SG 13 – USER MANUAL
Space Guard Series
Photoelectric light curtains for automatic doors

EN

Telco *sensors*

Product Data

Technical Data

	SGT (Transmitter)	SGR (Receiver)
Supply voltage	12-30 Vdc	
Max. Voltage ripple	15% (within supply range)	
Reverse polarity protected	Yes	
Max. current consumption	70 mA (RMS)	30 mA
Max. output load	-	100 mA
Max. output ON resistance	-	20Ω ~ 2V@100mA
Max. leakage current	-	80uA
Short circuit protected	-	Yes
Inductive load protection	-	Yes
Output type	-	Opto coupled solid state relay
Sensing range	1 m – 10 m	
Response time (max.)	50 ms	

Environmental Data

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

Available Models

	Model	Output	Blanking Function	Output Mode	Sensing Range
Transmitter	SGT 13-xxx-0xx-x1-x-01-xx	-	-	-	1 – 10 m
Receiver	SGR 13-xxx-0xx-x1-x-x9-xx	Solid State Relay	On / Off	N.C.	

Connection

Wiring Diagrams
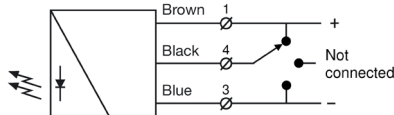

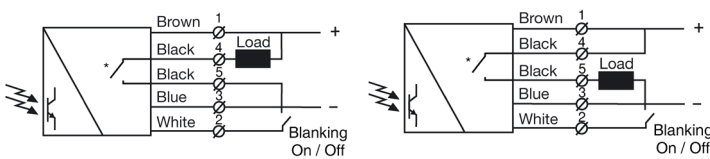1: Brown
2: White
3: Blue
4: Black
5: Black or Yellow/green

5 pole M12 male connector

Transmitter Model	Black wire connected to (-)	Black wire not connected	Black wire connected to (+)
SGT 13-xxx-0xx-x1-x-**01**-xx	TX is not transmitting	TX is transmitting	TX is not transmitting

Brown 1 +
Black 4
Blue 3 Not connected –

Transmitter SGT 13

Brown 1 +
Black 4
Black 5 Load
Blue 3 –
White 2 Blanking On / Off

Brown 1 +
Black 4
Black 5 Load
Blue 3 –
White 2 Blanking On / Off

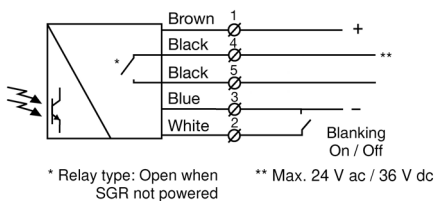**Receiver SGR 13 with solid state relay used as NPN output**

Receiver SGR 13 with solid state relay used as PNP output

Brown 1 +
Black 4 **
Black 5
Blue 3 –
White 2 Blanking On / Off

* Relay type: Open when SGR not powered
** Max. 24 V ac / 36 V dc

Receiver SGR 13 with solid state relay output.

Installation & Adjustments

General Instructions and Precautions

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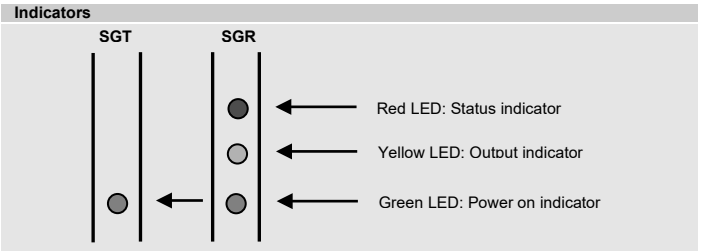
Even though the light curtain has a high degree of immunity to ambient light sources, it is recommended to avoid direct exposure to sunlight, and interference from flashlights or other infrared light sources, such as other photo sensors.

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.

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.

Indicators

SGT   SGR

Red LED: Status indicator
Yellow LED: Output indicator
Green LED: Power on indicator

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.
3	Wire the sensor according to the wiring diagram. Make sure the load does not exceed 100 mA.
4	Check for correct wiring. Select blanking function if required.
5	Turn power on.
6	The status indicator (red LED) on the SGR will flash quickly when the AST is active. (Not applicable for the SGR 13-xxx-0xx-x1-x-HS9- version).
7	When the power on indicators (green LEDs) is on, the system is operating. If the Status indicator (red LED) is constant on the SGR cannot see the SGT.
8	Notice that the rails must not be moved after the power to the SGR is turned on.

SGT Test Input

The transmitter can be externally disabled and enabled via the control wire (black wire) for test purposes. To activate the test input, please refer to "Transmitter Model" table.
Make sure no object is present in the detection area when transmitter is disabled for test.
When the transmitter is disabled, the receiver will change its output.

The test input on SGT13 has to be activated a certain minimum time T_r in order to ensure that the output of SGR 13 will switch.

On activation of the SGT13 test input, the output of the receiver will switch within a certain maximum time T_{ON}.

When the test input of SGT13 is deactivated the output will be switched back within a certain maximum time T_{OFF}.

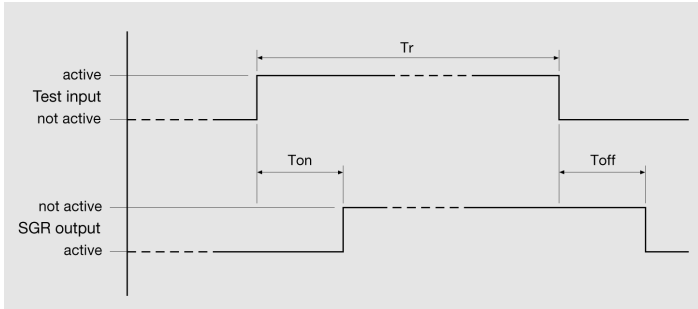The time T_r is longer than T_{ON} in order to ensure a complete test cycle of minimum duration.

Note: Refer to "SGT test input response time table" & graph.

SGT/R Test Input Response Time

Number of channels	Ton (max.)	Toff	Tr (min.)
56	50 ms	100 ms	50 ms
48	45 ms	90 ms	45 ms
40	40 ms	72 ms	40 ms
26 – 32	30 ms	60 ms	30 ms
10 – 24	25 ms	50 ms	25 ms

Output Logic

Detection	Output mode	Output status	Output indicator (yellow led)
Present	Light operated (N.C.)	Open	Off
Absent	Light operated (N.C.)	Closed	On

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	2,4 m/s
	D1	1800 mm	28	1,7 m/s
	E1	1800 mm	16	1,9 m/s
2308 mm	C1	2160 mm	48	2,1 m/s
	D1	2160 mm	30	1,6 m/s
	E1	2160 mm	18	1,9 m/s
2668 mm	C1	2520 mm	56	1,8 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. Notice that the bottom part of the door has to provide an obstruction of the beams of at least 50 mm vertical height, in order for the blanking process to function correctly. Beams are blanked in (activated) when the door motion is reversed.

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.

Maximum door closing speed	See table above

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.

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 above, 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: 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.
2. Symptom: After power-up red LED on SGR continues to flash quickly. Green LED is on. (Not applicable for the SGR 13-xxx-0xx-x1-x-HS9- version).	
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.
3. Symptom: Green LED on SGT/R is on. Red LED on SGR is on. Yellow LED on SGR is off.	
Test input is activated or rails are out of sensing range.	Deactivate the test input on SGT/R or check the sensing range.