

Installation and operating instructions

Switching light curtain CSL 505

Function

The CSL 505 switching light curtain monitors a defined control area with multiple invisible infrared light beams. The light curtain systems consist of a transmitter bar (Tx) and a receiver bar (Rx) made of anodized aluminum. They operate on the principle of multiple throughbeam photoelectric sensors, whose output signals are linked. If any light beam between transmitter and receiver is interrupted, this is registered by the integrated evaluation electronics and signaled at the antivalent push-pull signal outputs (PNP & NPN).

Intended use

The CSL 505 switching light curtain can be mounted on building components, machine elements as well as other support elements. The device must be secured with the existing fastening options (holes, bolts, ...). The switching light curtain is suitable for indoor and outdoor use.

Declaration of Conformity

The product satisfies the following standards:

EU Directive	2004/108/EC		
Interference emission	EN 55022:2010		
Interference rejection	EN 55022:2010		
Degree of protection	EN 60529		
Proximity switches	EN 60947-5-2		
cCSAus	UL 61010-1 (Third Edition): 2012-05; CAN/CSA-C22.2 No. 61010-1-1		

Leuze electronic GmbH + Co KG in D-73277 Owen, possesses a certified quality assurance system in accordance with ISO 9001.

Safety notices

Please observe the safety notices of the original operating instructions.

Mounting

CSL 505 switching light curtains can be mounted on building components, DIN rails as well as other support elements.

Technical data

Housing	Aluminum, clear anodized, dark-red plastic film
Connection	4-pin M8 connector or open cable end
Cables (optional)	4-pin cable with M8 socket available in various lengths as accessory
Operating voltage	24 V DC (18...30 V DC) with max. 10% ripple
(DC voltage)	
Power consumption	Nominal: 3.1 W, peak: 6.5 W (2 MHz, 100 µs)
Switch-on current	7.5 A (max), 40 µs
Outputs	Short-circuit proof, max. 150 mA
Environmental data	-30 ° C to +50 ° C, air humidity < 90 %, non-condens.
Operating range	300 mm up to 5,000 mm ²
Response time	Cycle time approx. 1 ms/beam plus basic time (approx. 4 ms)
Max. number of beams	160 logical beams
Grid:	5 / 12.5 / 25 / 50 / 100 mm
Degree of protection	IP 65
Altitude	< 2000 m
Degree of contamination	2

Overvoltage category I

Installation recommendations

Read these instructions before commissioning. Mount the bars without any mechanical loading. In general, rough alignment of the bars is sufficient. The transmitter bar and receiver bar must be able to "see" over the entire monitoring range.

For optical synchronization of transmitter and receiver, either the bottom or top beam (configurable) is used. This beam must not be continuously interrupted or suppressed.

Only connect and disconnect bars while in a de-energized state.

A potential difference of 60 V between the bar housing and the supply voltage must not be exceeded.

Avoid ground loops: all bars must have the same grounding potential.

Interference from ambient light (e.g., from flash lamps or sunlight) on the receiver bar is to be avoided. Avoid object reflections.

Mutual interference of optical sensors is to be avoided.

Teach event

The teach event is important for ensuring the function of the light curtain. Therefore, perform the teach event on the receiver after every change to the bars. For an error-free teach event, the monitoring range must be clear.

Execution of teach event:

- On the receiver, switch pin 2 (Q1_RX) to +24 VDC.
- Switch on the device by connecting pin 1 to +24 VDC and pin 3 to GND.
- The LEDs indicate a successful teach as follows:
 - LED 1: Continuous light
 - LED 2: Double flashing
- Switch off the device.
- On the receiver, disconnect pin 2 (Q1_RX) from +24 VDC.

M8 connection diagram

Pin	TX	RX
1, 3	+24 V DC, GND	
2*	n.c.	Dark switching*
4	TX_Off ¹⁾	Light switching

* is used during the teach event
¹⁾ see translation of original operating instructions

Function assignment

By reversing the polarity of the supply voltages on the transmitter and receiver, it is possible to switch between predefined device functions:

Transmitt	Pin 1	Pin 3	Description
	+24 V DC	GND	Extended operating range: 1.0 ... 5.0 m
	GND	+24 V DC	Reduced operating range: 0.3 ... 1.3 m

Receiver	Pin 1	Pin 3	Description
	+24 V DC	GND	Only parallel beams
	GND	+24 V DC	Parallel and diagonal beams

The depicted assignments are standard settings. The assigned functions can be freely configured. For configurations that differ from the standard configuration, please observe references to a configuration provided with the product or the technical information.

Status LED

LEDs on the transmitter and receiver are used for diagnostics.

Receiver			Transmitter	
LED1	LED2	Status	LED	Status
○	○	Not ready	○	Not ready
●	○	Ready, interrupted beam	●	Ready
●	●	Ready	⊗	Error
●	⊗	Successful teach		
⊗	●	Error		
⊗	○	Error, interrupted beam		
⊗	○	Configuration error		
⊗	⊗	Serious error*		

* during the teach event