

Important Information

General

THIS LIGHT CURTAIN SG15 SHOULD ONLY BE INSTALLED BY AUTHORIZED AND FULLY TRAINED PERSONNEL!

THE LIGHT CURTAIN IS ONLY A SAFETY PROTECTION DEVICE IF ALL INSTRUCTIONS IN THIS MANUAL, ARE CAREFULLY FOLLOWED AND FULLY COMPLIED WITH. IN ADDITION, THE INSTALLER IS REQUIRED TO COMPLY WITH ALL LOCAL LAWS AND STANDARDS.

ANY ALTERATIONS TO THE DEVICE BY THE BUYER, INSTALLER OR USER MAY RESULT IN UNSAFE OPERATING CONDITIONS.

Compliance to Directives and Standards

This device complies with the European directive 2006/42/EC for machinery and with the European directive 2004/108/EC for electromagnetic compatibility, when used in accordance with the instructions in this manual.

The compliance to the directive of machinery is declared according to EN 12978, with normative reference to:

EN ISO 13849-1: 2008 AC:2009, category 2, PL d
 IEC 61496-2, type 2 ESPE

EC type examination:
 TÜV NORD CERT GmbH, Langemarckstr. 20, 45141 Essen (NB 0044)
 EC-type certificate No. 44 205 13099404

Product Data

Technical Data

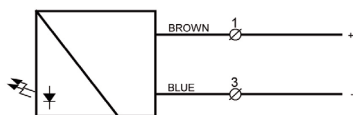
	SGT (Transmitter)	SGR (Receiver)
Supply voltage	10 - 30 Vdc	
Max. Voltage ripple	15% (within supply range)	
Reverse polarity protected	Yes	
Max. current consumption	70 mA (RMS)	35 mA (no load)
Output	-	5V 900Hz square signal
Max. output load	-	15 mA
Max. capacitive load	-	100nF
Short circuit protected	-	Yes
Inductive load protection	-	Yes
Sensing range	1 m - 12 m	
Response time (max.)	50 ms	

Environmental Data

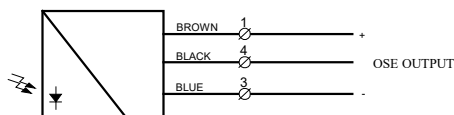
Light immunity @ 5° incidence	> 100.000 lux
Temperature, operation	-20 to + 65 °C
Temperature, storage	-40 to + 80 °C
Sealing class	IP67
Marking	UK CA CE

Connection

Wiring Diagrams



Transmitter SGT 15



Receiver SGR 15 with OSE output

Installation & Adjustments

General Instructions and Precautions

This light curtain can be used in industrial, commercial and garage doors and gates, as described in EN 12453, when it is used as device type E according to clause 5.5.1. The light curtain is intended to be mounted in the door plane of vertically sliding doors. It is important that the lowest part of the door leaf will efficiently obstruct the light beams over a height of at least 50 mm.

Even though the light curtain has a high degree of immunity to ambient light sources, it is recommended to avoid direct exposure to sunlight, and interference from flashlights or other infrared light sources, such as other photo sensors.

If the front cover of the light curtain becomes contaminated, they have to be cleaned with a slightly damp cloth. Do not use organic solvents or detergents. If the light curtain is very contaminated, the output may go into safe state and de-energize even after the cleaning, due to safety reasons. The light curtain will automatically make the necessary internal adjustments, and within less than a few minutes, the light curtain will be fully adjusted and resume normal operation. Immediate adjustment can be forced by switching the light curtain off and then on again.

Ensure that the light curtain is mounted, so that it is mechanically stable during operation.

The light curtain must not be placed on moving doors.

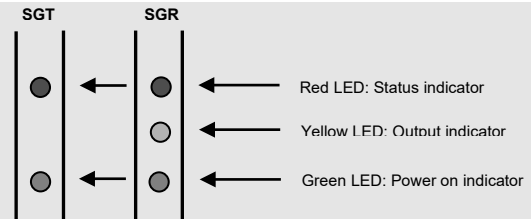
Severe rain and snow may be detected due to the high sensitivity of the light curtain.

Both transmitter and receiver are continuously performing extensive internal safety tests, and if any dangerous faults are found the light curtain will switch into safe state, de-energizing the output.

Be aware, for optical safety devices with square signal output (OSE), it is important for the door controller to ensure that the output is oscillating according to the specifications.

Automatic door closure must be disabled on the door controller if door repair or maintenance or other activities requires longer presence in the door opening. In general, do not prevent automatic door closure by placing objects in the active area of the light curtain.

Indicators



Installation and Adjustment

No initial set up or adjustments are required, due to the automatic signal-tracking (AST) feature, which automatically adjust each individual channel on the system.

- 1 Use the brackets supplied with the light curtain (at least 2 pcs, with max distance of 135 cm) to mount the transmitter (SGT) and receiver (SGR) facing each other and correctly aligned.
- 2 Correct alignment is achieved when the front cover of the light curtains are parallel and when a virtual line connecting top of the transmitter and receiver are perpendicular to both transmitter and receiver front cover. (Within 2 deg.)
- 3 The light curtain has to stand on the pin in the bottom, in order to ensure that the protective field is correctly positioned and in compliance with EN 12445
- 4 Wire the sensor according to the wiring diagram. Make sure the load does not exceed 15 mA.
- 5 Check for correct wiring.
- 6 Turn power on.
- 7 The status indicator (red LED) on the SGR will flash quickly when the AST is active.
- 8 When the power on indicators (green LEDs) is on, the system is operating.
- 9 Notice that the rails must not be moved after the power to the SGR is turned on.

Detection	Output status	Output indicator (yellow led)
Present 	0V	Off
Absent 	900 Hz square modulation	On

Housing Length, Number of Channels and Door closing speed

Housing Length, Number of Channels and Door closing speed				
Housing length	Beam Placement	Active Height	Number of channels	Maximum door closing speed
1948 mm	C1	1800 mm	40	1,2 m/s
	D1	1800 mm	28	1,7 m/s
	E1	1800 mm	16	1,9 m/s
2308 mm	C1	2160 mm	48	1,0 m/s
	D1	2160 mm	30	1,6 m/s
	E1	2160 mm	18	1,9 m/s
2668 mm	C1	2520 mm	56	0,9 m/s
	D1	2520 mm	32	1,5 m/s
	E1	2520 mm	20	1,9 m/s

Dynamic Blanking Function

Dynamic Blanking Function

All the infrared light beams can be blanked out (made inactive) without changing state of the output of the receiver by moving a non-transparent object, as the door leaf, between the SGR and SGT from top of the rails (wire end) and downwards to the lowest beam.

In order for the blanking process to function correctly, it is recommended that the blanking object has a minimum vertical height of 50 mm and enough width to ensure that the front window of the light curtain is fully covered during the closing process. Beams are blanked in (activated) when the door motion is reversed.

The output will go to OV 3 s after the lowest beam is broken.

The light curtain supports partial opening of the door, for energy saving or ventilation. However, notice that the stop either has to be in the zone with 45 mm beam spacing or then the bottom part of the door leaf has to obstruct the beams over 200 mm, keeping the lowest beam obstructed when stopped. This limitation exists for safety reasons; the light curtain shall not respond with permanent blanking of beams for objects just passing through the beams and thereafter taken out of the active zone.

All beams will stay blanked, as long as the lowest beam, at the bottom of the rails is obstructed. Make sure that the lowest beam is kept well obstructed, when door has finished closing. The blanked beams are ignored by the output logic.

Maximum door closing speed	See table above
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There is no restriction on maximum speed when the door is opening

When a blanking object of 50 mm vertical height is passing areas with 180 mm beam spacing the minimum speed of the blanking object is 0.18 m/s. If the blanking object has a size so at least one beam is always obstructed there are no minimum blanking speed.

If the door leaf is stopped in the bottom of the rails just above the second lowest beam the door cannot proceed downwards to the lowest beam after some time without de-energizing the output. This is done for security reasons. To proceed downwards the door must in this case first be reversed to above the third lowest beam.

If the door leaf is stopped between the rails before the bottom (lowest) IR beam is reached and 3 or more IR beams above the door edge are not obstructed, the output will switch to a safe state after 2 seconds for SG15 C1 systems and 4 seconds for SG15 D1 and E1 systems.

Notice that the actual speed of the bottom door edge can fluctuate for a non-rigid door construction and it is advised that the door speed therefore has to be set lower than listed in the table other place on this page, in order not to exceed the maximum speed limit of the light curtain while the door is closing.

Be aware that side to side movements of a round bottom door edge will also contribute to the fluctuation of the obstruction speed. It is therefore best to have a horizontal straight edge for obstruction of the light beams.

Troubleshooting

Troubleshooting

Probable Reason	Corrective Action
1. Symptom: Red and green LEDs on SGT is constant on.	
Error found during test process	Replace the SGT rail.
2. Symptom: Red and green LEDs on SGR is constant on.	
Error found during test process	Replace the SGR rail.
3. Symptom: Yellow LED on SGR is flashing	
Cross talk from another light curtain, or other powerful light sources.	Change position of the SGT and SGR rails.
4. Symptom: Yellow LED on SGR is constant off. Red LED is off.	
Rails are out of sensing range	Check the sensing range and power to the SGT.

5. Symptom: After start up, red LED on SGR continues to flash quickly. Green LED is on.

Rails are out of sensing range or SGT is not turned ON or an object is obstructing one or more beams.	Check the sensing range and for objects between the SGT and the SGR. Check SGT is powered or replace rails.
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Manufacturer

Manufacturer
Telco A/S
Vangen 5, DK-9460 Brovst, Denmark
Mikael Larsen, Managing director.