SG 18 Solid State – USER MANUAL
Space Guard Series
Photoelectric light curtains for automatic doors

EN

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)	40 mA
Max. output load	-	100 mA
Max. output ON resistance	-	40 Ω
Max. leakage current	-	1 uA
Short circuit protected	-	Yes
Inductive load protection	-	Yes
Output type	-	Opto coupled solid state relay
Output mode	-	Light/Dark selectable by wire
Sensing range	1 m – 12 m	
Response time (max.) (*)	40 ms	

(*) Independent on model

Environmental Data

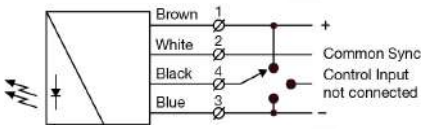
Light immunity @ 5º incidence	> 100.000 lux
Temperature, operation	-25 to + 55 ºC
Temperature, storage	-40 to + 80 ºC
Sealing class	IP67
Marking	UK CA CE

Available Models

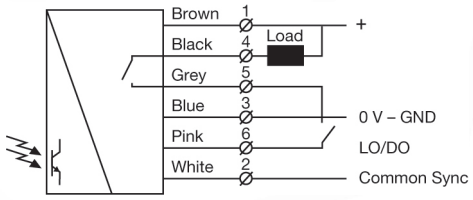
	Model	Output	Output Mode	Sensing Range
Transmitter	SGT 18-xxx-0xx-x1-U-0x-xx	-	-	1 – 12 m
Receiver	SGR 18-xxx-0xx-x1-U-07-xx	Solid State Relay	Light/Dark	

Connection

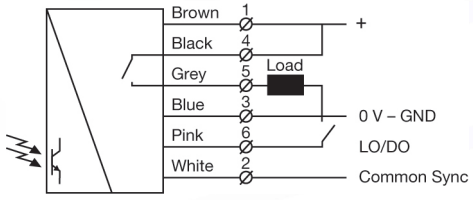
Wiring Diagrams



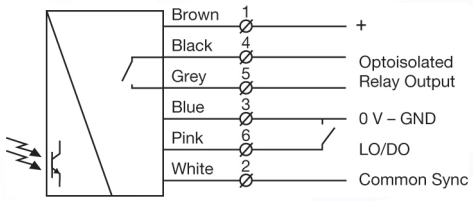
Transmitter SGT 18



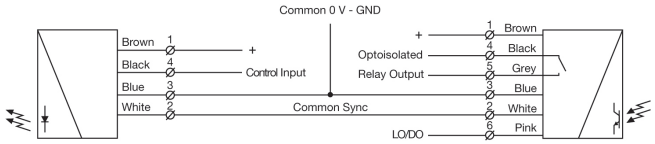
Receiver SGR 18 as NPN output



Receiver SGR 18 as PNP output



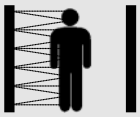
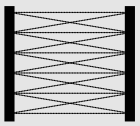
Receiver SGR 18 Solid State output



SGT 18 and SGR 18 with common 0V – GND and synchronization wire.

SGR Output Logic

Output Logic

Detection	Output mode	Output status	Output indicator (yellow led)
Present 	Dark operated (N.O.) (Pink wire connected to Blue wire)	Closed	On
	Light operated (N.C.) (Pink wire disconnected)	Open	Off
Absent 	Dark operated (N.O.) (Pink wire connected to Blue wire)	Open	Off
	Light operated (N.C.) (Pink wire disconnected)	Closed	On

Note: The LO/DO switch (input) must be connected to GND, VCC or left floating before power-up of the SGR 18. It is not possible to change the output logic after power-up when the SGR 18 is operating.

Installation & Adjustment

General Instructions and Precautions

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 photoelectric sensors).

If the front cover or the opto components of the light curtain become contaminated, then they have to be cleaned with a slightly damp cloth. Do not use organic solvents or detergents.

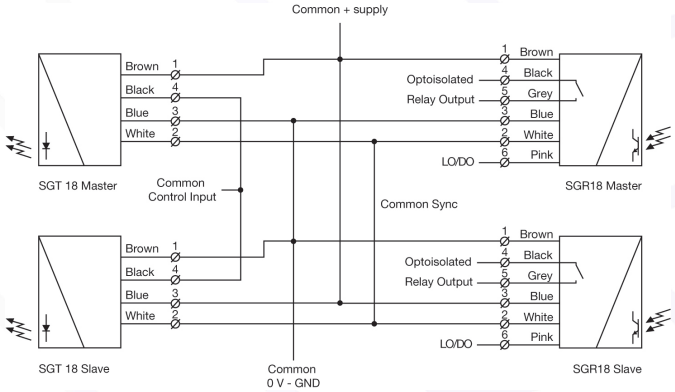
Ensure that the light curtain is mounted so that it is mechanically stable during operation. Severe rain and snow may be detected due to the high sensitivity of the system.

SG 18 Master/Slave Configuration (installation of double light curtains)

It is possible to mount 2 light curtains next to each other if they are installed as master slave.

The two light curtains sets must then have a common 0V - GND, + supply and synchronisation connection as shown below.

The polarity's connection defines the Master set and the Slave set. The set connected with the standard polarity will act as Master set. And the set connected with the reversed polarity will act as Slave. A SG 18 set connected as a slave (reversed polarity) will not run without connection to a SG 18 Master set.



SG 18 Master/Slave wiring

Warning
This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

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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	Mount the transmitter (SGT) and receiver (SGR) facing each other and correctly aligned. The bottom beam is 35 mm above ground if the rails stand on the ground on the pin. The pin can partially or completely be cut off if the light curtain needs to be lowered relative to support structure.
2	Fix the mounting clips in line and parallel. The maximum distance between the points of fixture should not exceed 135 cm.
3	Wire transmitter and receiver according to the wiring diagram. Make sure the load does not exceed 100 mA.
4	Check for correct wiring.
5	Turn power on.
6	When the power on indicators (green LEDs) is on, the system is operating. No initial set up or adjustments are required.

SGT Control/Test input

Control/test input operation depends on digit **0X** in the model code of the transmitter (SGT);

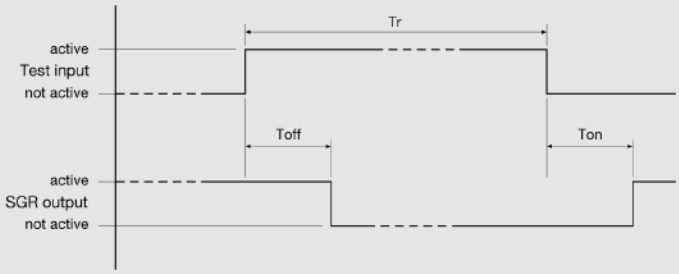
SGT 18-xxx-0xx-X1-x-**0X**-xx

The test is enabled and disabled via the black SGT control wire. (See "Wiring Diagrams" and table below). Make sure no object is present in the detection area when test is done.

Model Transmitter SGT	Control/Test input connected to 0V - GND	Control/Test input not connected	Control/Test input connected to + supply
00	Testing activated	No testing	No testing
01	Testing activated	No testing	Testing activated
02	No testing	Testing activated	No testing
03	No testing	No testing	Testing activated
04	Testing activated	Testing activated	No testing

SGT/R Test Input Response Time

Ton (max./min.)	Toff (max./min.)	Tr (min.)
300 ms / 50 ms	60 ms / 1 ms	100 ms



SGT/R test input response time graph

Static Blanking Function

Static Blanking Function

The static blanking function allows the user to make a number of beams permanently inactive.

Static blanking cannot be done in a master/slave configuration setup with two light curtain sets. If this is needed then do static blanking on each separate set (only one SGR and SGT rail connected) an afterwards connect the two sets in master/slave configuration.

The beams can be blanked out statically both in the top and/or in the bottom of the light curtain. However, the statically blanked area will have to go from the top beam and down in a **coherent** area, and/or from the bottom beam and up in a coherent area. There can be no active beams inside these areas.

Total number of beams that can be statically blanked out is maximum 2/3 of the total number of beams.

Static blanking requires a special blanking procedure. Any deviation from this procedure will lead to lack of static blanking and previous function will resume.

1.	Obstruct **all beams** in the areas that needs to be statically blanked.
2.	Remove power from the light curtain.
3.	Activate the test-input on SGT (how to do, depends on model)
4.	Power the light curtain up. Green LED on SGR will flash for 4 s.
5.	De-activate test-input, when Green LED stops flashing. This has to be done within 2 s.
6.	If de-activation done correctly, red, yellow and green LED on SGR will flash simultaneously 3 times showing that static blanking is done correctly.
7.	**Check that the desired beams are made inactive and all other beams are functioning as intended**.

The beams are permanently made inactive also after power down. Only a new static blanking procedure will change the number of active beams.
If the number of beams obstructed are more than 2/3 of all beams or if the obstructed areas are not as specified or if the light curtain has a free beam in the obstructed areas or if the test procedure is not done exactly in accordance with point 1 – 7, then there will be no static blanking.
In that case the light curtain will resume function with the latest legal static blanking.

Troubleshooting

Troubleshooting

Probable Reason	Corrective Action
1. Symptom: Red LED on SGT is constant on.	
Error found during test process.	Replace the SGT rail.
2. Symptom: Red LED 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. SGR and SGT rails are not aligned.	Change position of the SGT and SGR rails. Align the SGR and SGT rails.
4. Symptom: Yellow LED on SGR is constant off. Red LED is off.	
Control/test input on SGT is constant activated, or beam is obstructed, or light curtain out of range, or transmitter is off, or lack of sync connection.	Deactivate the control/test input on SGT, remove obstruction, bring light curtains closer or improve alignment, turn on transmitter, connect white sync wire.
5. Symptom: After power-up red LED on SGR keep blinking. Yellow and red LED on SGR is off.	
Control/test input on SGT is constant activated, or beam is obstructed, or light curtain out of range, or transmitter is off, or lack of sync connection.	Deactivate the control/test input on SGT, remove obstruction, bring light curtains closer or improve alignment, turn on transmitter, connect white sync wire.

Disposal

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Disposal should be done using the most up-to-date recycling technology according to local rules and laws.

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