



*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-Extended 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 paragraph 1.3.3 of the downloadable 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 sections 2; 3; 4; 5 of the Instruction Manual) 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 (see chapters 2, 3 of the Instruction Manual).
- 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.
- The TEST, RESET/RESTART and OVERRIDE buttons must be located outside the protected area as the operator must check the protected area during all Test, Restart and Override operations.
- 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-E device is compatible with the real danger level of the machine to be controlled, according to EN ISO 13849-1 and EN 62061.

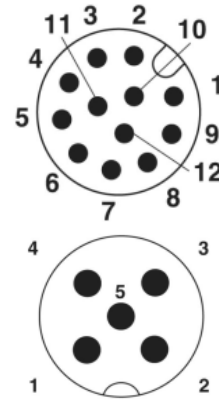
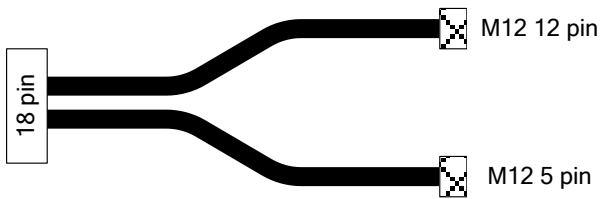
- The outputs (OSSD) of the ESPE must be used as machine stopping devices and not as command devices. The machine must have its own START command.
- The dimension of the smallest object to be detected must be larger than the resolution level of the device.
- The ESPE must be installed in a room complying with the technical characteristics indicated in section 11 "Technical data" of the downloadable 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 jeopardize 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 jeopardize functioning.
- Reflecting surfaces near the safety light curtain light beam (above, under or lateral) can cause passive reflections that can jeopardize 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 cannot 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 complete Instruction Manual.

CONNECTIONS

SG4-E RX (Muting Operation)



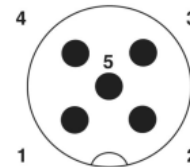
M12 12 pole:

1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. OVERRIDE1 (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. MUTING ENABLE (black)
8. OSSD1 (grey)
9. OVERRIDE2 (red)
10. MUTING LAMP (violet)
11. OVERRIDE STATUS (grey-pink)
12. EARTH (red-blue)

M12 5 pole:

1. 24V (brown)
2. MUTING2 (white)
3. 0V (blue)
4. MUTING1 (black)
5. N.C. (grey)

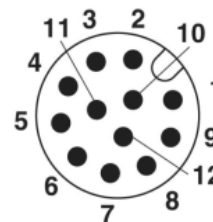
SG4-E TX



M12 5 pole:

1. 24V (brown)
2. TEST (white)
3. 0V (blue)
4. EARTH (black)
5. N.C.

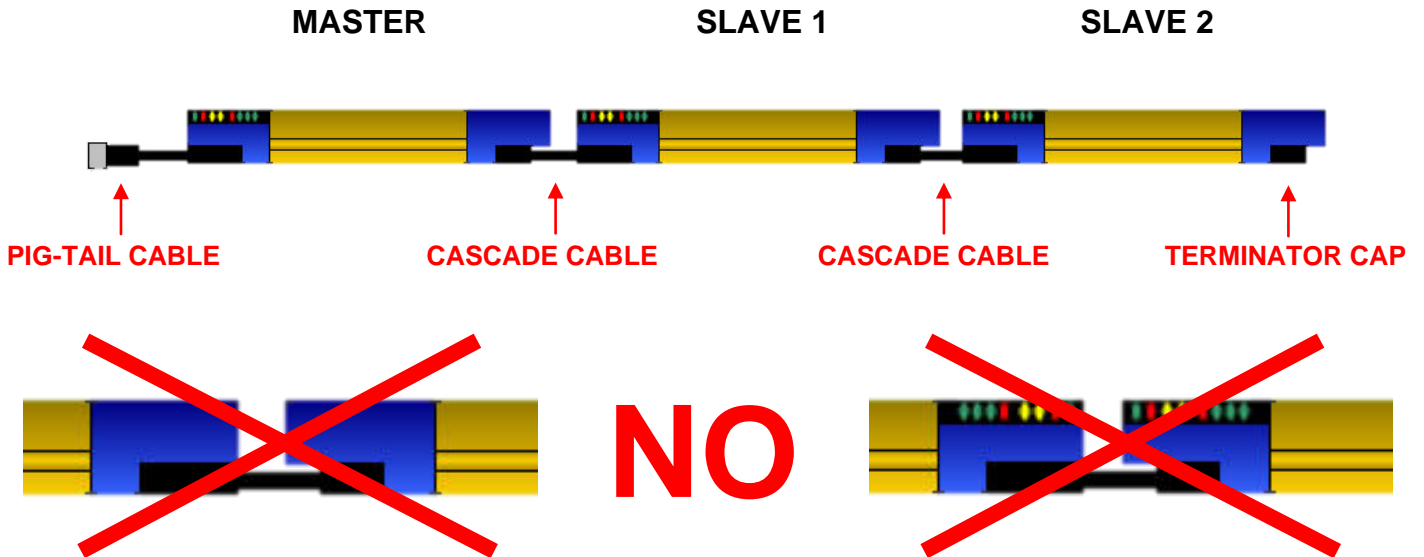
SG4-E RX (Blanking Operation)



M12 12 pole:

1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. TEACH IN (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. N.C. (black)
8. OSSD1 (grey)
9. TOLERANCE (red)
10. LAMP (violet)
11. N.C. (grey-pink)
12. EARTH (red-blue)

CASCADE CONNECTION



The Cascade connection can be done by using two or three Light Curtains (Standard Model), which can have different length and resolution (refer to the Instruction Manual).

The cascade configuration can reach a maximum of 160 beams for 30mm resolution models and a maximum of 320 beams for 14mm resolution models. The maximum length of the master unit is 1800mm and the maximum length of each slave is 1200mm.

The connection among the light curtains needs a Cascade Cable that is available in three different lengths:

- Cascade Cable 1 m (**CS-F1-80-B-01**)
- Cascade Cable 0.5 m (**CS-F1-80-B-005**)
- Cascade Cable 0.05 m (**CS-F1-80-B-0005**)

The cascade cable must be connected between a Top side (without LEDs) and a Bottom Side (with LEDs) of two SG4E Light Curtains.



Make sure to correctly connect the Light Curtains in order to avoid devices damages. Before connecting or disconnecting the Light Curtains please make sure to power off all units. Connection or disconnection with powered products can damage the Light Curtains.

ALIGNMENT PROCEDURE

The alignment between the emitting and the receiving units is necessary to obtain the correct functioning of the light curtain. A good alignment prevents output instability caused by dust or vibrations.

After correct mechanical mounting and electrical wiring user should proceed to alignment procedure and verify results according to next table. To enter SG4-E dedicated Alignment Mode activate RESET/RESTART/ALIGN input during Power-On until OSSD red led blinks.

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

Both first (near the connector) and last beam are used for optical SYNC.

	Indication	Rx Led configuration	Alignment status	OSSD Status in Normal operation
	No Sync, check SYNC1		NONE	OFF
	SYNC 1 aligned		NONE	OFF
	SYNC 2 aligned		NONE	OFF
	One ore more intermediate beam not aligned		NONE	OFF
	All beams aligned		BAD	ON
	All beams aligned			ON
	All beams aligned			ON
	All beams aligned			EXCELLENT

A Keep the receiver in a steady position and set the emitter until the yellow **SYNC 1** LED is OFF. This condition shows the effective alignment of the first synchronisation beam.

B Rotate the emitter, pivoting on the lower optics axis, until the yellow **SYNC 2** LED is OFF.

C Delimit the area in which alignment is good and steady through some micro adjustments - for the first and then for the second unit - so to have the maximum alignment **LEVEL** (●●●●●) and then place both units in the centre of this area.

D Fix the two units firmly using brackets.

Verify that the **LEVEL** on the RX unit is as high as possible and beams are not interrupted, then verify that **all LEVEL** Led turns OFF if even one single beam is interrupted.

This verification shall be made with the special cylindrical "Test Piece" having a size suitable to the resolution of the device used (refer to paragraph 2.2.5 "Checks after first installation" of the Instruction Manual).

E Switch OFF and ON the device in standard operating mode.

The alignment level is monitored also during device normal operation with the same display (see paragraph 8.1 of user manual).

Once the light curtain has been aligned and correctly fastened, the display signal is useful both to check the alignment and show a change in the environmental conditions (occurrence of dust, light disturbance and so on) via signal level monitoring.

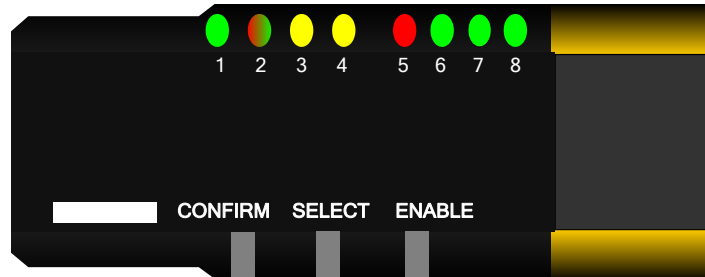
BASIC CONFIGURATION MODE



The device can enter Basic Configuration during Normal Operation. As soon as **CONFIRM** action after configuration is executed the device automatically restarts in Normal Operation with the new configuration. Particular attention has to be taken during the basic configuration management and use.



Muting time-out “∞” does not comply with the requirements of IEC 61496-1. Therefore all possible risks must be considered and related precautions undertaken before selecting the “∞”option.



- A** Keep **CONFIRM** button pressed to enter Basic Configuration Mode.
A **Test Pattern** is shown on led interface, **carefully check that ALL led are lit** in sequence from 1 to 8, then current configuration is shown.
- B** Choose function to set by **SELECT** button, selected led blinks.
- C** Configure selected function with **ENABLE** button (switch led on/off).
Repeat B-C steps until desired configuration is visualized.
- E** Keep **CONFIRM** button pressed to authorize the new configuration

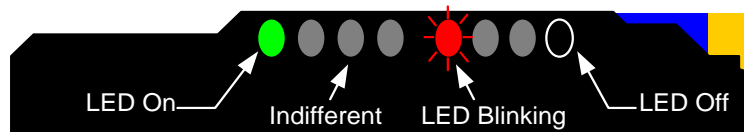
RX Function list in Muting (default) operation Mode (Led3 ON Yellow)			
Function	Led #	Setting (default in bold)	Led Status
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	○ ● ● ● ● ● ● ●
Muting/Blanking Selection	3	Muting	● ● ● ● ● ● ● ●
		Blanking	● ● ● ● ● ● ● ●
EDM	4	Enabled	● ● ● ● ● ● ● ●
		Disabled	● ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	● ● ● ● ● ● ● ●
Muting Direction	6	T (bidirectional)	● ● ● ● ● ● ● ●
		L (unidirectional)	● ● ● ● ● ● ● ●
Muting Timeout	7	10 min	● ● ● ● ● ● ● ●
		Inf.	● ● ● ● ● ● ● ●
Override Trigger	8	Level	● ● ● ● ● ● ● ●
		Edge	● ● ● ● ● ● ● ●

Function list in Blanking operation Mode (Led3 OFF)			
Function	Led #	Setting (default in bold)	Led Status
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	● ● ● ● ● ● ● ●
Muting/Blanking Selection	3	Muting	● ● ● ● ● ● ● ●
		Blanking	● ● ● ● ● ● ● ●
EDM	4	Enabled	● ● ● ● ● ● ● ●
		Disabled	● ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	● ● ● ● ● ● ● ●
Floating Blanking Selection	6-7	Floating Blanking Disabled	● ● ● ● ● ● ● ●
		Floating Blanking 1 beam	● ● ● ● ● ● ● ●
		Floating Blanking 2 beams	● ● ● ● ● ● ● ●
		Reduced Res 4 beams	● ● ● ● ● ● ● ●
Fixed blanking selection	8	1 Fixed Blanking Zone	● ● ● ● ● ● ● ●
		2 Fixed Blanking Zones	● ● ● ● ● ● ● ●

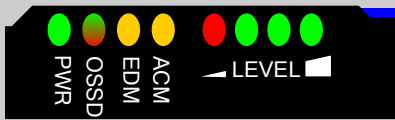


















Tx Function list			
Function	Led #	Setting (default in bold)	Led Status
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	● ● ● ● ● ● ● ●
Range Selection	3	Long	● ● ● ● ● ● ● ●
		Short	● ● ● ● ● ● ● ●

DIAGNOSTICS FUNCTION

The operator can visualize the operating condition of the light curtains thanks to the 8 led positioned on both the RX and TX unit. SG. The figure below shows all signalling LEDs modes: **OFF**, **ON**, **BLINKING**, **INDIFFERENT** (Can be both On or Off depending on actual working mode)



RX UNIT			
ESPE Working Mode	Indication	LED Status	Suggested Action
INTERLOCK	Free beams OSSDs OFF	● ● ● ● ● ● ● ●	User can restart device in normal operation activating RESTART line.
	Intercepted beams OSSDs OFF	● ● ● ● ● ● ● ●	User must free beams path before activating RESTART line.
NORMAL OPERATION	OSSD ON	● ● ● ● ● ● ● ●	
SAFE	OSSD OFF CODE1	● ● ● ● ● ● ● ●	

RX UNIT			
ESPE Working Mode	Indication		Suggested Action
SAFE	OSSD OFF CODE 2		
SAFE	OSSD OFF NO CODE		
-	EDM active		
-	ACM active		
SAFE	ACM configuration pending		Configuration from PC in progress, follow software instruction.
FAILURE LOCKOUT	Failure on OSSD(s)		Activate RESET line. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	Failure on micro-processor(s)		Activate RESET line. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	Failure on optics		Activate RESET line. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	failure on EDM		Check EDM feedback line and EDM configuration. Activate RESET line.
FAILURE LOCKOUT	Failure on restart		Check RESTART line connection. Activate RESET line.
FAILURE LOCKOUT	Communication failure		Check cascade connection and correct mounting of terminator cap. Activate RESET line.
FAILURE LOCKOUT	BCM Configuration failure		Re-operate Basic Configuration. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	ACM Configuration failure		Re-operate Advanced Configuration. If error persists contact Technical Support. Make sure the most recent version of the GUI available on www.datalogic.com is installed.
CRITICAL FAILURE LOCKOUT	Generic Non-resettable failure		Turn ON/OFF ESPE. Shown Failure Code corresponds to failures above with steady leds.
ESPE OFF	Power supply failure		Check Power Supply Connection. If error persists contact Technical Support.
RX UNIT (BLANKING ONLY)			
SAFE	Invalid Blanking (OSSDs OFF)		Blanking Zones not respected. Reconfigure Blanking (Teach In if BCM)
NORMAL OP.	Valid Blanking (OSSDs ON)		
NORMAL OP SAFE	BCM Tolerance Active		Check effective ESPE resolution and intentional activation of tolerance function.

RX UNIT			
ESPE Working Mode	Indication		Suggested Action
RX UNIT (MUTING ONLY)			
NORMAL OP SAFE	Muting Active		If unexpected OSSDs OFF with muting active check Partial Muting Configuration.
NORMAL OP	Override Active		OSSDs ON, muting lamp flashing.
SAFE	Override attention status		Trigger override button to force OSSDs ON.
SAFE	Override timings failure		Check and repeat override activation sequence. Check override connections.
	Lamp Failure		

TX UNIT			
ESPE Working Mode	Indication		Action
EMISSION	Emission		
TEST	Test		If undesired Test check TEST line connection.
EMISSION, TEST	Short Range Emission		
EMISSION, TEST	Long Range Emission		
EMISSION, TEST	No code		
EMISSION, TEST	Code 1		
EMISSION, TEST	Code 2		
FAILURE LOCKOUT	Failure on micro-processor(s)		Activate RESET line. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	Failure on optics		Activate RESET line. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	BCM Configuration failure		Re-operate Basic Configuration. If error persists contact Datalogic Technical Support.
FAILURE LOCKOUT	Communication failure		Check cascade connection and correct mounting of terminator cap. Activate RESET line.
CRITICAL FAILURE LOCKOUT	Generic Non-resettable failure		Turn ON/OFF ESPE. Shown Failure Code corresponds to failures above with steady leds.

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.



Under current Italian and European laws, Datalogic is not obliged to take care of product disposal at the end of its life. Datalogic recommends disposing of the product in compliance with local laws or contacting authorised waste collection centres.

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