN EN 60068-2-27: 2012)
Vibration resistance	10 mm / 3g (5...150 Hz) (Class 3M7) (ref. EN 60068-2-6: 2009)

Technical

Resolutions [mm]	14 / 20 / 30 / 40 / 50 / 90	
Multibeam	2B / 3B / 4B	
Detection zone [mm]	150…2250 *(14 / 20 mm models)*	150…2250 *(30 / 40 / 50 / 90 mm models)*
Working range (selectable) [m]	LOW 0…4 / HIGH 3…8 *(14 mm models)*	LOW 0...8 HIGH 6...18 (other models)
Power supply	24 VDC +/-20%	
Max. consumption [W]	1 (Emitter)	3 (Receiver)
Safety outputs (n° / type)	2 PNP / 400mA@24VDC	
OSSDs dynamic test	Type C, ZVEI Classification - CB24I	
EDM	Feedback input for external relay control	
Response time [ms]	3,6…48,1	
Connections	Basic model: M12 5 pin connectors Standard/Plus model: M12 (5/8 pin) connectors	
Max. length of connections [m]	100	
Section dimensions [mm]	28 x 33	

Bluetooth®

Description	Low energy (LE) V5.2 (compatible 4.2 or later)
Connection	Bluetooth® with ReeR App mobile and PC Range <15 m

FCC

FCC	FCC CFR 47 Part 15C

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Safety data

Safety Level	**Type 4**	EN IEC 61496-1: 2020 EN IEC 61496-2: 2020
	SIL 3	IEC 61508-1: 2010 IEC 61508-2: 2010 IEC 61508-3: 2010 IEC 61508-4: 2010
	Maximum SIL 3	IEC 62061: 2021
	PL e - Category 4	EN ISO 13849-1: 2023
HFT	**1**	EN ISO 13849-1: 2023
Mission time	**20 years**	IEC 62061: 2021
Positioning of safeguards		EN ISO 13855: 2024

14mm Resolution Models	**151**	**301**	**451**	**601**	**751**	**901**	**1051**	**1201**	**1351**	**1501**	**1651**	**1801**
PFHd	3,94E-08	4,05E-08	4,15E-08	4,25E-08	4,36E-08	4,46E-08	4,56E-08	4,67E-08	4,77E-08	4,87E-08	4,98E-08	5,08E-08
SFF	98,95%	99,20%	99,35%	99,45%	99,52%	99,57%	99,61%	99,64%	99,67%	99,69%	99,71%	99,72%
MTTFd	153,6	147,3	141,4	136	131	126,3	121,9	117,9	114,1	110,5	107,2	104,1
DCavg	95%	95%	95%	95%	95%	95%	95%	95%	96%	96%	96%	96%

20mm Resolution Models	**152**	**302**	**452**	**602**	**752**	**902**	**1052**	**1202**	**1352**	**1502**	**1652**	**1802**	**1952**	**2102**	**2252**
PFHd	3,94E-08	4,05E-08	4,15E-08	4,25E-08	4,36E-08	4,46E-08	4,56E-08	4,67E-08	4,77E-08	4,87E-08	4,98E-08	5,08E-08	5,18E-08	5,29E-08	5,39E-08
SFF	98,95%	99,20%	99,35%	99,45%	99,52%	99,57%	99,61%	99,64%	99,67%	99,69%	99,71%	99,72%	99,73%	99,75%	99,76%
MTTFd	153,6	147,3	141,4	136	131	126,3	121,9	117,9	114,1	110,5	107,2	104,1	101,1	98,3	95,6
DCavg	95%	95%	95%	95%	95%	95%	95%	95%	96%	96%	96%	96%	96%	96%	96%

30mm Resolution Models	**153**	**303**	**453**	**603**	**753**	**903**	**1053**	**1203**	**1353**	**1503**	**1653**	**1803**	**1953**	**2103**	**2253**
PFHd	3,90E-08	3,94E-08	4,00E-08	4,05E-08	4,10E-08	4,15E-08	4,21E-08	4,25E-08	4,31E-08	4,36E-08	4,41E-08	4,46E-08	4,52E-08	4,56E-08	4,62E-08
SFF	98,76%	98,95%	99,10%	99,20%	99,29%	99,35%	99,41%	99,45%	99,49%	99,52%	99,55%	99,57%	99,59%	99,61%	99,63%
MTTFd	156,8	153,6	150,2	147,3	144,1	141,4	138,5	136	133,2	131	128,4	126,3	123,9	121,9	119,7
DCavg	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

40mm Resolution Models	**154**	**304**	**454**	**604**	**754**	**904**	**1054**	**1204**	**1354**	**1504**	**1654**	**1804**	**1954**	**2104**	**2254**
PFHd	3,87E-08	3,91E-08	3,94E-08	3,98E-08	4,01E-08	4,05E-08	4,08E-08	4,12E-08	4,15E-08	4,18E-08	4,22E-08	4,25E-08	4,29E-08	4,32E-08	4,36E-08
SFF	98,65%	98,82%	98,95%	99,05%	99,13%	99,20%	99,26%	99,31%	99,35%	99,39%	99,42%	99,45%	99,48%	99,50%	99,52%
MTTFd	158,2	155,9	153,6	151,5	149,3	147,3	145,3	143,3	141,4	139,5	137,7	136	134,3	132,6	131
DCavg	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

50mm Resolution Models	**155**	**305**	**455**	**605**	**755**	**905**	**1055**	**1205**	**1355**	**1505**	**1655**	**1805**	**1955**	**2105**	**2255**
PFHd	3,87E-08	3,90E-08	3,92E-08	3,94E-08	3,97E-08	4,00E-08	4,03E-08	4,05E-08	4,07E-08	4,10E-08	4,13E-08	4,15E-08	4,18E-08	4,21E-08	4,23E-08
SFF	98,61%	98,76%	98,87%	98,95%	99,03%	99,10%	99,16%	99,20%	99,25%	99,29%	99,33%	99,35%	99,38%	99,41%	99,43%
MTTFd	158,7	156,8	155	153,6	151,9	150,2	148,5	147,3	145,7	144,1	142,5	141,4	139,9	138,5	137
DCavg	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

90mm Resolution Models		**309**	**459**	**609**	**759**	**909**	**1059**	**1209**	**1359**	**1509**	**1659**	**1809**	**1959**	**2109**	**2259**
PFHd		3,87E-08	3,88E-08	3,90E-08	3,91E-08	3,92E-08	3,94E-08	3,94E-08	3,96E-08	3,97E-08	3,98E-08	4,00E-08	4,01E-08	4,03E-08	4,04E-08
SFF		98,61%	98,69%	98,76%	98,82%	98,87%	98,93%	98,95%	98,99%	99,03%	99,07%	99,10%	99,13%	99,16%	99,19%
MTTFd		158,7	157,7	156,8	155,9	155	154,1	153,6	152,8	151,9	151	150,2	149,3	148,5	147,7
DCavg		95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

Multibeam	**2 beams**	**3 beams**	**4 beams**
PFHd	2,32E-08	2,34E-08	2,36E-08
SFF	98,63%	98,70%	98,76%
MTTFd	247,2	241,8	236,7
DCavg	95%	95%	95%

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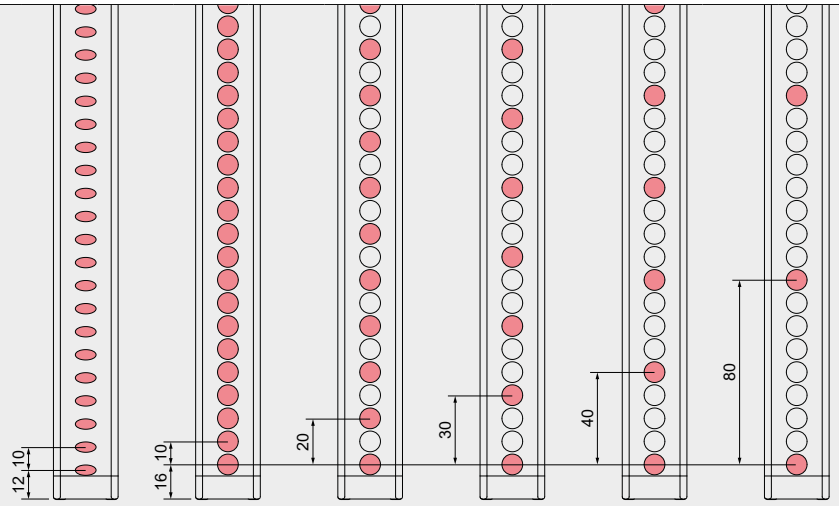
List of models



14mm Resolution Models	151	301	451	601	751	901	1051	1201	1351	1501	1651	1801
Number of beams	15	30	45	60	75	90	105	120	135	150	165	180
Detection zone [mm]	147	297	447	597	747	897	1047	1197	1347	1497	1647	1797
Response Time [ms]	5,8	8,8	11,8	14,9	17,9	20,9	23,9	27	30	33	36	39,1

20mm Resolution Models	152	302	452	602	752	902	1052	1202	1352	1502	1652	1802	1952	2102	2252
Number of beams	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225
Detection zone [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Response Time [ms]	5,8	8,8	11,8	14,9	17,9	20,9	23,9	27	30	33	36	39,1	42,1	45,1	48,1

30mm Resolution Models	153	303	453	603	753	903	1053	1203	1353	1503	1653	1803	1953	2103	2253
Number of beams	8	15	23	30	38	45	53	60	68	75	83	90	98	105	113
Detection zone [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Response Time [ms]	4,4	5,8	7,4	8,8	10,4	11,8	13,5	14,9	16,5	17,9	19,5	20,9	22,5	23,9	25,6

40mm Resolution Models	154	304	454	604	754	904	1054	1204	1354	1504	1654	1804	1954	2104	2254
Number of beams	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Detection zone [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Response Time [ms]	3,8	4,8	5,8	6,8	7,8	8,8	9,8	10,8	11,8	12,9	13,9	14,9	15,9	16,9	17,9

50mm Resolution Models	155	305	455	605	755	905	1055	1205	1355	1505	1655	1805	1955	2105	2255
Number of beams	4	8	12	15	19	23	27	30	34	38	42	45	49	53	57
Detection zone [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Response Time [ms]	3,6	4,4	5,2	5,8	6,6	7,4	8,2	8,8	9,6	10,4	11,2	11,8	12,6	13,5	14,3

90mm Resolution Models		309	459	609	759	909	1059	1209	1359	1509	1659	1809	1959	2109	2259
Number of beams		4	6	8	10	12	14	15	17	19	21	23	25	27	29
Detection zone [mm]		300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Response Time [ms]		3,6	4	4,4	4,8	5,2	5,6	5,8	6,2	6,6	7	7,4	7,8	8,2	8,6

Multibeam	2B	3B	4B
Number of beams	2	3	4
Detection zone [mm]	510	810	910
Lens pitch [mm]	500	400	300
Response Time [ms]	3,2	3,4	3,6

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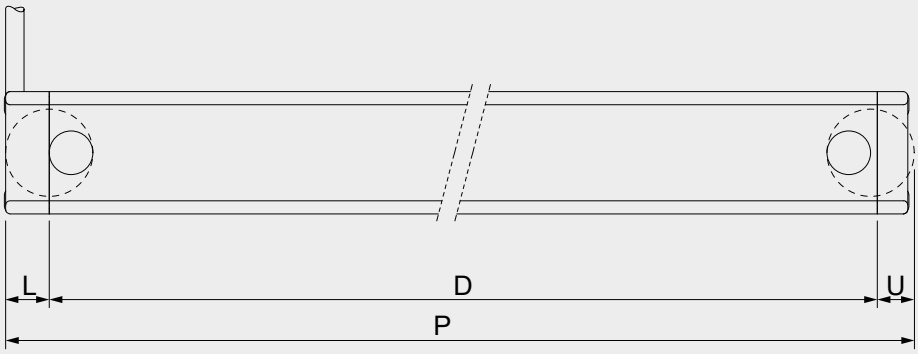
Effective protective field height (14/20mm Resolution)



14mm Resolution Models	151	301	451	601	751	901	1051	1201	1351	1501	1651	1801
L [mm]	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
U [mm]	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
D [mm]	146	296	446	596	746	896	1046	1196	1346	1496	1646	1796
P [mm]	159	309	459	609	759	909	1059	1209	1359	1509	1659	1809

20mm Resolution Models	152	302	452	602	752	902	1052	1202	1352	1502	1652	1802	1952	2102	2252
L [mm]	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
U [mm]	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
D [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
P [mm]	169	319	469	619	769	919	1069	1219	1369	1519	1669	1819	1969	2119	2269

Legenda	
L	Supplement quote below the lower edge of the front window
U	Supplement quote above the upper edge of the front window
D	Front window height
P	Effective protective field height

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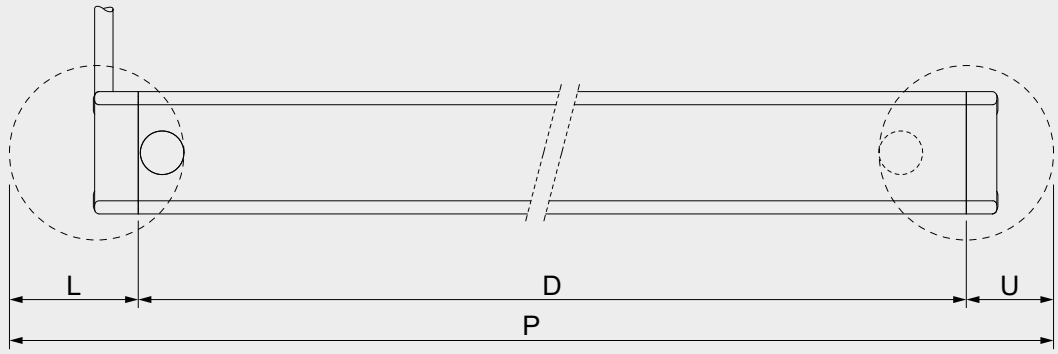
Effective protective field height (30/40/50/90mm Resolution)



30mm Resolution Models	**153**	**303**	**453**	**603**	**753**	**903**	**1053**	**1203**	**1353**	**1503**	**1653**	**1803**	**1953**	**2103**	**2253**
L [mm]	20	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5
U [mm]	19,5	9,5	19,5	9,5	19,5	9,5	19,5	9,5	19,5	9,5	19,5	9,5	19,5	9,5	19,5
D [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
P [mm]	189	329	489	629	789	929	1089	1229	1389	1529	1689	1829	1989	2129	2289

40mm Resolution Models	**154**	**304**	**454**	**604**	**754**	**904**	**1054**	**1204**	**1354**	**1504**	**1654**	**1804**	**1954**	**2104**	**2254**
L [mm]	30	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5	29,5
U [mm]	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
D [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
P [mm]	189	339	489	639	789	939	1089	1239	1389	1539	1689	1839	1989	2139	2289

50mm Resolution Models	**155**	**305**	**455**	**605**	**755**	**905**	**1055**	**1205**	**1355**	**1505**	**1655**	**1805**	**1955**	**2105**	**2255**
L [mm]	40	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5	39,5
U [mm]	19,5	29,5	39,5	9,5	19,5	29,5	39,5	9,5	19,5	29,5	39,5	9,5	19,5	29,5	39,5
D [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
P [mm]	209	369	529	649	809	969	1129	1249	1409	1569	1729	1849	2009	2169	2329

90mm Resolution Models		**309**	**459**	**609**	**759**	**909**	**1059**	**1209**	**1359**	**1509**	**1659**	**1809**	**1959**	**2109**	**2259**
L [mm]		80	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5	79,5
U [mm]		29,5	39,5	49,5	59,5	69,5	79,5	29,5	39,5	49,5	59,5	69,5	79,5	29,5	39,5
D [mm]		300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
P [mm]		409	569	729	889	1049	1209	1309	1469	1629	1789	1949	2109	2209	2369

Legenda	
L	Supplement quote below the lower edge of the front window
U	Supplement quote above the upper edge of the front window
D	Front window height
P	Effective protective field height

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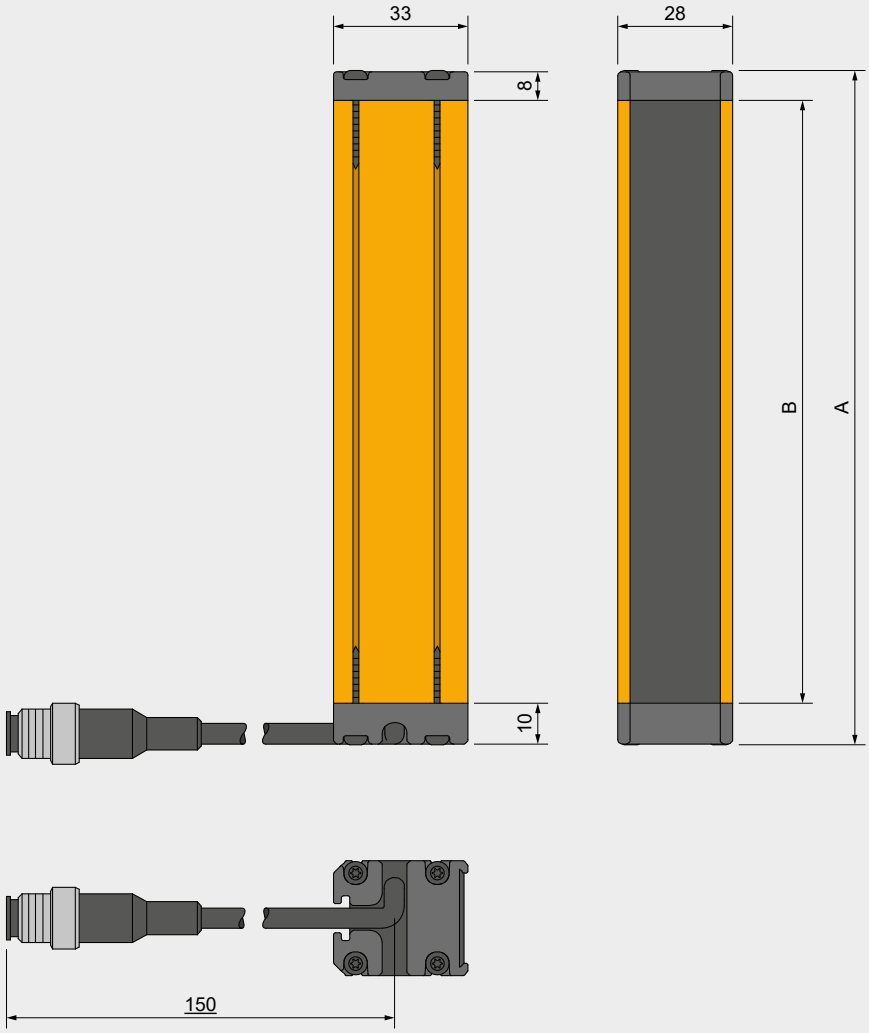
Dimensions



Resolution 14 mm	**150**	**300**	**450**	**600**	**750**	**900**	**1050**	**1200**	**1350**	**1500**	**1650**	**1800**
Dimension "A" [mm]	164	314	464	614	764	914	1064	1214	1364	1514	1664	1814
Dimension "B" [mm]	146	296	446	596	746	896	1046	1196	1346	1496	1646	1796

Resolutions 20, 30, 40, 50, 90 mm	**150**	**300**	**450**	**600**	**750**	**900**	**1050**	**1200**	**1350**	**1500**	**1650**	**1800**	**1950**	**2100**	**2250**
Dimension "A" [mm]	168	318	468	618	768	918	1068	1218	1368	1518	1668	1818	1968	2118	2268
Dimension "B" [mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250

Multibeam	**2B**	**3B**	**4B**
Dimension "A" [mm]	510	810	910
Dimension "B" [mm]	528	828	928

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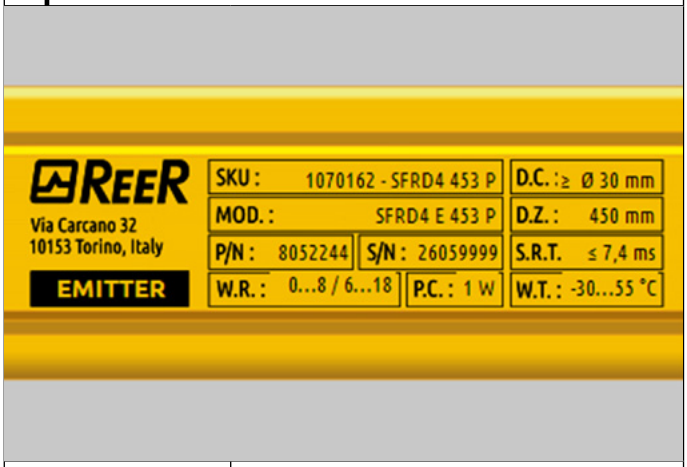
Laser marking specifications



SKU	Sales code (TX + RX)
MOD	Full model designation
P/N	Part number (TX or RX)
S/N	Serial Number
W.R.	Working Range
P.C.	Power Consumption
D.C.	Detection Capability
D.Z.	Detection Zone
S.R.T.	System Response Time
W.T.	Operating Temperature

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Maintenance

Pre-activation checklist

To make sure that **SafeReady** has been configured correctly, follow this checklist.

1.	Verify that the electrical connections have been carried out correctly.
2.	Verify that the supply voltage is 24Vdc ± 20% (PELV, compliant with EN 60204-1 (Chapter 6.4)).
3.	Verify that access to the hazardous area can only take place through the gate protected by **SafeReady**.
4.	Verify that there are physical protection curtains preventing access to the hazardous area.
5.	The power contactors operating the hazardous machine must meet the light curtain safety level: SIL 3 - PL e - Cat.4.
6.	RESTART command must not be accessible from inside the hazardous area.
7.	The minimum safety distance must have been previously measured and respected during installation.
8.	There must be no reflective surfaces near the dangerous guarded area.
9.	Make sure that the top cap signal lamp operates correctly.
10.	PLUS Models: Ensure that the safety barrier properly engages via Bluetooth® with the application.
11.	Verify (only if **SafeReady** is programmed via Software) that the Bluetooth® LED is turned on.
12.	Ensure that there are no spurious light sources that may affect the smooth operation of the **SafeReady**.
13.	Make sure the on-board staff has been adequately trained on the **SafeReady** operation.
14.	Ensure that all selected functions for the light curtain (e.g., blanking) are correctly configured and properly considered during the risk assessment.

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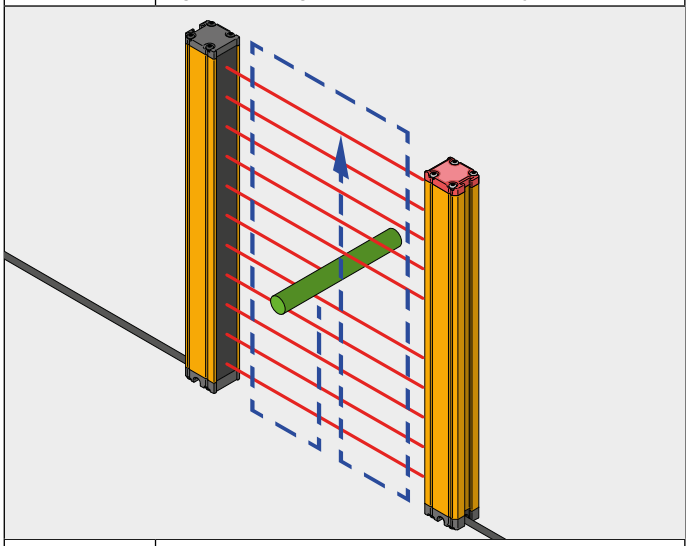
Periodic control

	Functional checks must be carried out at a certain frequency (e.g. daily), depending on the risk analysis and on the light curtain utilization environment.

1	Verify that Emitter and Receiver have been properly connected to the power supply (24VDC±20%).
2	Verify the correct configuration settings: **MANUAL** at power-up, the curtain waits for a RESTART command to activate its work cycle (START INTERLOCK). Verify that this command is positioned so that it cannot be activated from the inside of the hazardous area. Stop at least one beam of the protected area and make sure that the red LED on the Receiver (RESTART INTERLOCK, OSSD OFF) lights up. **AUTOMATIC** Stop at least one beam of the protected area and verify that the green LED is lit again when the area is free (OSSD ON)
3	Verify protected zone resolution: for the test, use the correct test object (matt cylinder of the diameter equal to the resolution of the curtain. Refer to www.reersafety.com to right ordering code for the test object.
	
a	Insert the test object into the controlled area and move it slowly from top to bottom (or vice versa), first in the centre, and then close to both the transmitter and the receiver.
b	Check that at each stage of the test object movement the LED cap on the receiver remains in RED, switched on and that the dangerous machine stops.

Care and maintenance

SafeReady does not require any specific maintenance work; However, periodic cleaning of the frontal protection surfaces of the two devices is recommended. Cleaning should be carried out with a damp cloth; in particularly dusty environments, after cleaning the front surface, it is advisable to spray it with an anti-static product.

	In any case, do not use abrasive, corrosive, solvents or alcohol that may damage the part to be wiped or wool cloth to avoid electrostatically loading the front surface of the curtain itself.
	Even a very fine groove of frontal plastic surfaces can increase the width of the beam of the light curtain, thus compromising the effectiveness of detection in the presence of reflective lateral surfaces.
	It is therefore essential to pay particular attention during the cleaning steps of the curtain front window, particularly in environments where abrasive powders are present. (e.g. cement plants, etc.).

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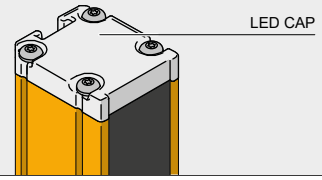
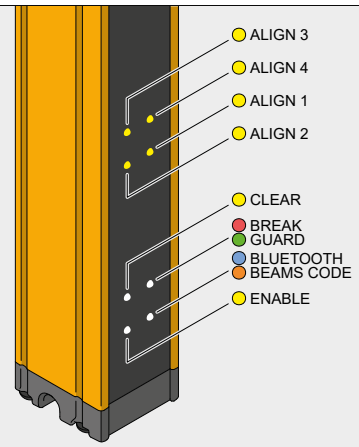
Anomaly state

RECEIVER

In the event of a fault, the upper LED cap will flash red. During this phase, it could be possible to identify the cause of the problem by analyzing the LEDs located along the front window of the receiver (see table below).



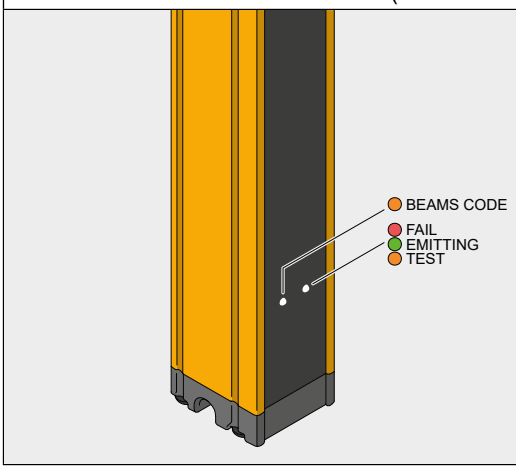


Error	Top cap	Break	Beams code	Clear	Enable	Align 1	Bluetooth®	Troubleshooting
App configuration loading / Uploading not successfull	↯	↯						- Check that the light curtain is correctly connected. - Perform light curtain reset and restart the App. - Perform a new configuration upload.
Wrong wire configuration	↯	↯						- Check light curtain wiring. - For STANDARD / PLUS models, check pins 4–5–6–8 (INPUT).
EDM feedback failure	↯	↯						- Check EDM connection on Pin 4 / Yellow.
OSSDs connection problem	↯	↯						Verify Receiver pin connections: - Basic: pin 2-4 - Standard/Plus: pin 1-3
Main board internal failure	↯	↯						Contact ReeR After-Sales Service
ADD-ON board internal failure	↯	↯						Contact ReeR After-Sales Service
Interfering emitter detected	↯	↯						- Check for another light curtain that may be incorrectly positioned. - Ensure the TX is set to the same RX coding. - Refer to *Beam Coding mode*
Bluetooth®	↯	↯						- Check if Bluetooth® is enabled on your device. - Restart the light curtain - Retry Bluetooth® connection.
Log memory 80%							↯	- Create a backup of the logs. - Delete logs from the light curtain (mandatory operation when Log Memory reaches 95%).

Legenda	↯	Led blinking

EMITTER

In the event of a fault, the LED located along the front window of the emitter will flash red (see table below).



Error	Beams code	Fail/ Emitting	Troubleshooting
Abnormal connection of pins 2 and 4		↯	Check connections between pins 2 and 4.
Internal error		↯	Send for repair to REER.

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