



*This Quick Reference Guide does not replace the Instruction Manual. Download the Instruction Manual by reading the QR code here or at: www.datalogic.com. Click on **Support** > **Search by product** and enter the SG4 family name, then select your product from the dropdown list. Click on the **Manuals & Technical Literature** link to download your Instruction Manual. The Instruction Manual must be available at all times when installing and working with the product.*



SAFETY INFORMATION



The following points must be observed for a correct and safe use of the safety light curtains of the SG4 FIELDBUS series:

- The stopping system of the machine must be electrically controlled.
- This control system must be able to stop the dangerous movement of the machine within the total machine stopping time T as per cfr. 1.3 of the Instruction Manual and during all working cycle phases.
- Mounting and connection of the safety light curtain must be carried out only by qualified personnel, according to the indications included in the special sections (refer to cfr. 2; 3; 4; 5) and in respect to the applicable Standards.
- The safety light curtain must be securely installed so that access to the dangerous zone is not possible without interrupting the beams.
- The personnel operating in the dangerous area must be well-trained and must have adequate knowledge of all the operating procedures of the safety light curtain.
- Please carefully read the instructions for the correct functioning before powering the light curtain.

Precautions to be observed for the choice and installation of the device



Make sure that the protection level assured by the SG4 device (Type 4) is compatible with the real danger level of the machine to be controlled, according to EN ISO 13849-1 and EN 62061.

- The dimension of the smallest object to be detected must be larger than the resolution level of the device.
- The ESPE must be installed in a room complying with the technical characteristics indicated in cfr. "Technical data" of the Instruction Manual.
- Do not place the device near intense and/or flashing light sources and, in particular, close to receiving unit front surface.
- The presence of intense electromagnetic disturbances could jeopardise device operation. This condition has to be carefully evaluated with the support of the Datalogic Technical service.
- The operating distance of the device can be reduced in presence of smog, fog or airborne dust.
- A sudden change in environment temperature, with very low minimum peaks, can generate a small condensation layer on the lenses and so jeopardise functioning.
- Reflecting surfaces near the safety light curtain light beam (above, under or lateral) can cause passive reflections that can jeopardise functioning.
- The safety device must be installed at a distance which is major or equal to the **minimum safety distance S** to ensure that the operator can not reach the dangerous area until the moving dangerous object has been blocked by the ESPE.

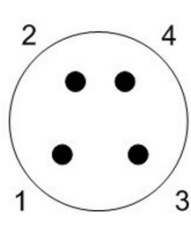


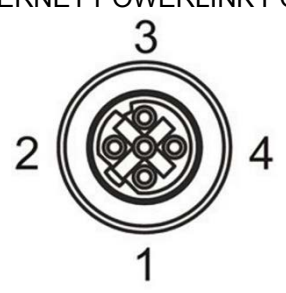
The failure to respect the safety distance reduces or cancels ESPE the protection function. For more detailed information about calculation of safety distance, please refer to the Instruction Manual.

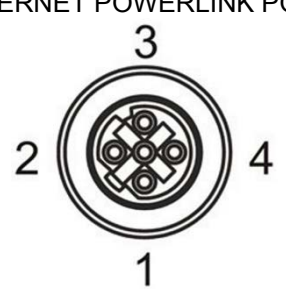
PIN-OUT AND CONFIGURATION PIN CONNECTION



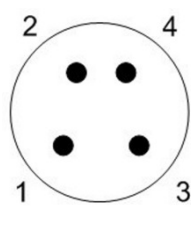
For the receiver an M8 4-pin male connector is used for power supply, while two M12 D-coded female Ethernet connectors provide dual port Ethernet Powerlink CN Node connection.

CN1	SIGNAL	POWER CONNECTOR 
1	24VDC (BROWN)	
2	NOT USED (WHITE)	
3	0 VDC (BLUE)	
4	NOT USED (BLACK)	

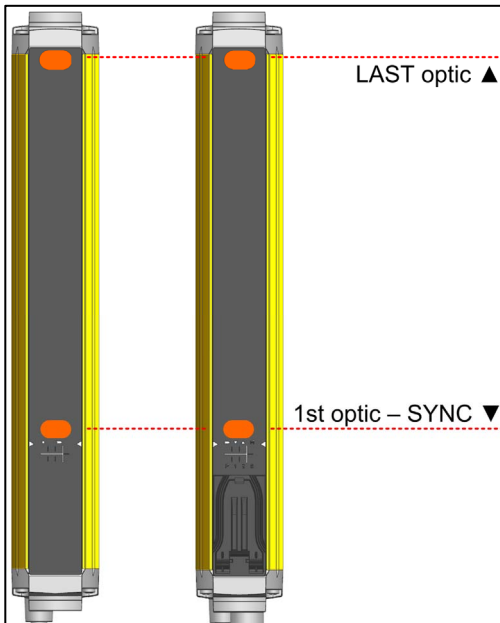
CN2	SIGNAL	ETHERNET POWERLINK PORT1 
1	TxD+, transmit data +	
2	RxD+, receive data +	
3	TxD-, transmit data -	
4	RxD-, receive data -	

CN3	SIGNAL	ETHERNET POWERLINK PORT2 
1	TxD+, transmit data +	
2	RxD+, receive data +	
3	TxD-, transmit data -	
4	RxD-, receive data -	

For the emitter an M8 4-pin male connector is used for power supply.

CN1	SIGNAL	POWER CONNECTOR 
1	24VDC (BROWN)	
2	NOT USED (WHITE)	
3	0 VDC (BLUE)	
4	NOT USED (BLACK)	

ALIGNMENT PROCEDURE



The alignment between the emitting and the receiving units is necessary to obtain the correct operation of the light curtain.

A good alignment prevents outputs instability caused by dust or vibrations.

The alignment is perfect if the optical axes of the first and the last emitting unit's beams coincide with the optical axes of the corresponding elements of the receiving unit.

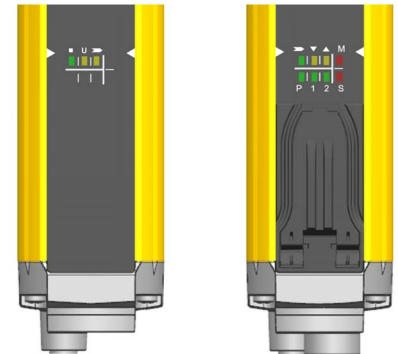
The beam used to synchronize the two units is the closest to the connector.

Thereon we refer to such beam as SYNC and to the last one as LAST.

When SYNC beam is not engaged all other beams scan it's not possible, thus it's mandatory to have SYNC beam aligned and not intercepted.

A LED user Interface provides indications about optic alignment together with Fieldbus connection status.

LEDs are clearly identified through symbols or labels allowing their immediate reading, independently of



bars directions; Find below a short description of LEDs indications about optical alignment. For Fieldbus connection LEDs please refer to cfr. **USER INTERFACE AND DIAGNOSTICS**.

The standard installation described hereinafter is the one shown in figure with the bar assembled with the connectors pointing down.

Two yellow LEDs (▲ LAST, ▼ SYNC) on receiver unit facilitate the alignment procedure.

During standard operation, the LEDs indicate the safety light curtain optical alignment status, as shown in the table.

ALIGNMENT STATUS

LED colour	Symbol	FREE	INTERCEPTED		
Yellow	▲	OFF	ON	ON	OFF
Yellow	▼	OFF	ON	OFF	OFF
Red/Green	➡	GREEN	RED	RED	RED
		SYNC ad LAST beam engaged No intercepted Beams	UNITS not aligned	SYNC engaged LAST not aligned	Units correctly aligned but at least one intermediate beam intercepted

CORRECT alignment procedure

The light curtain alignment can be effected only after having completed the mechanical installation and the electrical connections as described above.

Compare alignment results with those given in the following table:

- Check the green LED (■) and the yellow LED (➡) on the TX unit. If both ON, the emitter is running correctly;
- Verify that the sensitive area from the safety light curtain is free;
- Verify that one of the following conditions is present on the RX unit:

1. FREE

Alignment LED (➡) lit GREEN.
Both yellow LEDs (▲, ▼) OFF.
Units are aligned.

2. INTERCEPTED

Alignment LED (➡) lit RED.
The status of both yellow LEDs (▲, ▼) does not matter.
Units are not aligned.

Continue with the following steps to switch from condition 2 to condition 1:

1. Keep the receiver in a steady position and regulate the emitter until the yellow LED (▼ SYNC) is OFF. This condition shows the effective alignment of the first synchronization beam.
2. Rotate the emitter, pivoting on the lower optics axis, until the yellow LED (▲ LAST) is OFF. Under these conditions, if no other beam is intercepted Alignment LED (➡) should turn GREEN.
3. Delimit the area in which the LED ➡ is steady GREEN through some micro adjustments - for the first and then for the second unit - then place both units in the centre of this area.



Ensure that the green LED ➡ is steady ON.

- Fix the two units firmly using brackets.
- ➡ Verify that the green LED on the RX unit is ON (➡ I) and beams are not interrupted, then verify that the red LED turns ON if even one single beam is interrupted (condition where an object has been detected).
- This verification shall be made with the special cylindrical “Test Piece” having a size suitable to the resolution of the device used.



Passing the Test Piece along the whole sensitive area and at any distance from the two units, the red LED (➡ I) shall be always ON and never change status.

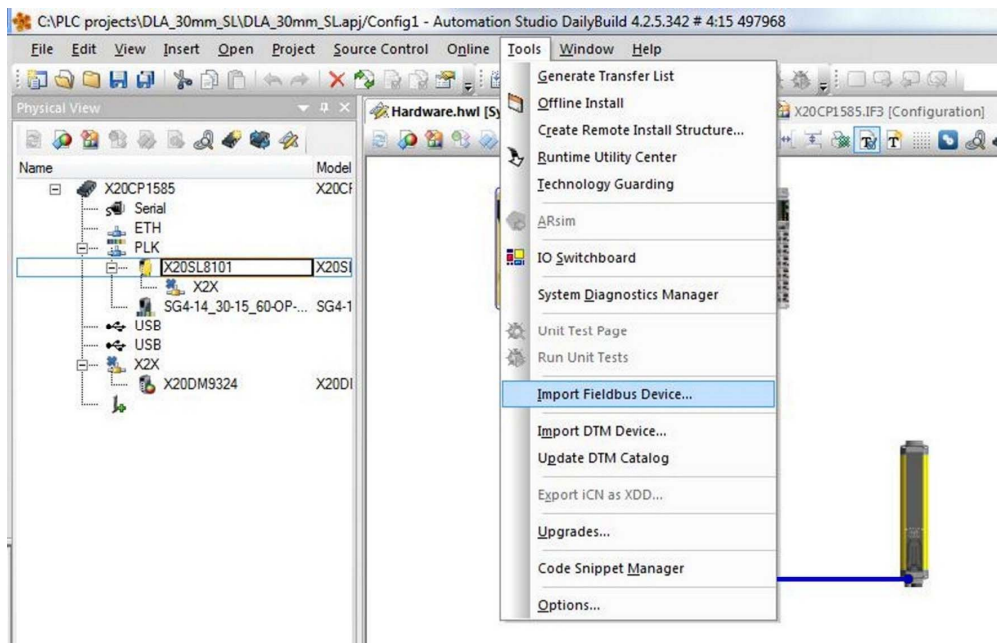
A daily test is recommended.

DEVICE DESCRIPTION FILE

Importing device in B&R automation studio

In order to make the light curtain available in Automation Studio it's necessary to import the description files in Automation Studio.

1. Select Tools -> Import Fieldbus Device

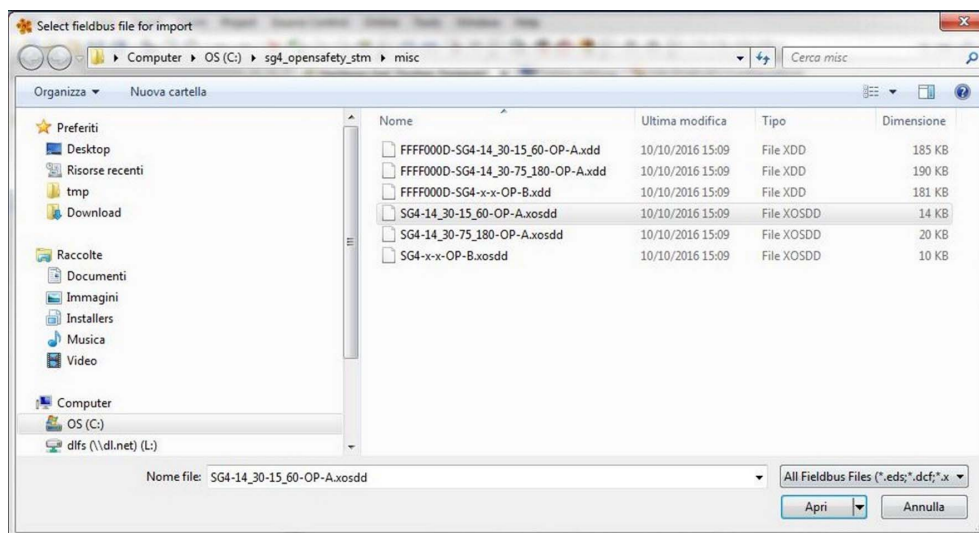


Step 1 - Importing the device

For SG4 FIELDBUS Series light curtain different description files are available depending on specific light curtain model, please refer to table below:

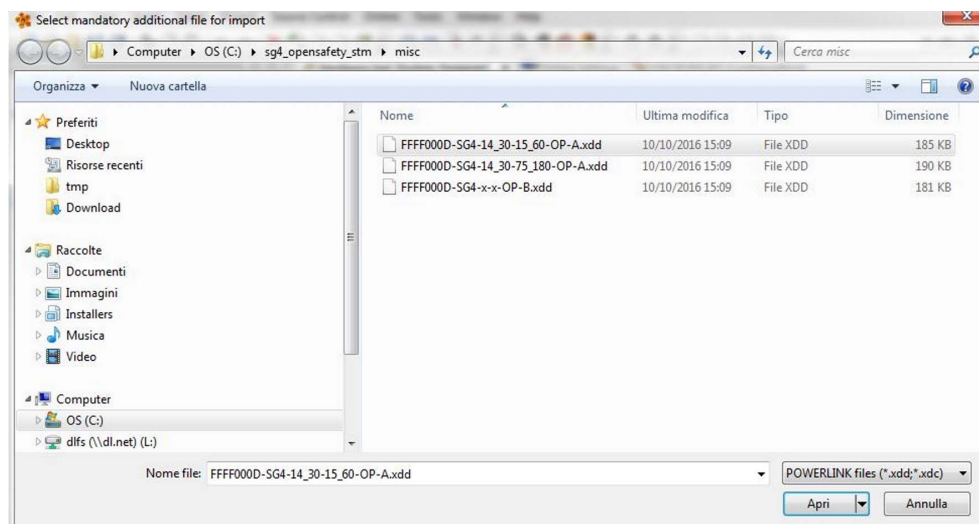
Model	Length (mm)	Description Files
Base (SG4-xx-xxx-OP-B)	150-1800	FFFF000D-SG4-x-x-OP-B.xdd SG4-x-x-OP-B.xosdd
Advanced up to 600mm (SG4-xx-xxx-OP-A)	150-600	FFFF000D-SG4-14_30-15_60-OP-A.xdd SG4-14_30-15_60-OP-A.xosdd
Advanced from 750mm to 1800mm (SG4-xx-xxx-OP-A)	750-1800	FFFF000D-SG4-14_30-75_180-OP-A.xdd SG4-14_30-75_180-OP-A.xosdd

2. Select first the file with extension .xosdd related to the device you want to import.



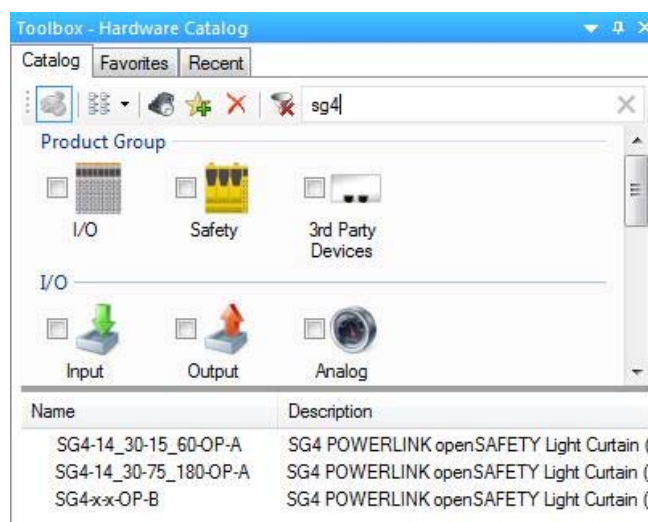
Step 2 - Importing the device

3. Select the file with extension .xdd according to the one selected above.



Step 3 - Importing the device

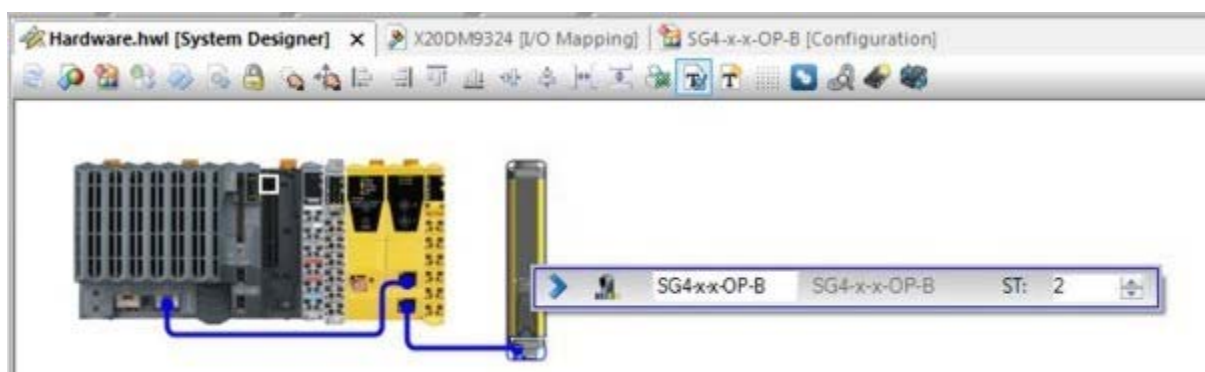
Once imported, the device will be present in Automation Studio Hardware Catalog, ready to be used in the project. Just search for the right device and drag&drop.



SG4 FIELDBUS devices in Automation Studio Hardware Catalog

SETTING DEVICE ADDRESS

In Automation Studio right-click on SG4 FIELDBUS device and select “Change node number”, set the address from 1 to 240.

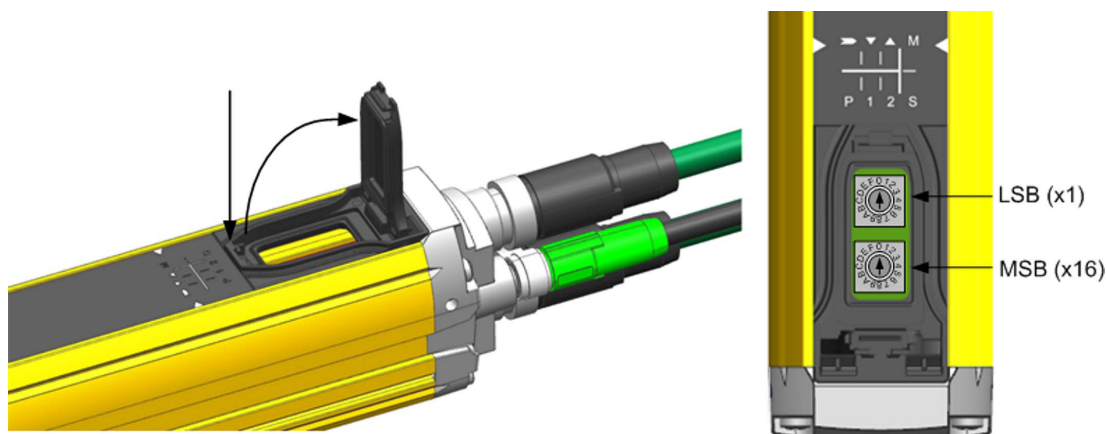


Select EPL device address in AutomationStudio

On device choose same address by setting the two rotary switches under the blue plastic flap. Use a proper tool as a little flat-head screwdriver to open the flap and set the switches.



EPL address in Automation studio is visualized in decimal format, while the rotary switches are hexadecimal type.



Select EPL device address on the device

USER INTERFACE



In the bottom side of the light curtain a user interface with 8 LEDs helps customer to check the status of the light curtain and the POWERLINK / openSAFETY variation.

Receiver (RX):

LED	COLOR	FUNCTION NORMAL OPERATION	FUNCTION ERROR
	Red/Green	BEAM STATUS Red ON ► At least one beam intercepted Green ON ► All beams free	Red ON
	Yellow	SYNC BEAM ON ► First beam intercepted or not aligned	Blinking ▼ uP ERROR
	Yellow	LAST BEAM ON ► Last beam intercepted or not aligned	▲ OPTIC ERROR ▼ ▲ openSAFETY ERROR
M	Red	MASTER uP STATUS OFF ► Normal operation Blinking ► 	ON ► Error ON uP MASTER
S	Red	SLAVE uP STATUS see LED S	ON ► Error ON uP SLAVE
P	Red/Green	ETHERNET POWERLINK STATUS Green ON ► normal operation Green blinking: pre-op Green double-blinking: Firmware Update in progress	Red ON ► Ethernet Powerlink Error
1	Green	EPL PORT 1 LINK ON ► there is a link Blinking ► there is activity on this link	no error indicator
2	Green	EPL PORT 2 LINK ON ► there is a link Blinking ► there is activity on this link	no error indicator

Emitter (TX):

LED	COLOR	FUNCTION NORMAL OPERATION	FUNCTION ERROR
	Green	POWER Green ON ► Power ON, Normal Operation	Red ON
U	Yellow	-	Blinking
	Yellow	EMISSION ON ► Emission active	► OPTIC ERROR U uP ERROR U ► openSAFETY ERROR

CE Compliance

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Helpful links at www.datalogic.com: **Contact Us, Terms and Conditions, Support.**

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

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