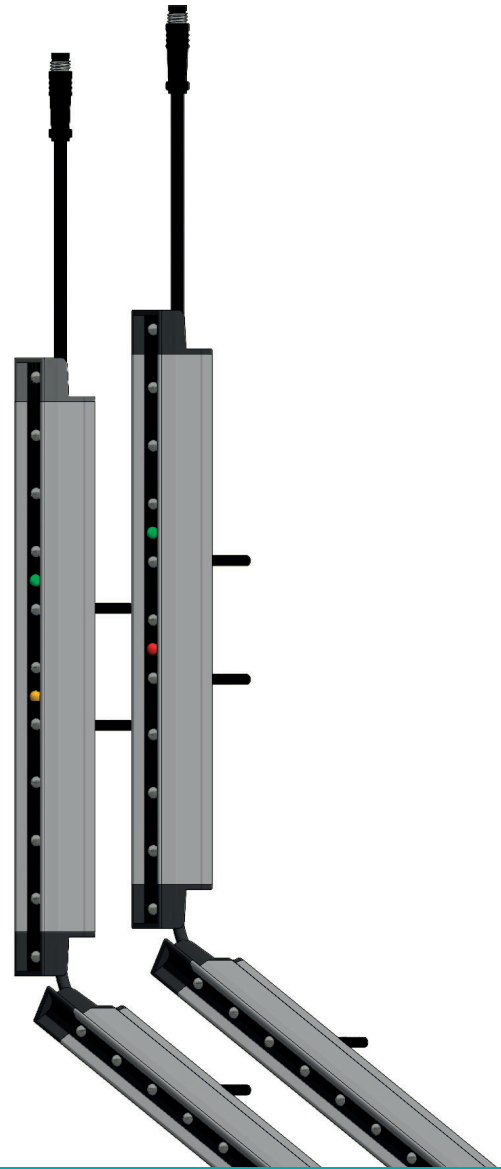


Non-contact protective
device to protect
contours with high
resolution



Safety light curtain LIGI-10-FLEX with high beam selection

Sold only to industrial specialist companies



Light barrier systems

Move doors safely

Subject to change

LIGI-10-FLEX Technical information

- Perfect adaptation of the protective geometry
- High resolution, obstacle detection as of \varnothing 28 mm
- Closely-meshed protective field for manual protection
- Beam geometry up into the boundary area
- Universal OSE or semiconductor relay output variants
- Automatic light control
- Highly resistant to extraneous light
- Extensive range of variants
- Robust aluminium housing, fully encapsulated
- IP 67, resistance to environmental influences
- Universal mounting options

The new LIGI-10-FLEX, with its high resolution and robust execution, has been specifically designed for industrial doors and gates, where safe detection in the hand protection range is required.

The LIGI can be used as a safety guard for the entire winding reel, as pull-in protection or as clamping protection for door/gate panels. This means that the mechanical protective housing can be fully dispensed with, which in turn means that the production costs can be reduced and service quality can be significantly improved.

For machine protection doors, the LIGI can be used as a non-contact protective device for closing edge monitoring and reach-in protection.

The highly compact and fully encapsulated LIGI offers perfect protection against moisture and vibrations in everyday door use. The housing is equipped with a guide groove for M4 hex screws as well as with the option to add freely selectable cross holes. Its compatibility with all the standard door controllers means that it can be used universally in almost all door systems.

Technical data

Door widths	1.6 - 10 m
Operating voltage	10 - 30 V DC
Current consumption	Transmitter: approx. 30 mA (24 V DC), depending on number of channels Receiver: approx. 20 mA (24 V DC), depending on number of channels
Power consumption	approx. 1.2 W
Type of light	infrared modulated
Detection capability	Obstacle detection as of \varnothing 28 mm
OSE output	approx. 950 Hz, alternating signal, short-circuit-proof, protected against reverse polarity
SSR semiconductor relay	100 mA, short circuit-proof, potential-free
Response time	< 100 ms
Reactivation time	< 800 ms
Ambient light safety	\geq 100 klux
Housing material	Aluminium profile fully encapsulated in 2 K epoxy resin
Connection	M8-6-pole plug
Protection class	IP67 as per EN60529
Operating temperature	-20 to +60°C
Storage temperature	-30 to +70°C

Basic functions

The LIGI is a very powerful safety light curtain equipped with state-of-the-art microprocessor technology. It comes with a very broad capacity range in regard to parameterisation for optimal adjustment to the door types and installation type. It performs a permanent self-test of the internal electronic system and software.

Diagnosis indicators

Setting parameters and service diagnosis are represented by a flashing code of the indicator LEDs. The LIGI monitors all important internal parameters of the electronic system and the software. In case of an error, a flash code is issued.

- LED illuminated
- ☆ LED flashing
- ⊗ LED off

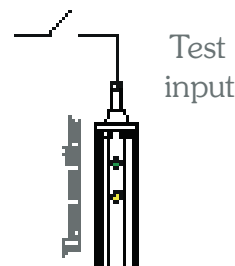
Indicator transmitter	Indicator receiver	Description	Error	Solution
⊗ ⊗	⊗ ⊗		no power supply	Check power supply
⊗ ⊗ ⊗ ⊗ ☆ ☆ ☆ ⊗	⊗ ⊗	Yellow LED flashes 3x, long pause	Receiver poles reversed	Check operating voltage for receiver
	⊗ ⊗ ⊗ ⊗ ☆ ☆ ⊗ ⊗	Red LED flashes 2x, long pause	Short-circuit at output	Check output line, overload, incorrectly connected, line faulty, output in light curtain faulty
⊗ ⊗ ⊗ ⊗ ☆ ☆ ☆ ⊗	⊗ ⊗ ⊗ ⊗ ☆ ☆ ☆ ⊗	LEDs flash 3x, long pause	Fault in sync line	Check sync line, should only be connected between transmitter and receiver
☆ ⊗ ☆ ⊗ ☆ ⊗ ☆ ⊗	☆ ⊗ ☆ ⊗ ☆ ⊗ ☆ ⊗	All LEDs flashing	Internal device error	Light curtain needs to be replaced

Test inputs / adjustment mode

Function assignment for test input

The test input on the LIGI transmitter is used with time control for two functions.

1. Test of the light curtain using the control
2. Adjustment mode through activation of the test input for at least 15s



Switch variants for test input

	T00	T05
Test input switching	OSE output	SSR output
10 - 30 V DC	Adjustment > 15s	Test Adjustment > 15s
open	Operation	Operation
GND	Operation	Test Adjustment > 15s
Internal test input		

Alignment mode

If the test input is activated for longer than 15s, the LIGI internally measures a receiver signal. The light signal quality is indicated through a flashing code of the indicator LEDs on the receiver. This serves to indicate the signal strength to solve problems with the adjustment, pollution or installation. Furthermore, it is also a helpful function to detect errors if service is needed and during the annual inspection.

activated test input	Transmitter	Receiver	
0 - 15s			LEDs flash in alternation
> 15s		Output of measured value	
			green LED flashes Insufficient light reserve
			green LED on red LED flashes

* The faster the flashing frequency of the red LEDs, the greater the light reserve.

Troubleshooting if the light reserve is insufficient:

clean the LIGI, check adjustment, possibly check installation behind the panel if the LIGI or the panel has shifted.

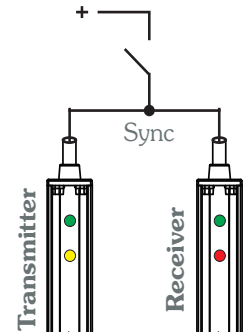
Programmable light control

With light control (default)

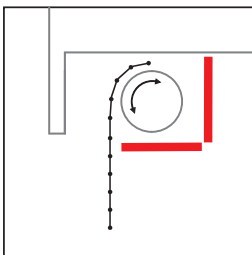
The LIGI is delivered by default with an automated luminance control. The control continuously adapts the luminance to the operating conditions.

Programming luminance directly

For the installation of the LIGI in systems with very high reflective values, e.g. circle-matted structures, stainless steel and reflecting surfaces, the light control functions may be disrupted.



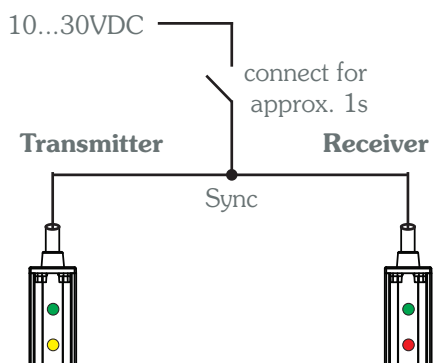
In these cases, the ideal luminance can be programmed directly by LIGI on the system. This serves to disable the electric light control.



Procedure:

1. Winding reel must be rolled off
2. LIGI must be connected and ready for operation
3. LIGI must have an uninterrupted free view during the reading of approx. 10s
4. Sync line for approx. 1s connected with the positive pole, reading and setting starts

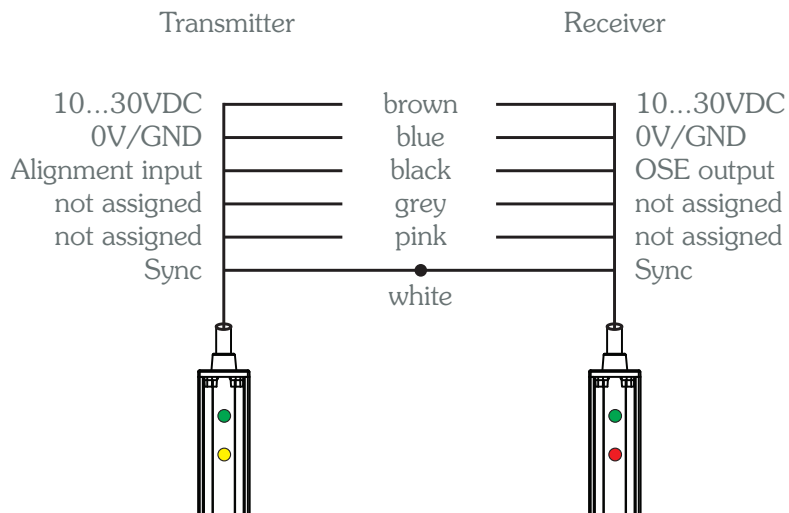
Start (when protected area is vacant)



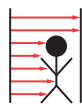
Indicator LEDs on receiver	
Indicator before start protected area vacant	● ⊗
Programming phase, approx. 10s green on / red flashes	● ● ● ● ● ● ● ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗
Programming phase completed Operational	● ⊗

OSE output

The safety-oriented OSE output is supported by most door controls.



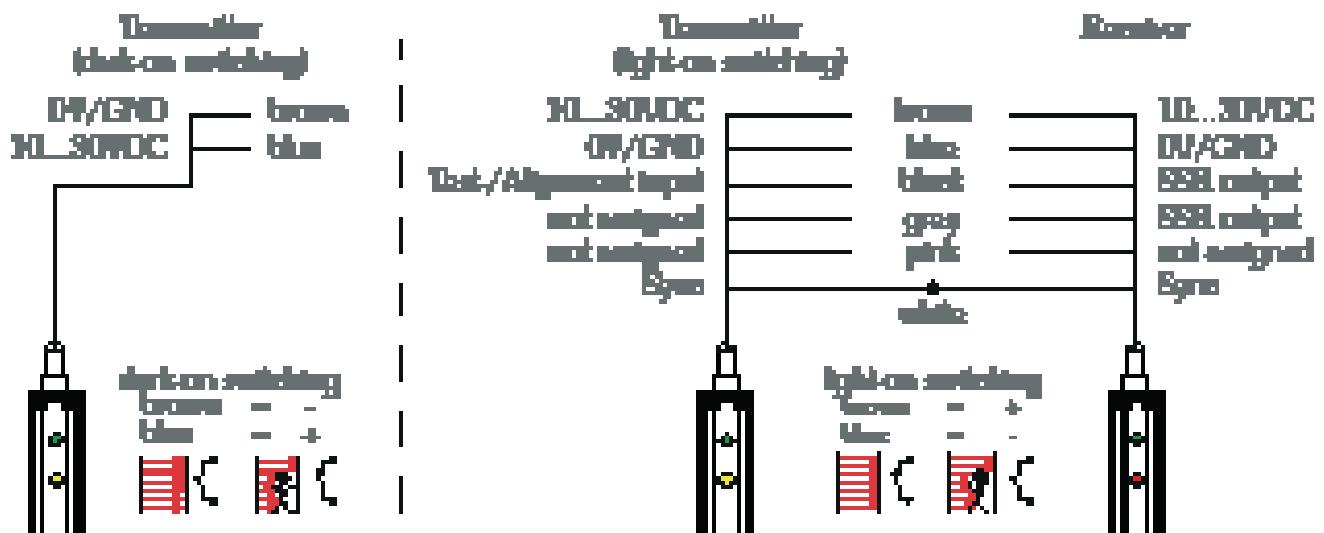
$I = \text{max. } 20 \text{ mA, typ. } 950 \text{ Hz}$



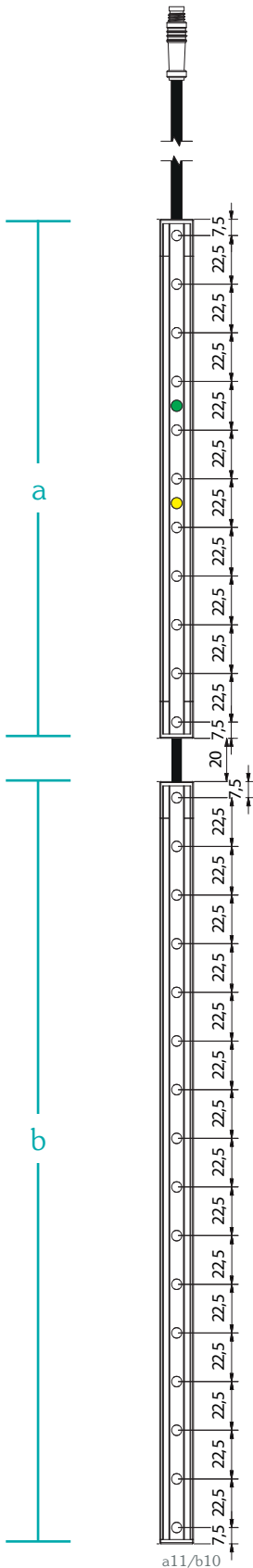
$\text{low} \leq 0.3 \text{ V}$

SSR semiconductor relay output

The SSR output is a semiconductor relay with potential-free contact.



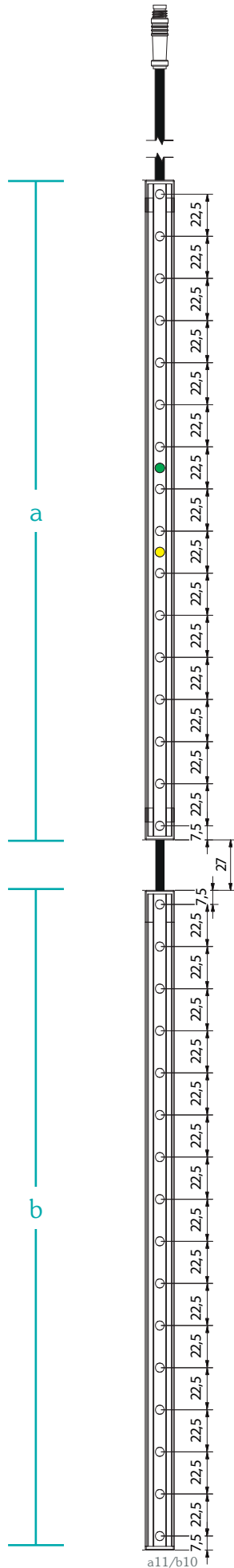
LIGI-10 FLEX a11 - b10/b12/b14/b16



KA	a11/b10		a11/b12		a11/b14		a11/b16	
	SA	SF	SA	SF	SA	SF	SA	PA
00								
a01	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
a02	22.5	30.0	22.5	30.0	22.5	30.0	22.5	30.0
a03	22.5	52.5	22.5	52.5	22.5	52.5	22.5	52.5
a04	22.5	75.0	22.5	75.0	22.5	75.0	22.5	75.0
a05	22.5	97.5	22.5	97.5	22.5	97.5	22.5	97.5
a06	22.5	120.0	22.5	120.0	22.5	120.0	22.5	120.0
a07	22.5	142.5	22.5	142.5	22.5	142.5	22.5	142.5
a08	22.5	165.0	22.5	165.0	22.5	165.0	22.5	165.0
a09	22.5	187.5	22.5	187.5	22.5	187.5	22.5	187.5
a10	22.5	210.0	22.5	210.0	22.5	210.0	22.5	210.0
a11	7.5	240.0	7.5	240.0	7.5	240.0	7.5	240.0
00								
b01	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
b02	22.5	30.0	22.5	30.0	22.5	30.0	22.5	30.0
b03	22.5	52.5	22.5	52.5	22.5	52.5	22.5	52.5
b04	22.5	75.0	22.5	75.0	22.5	75.0	22.5	75.0
b05	22.5	97.5	22.5	97.5	22.5	97.5	22.5	97.5
b06	22.5	120.0	22.5	120.0	22.5	120.0	22.5	120.0
b07	22.5	142.5	22.5	142.5	22.5	142.5	22.5	142.5
b08	22.5	165.0	22.5	165.0	22.5	165.0	22.5	165.0
b09	22.5	187.5	22.5	187.5	22.5	187.5	22.5	187.5
b10	7.5	217.5	22.5	210.0	22.5	210.0	22.5	210.0
b11			22.5	232.5	22.5	232.5	22.5	232.5
b12			7.5	262.5	22.5	255.0	22.5	255.0
b13					22.5	277.5	22.5	277.5
b14					7.5	307.5	22.5	300.0
b15							22.5	322.5
b16							7.5	352.5

KA = channels
 SA = beam distances
 SF = height of protected area

LIGI-10 FLEX a16 - b10/b12/b14/b16

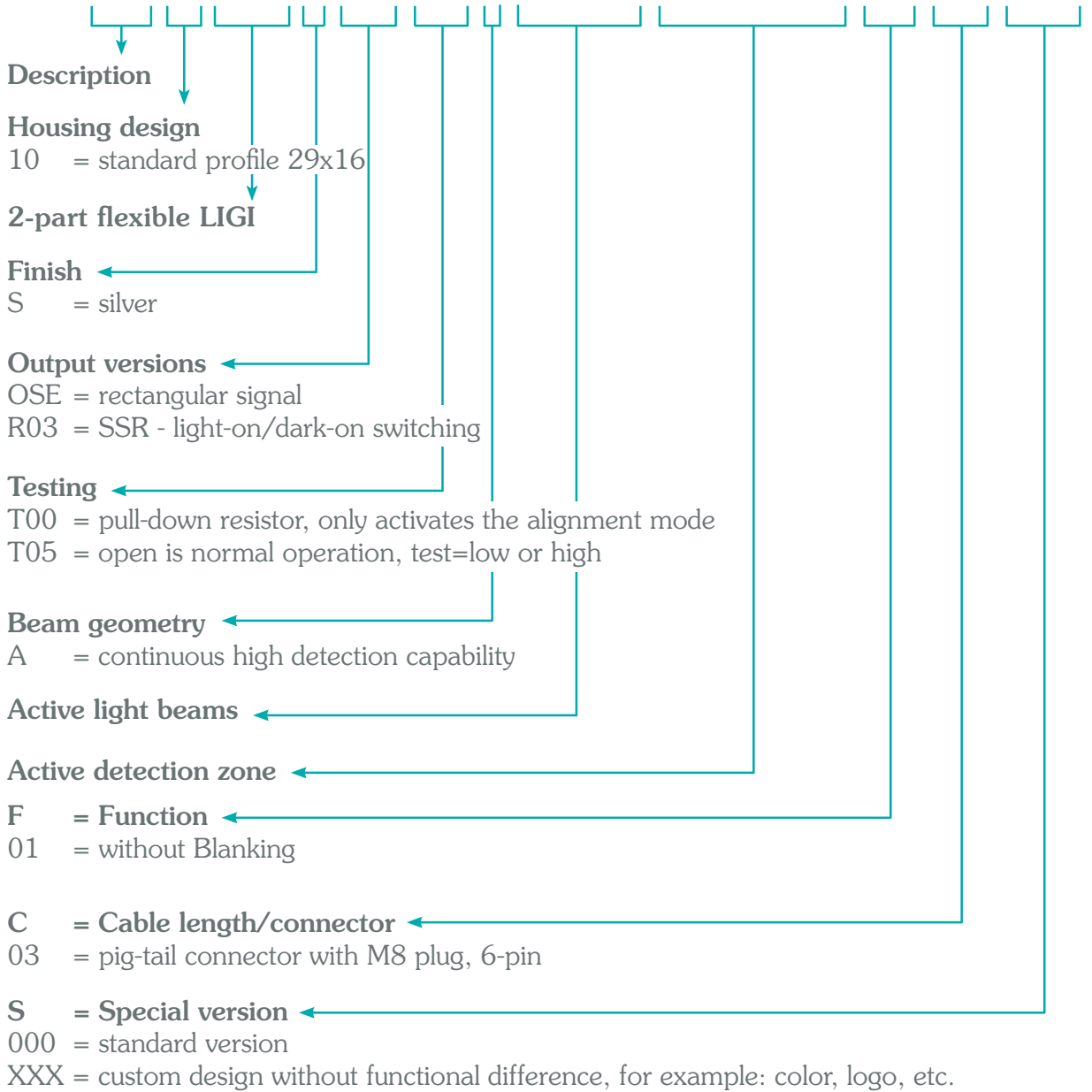


KA	a16/b10		a16/b12		a16/b14		a16/b16	
	SA	SF	SA	SF	SA	SF	SA	SF
00								
a01	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
a02	22.5	30.0	22.5	30.0	22.5	30.0	22.5	30.0
a03	22.5	52.5	22.5	52.5	22.5	52.5	22.5	52.5
a04	22.5	75.0	22.5	75.0	22.5	75.0	22.5	75.0
a05	22.5	97.5	22.5	97.5	22.5	97.5	22.5	97.5
a06	22.5	120.0	22.5	120.0	22.5	120.0	22.5	120.0
a07	22.5	142.5	22.5	142.5	22.5	142.5	22.5	142.5
a08	22.5	165.0	22.5	165.0	22.5	165.0	22.5	165.0
a09	22.5	187.5	22.5	187.5	22.5	187.5	22.5	187.5
a10	22.5	210.0	22.5	210.0	22.5	210.0	22.5	210.0
a11	22.5	232.5	22.5	232.5	22.5	232.5	22.5	232.5
a12	22.5	255.0	22.5	255.0	22.5	255.0	22.5	255.0
a13	22.5	277.5	22.5	277.5	22.5	277.5	22.5	277.5
a14	22.5	300.0	22.5	300.0	22.5	300.0	22.5	300.0
a15	22.5	322.5	22.5	322.5	22.5	322.5	22.5	322.5
a16	7.5	352.5	7.5	352.5	7.5	352.5	7.5	352.5
00								
b01	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
b02	22.5	30.0	22.5	30.0	22.5	30.0	22.5	30.0
b03	22.5	52.5	22.5	52.5	22.5	52.5	22.5	52.5
b04	22.5	75.0	22.5	75.0	22.5	75.0	22.5	75.0
b05	22.5	97.5	22.5	97.5	22.5	97.5	22.5	97.5
b06	22.5	120.0	22.5	120.0	22.5	120.0	22.5	120.0
b07	22.5	142.5	22.5	142.5	22.5	142.5	22.5	142.5
b08	22.5	165.0	22.5	165.0	22.5	165.0	22.5	165.0
b09	22.5	187.5	22.5	187.5	22.5	187.5	22.5	187.5
b10	7.5	217.5	22.5	210.0	22.5	210.0	22.5	210.0
b11			22.5	232.5	22.5	232.5	22.5	232.5
b12			7.5	262.5	22.5	255.0	22.5	255.0
b13					22.5	277.5	22.5	277.5
b14					7.5	307.5	22.5	300.0
b15							22.5	322.5
b16							7.5	352.5

KA = channels
 SA = beam distances
 SF = height of protected area

Order code LIGI - safety light curtain

LIGI-10-FLEX-S-OSE-T00-A-a16/b10-352,5/217,5-F01-C03-S000



All LIGI-10-FLEX devices come with a 6-pin plug system. The delivery includes one connecting cable of 5 m and 15 m each.



Description	Number of beams (a+b)	SF a	SF b	SSR semiconductor relay Item no.:	OSE output Item no.:
LIGI-10 - a11/b10	240	240	217.5	322218	322206
LIGI-10 - a11/b12	240	240	262.5	322221	322209
LIGI-10 - a11/b14	240	240	307.5	322224	322212
LIGI-10 - a11/b16	240	240	352.5	322227	322215
LIGI-10 - a16/b10	352.5	352.5	217.5	322230	322194
LIGI-10 - a16/b12	352.5	352.5	262.5	322233	322197
LIGI-10 - a16/b14	352.5	352.5	307.5	322236	322200
LIGI-10 - a16/b16	352.5	352.5	352.5	322239	322203

SF = height of protected area





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