

# SG4 Extended Series

*(SG4-...-N Models)*

## QUICK REFERENCE GUIDE

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](http://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.



Scan or tap on the QR code to download the Instruction Manual.

Safety Light Curtains with infrared beams

# 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 “Minimum installation distance” of the Instruction Manual and during all working cycle phases.
- Mounting and connection of the safety light curtain must be carried out by qualified personnel only, according to the indications included in the Instruction Manual (refer to paragraphs “Installation”, “Mechanical Mounting”, “Electrical Connections”, “Alignment Procedure”) and in the applicable standards.
- The safety light curtain must be securely placed in a particular position so that access to the dangerous zone is not possible without the interruption of the beams (refer to paragraph “Installation” in 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 because 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 on.**

**NOTE**

## Precautions to be observed for the choice and installation



**Make sure that the protection level assured by the device is compatible with the real danger level of the machine to be controlled, according to EN ISO 13849-1 or EN 62061.**

**CAUTION**

- 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 an environment complying with the characteristics indicated in chapter “Technical data” of the Instruction Manual.
- The ESPE must not be installed close to strong and/or flashing light sources, in particular close to the front window of receiving unit.
- The presence of intense electromagnetic disturbances could affect device’s correct operation. This condition shall be carefully assessed with the advice of 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 thus jeopardize correct operation.
- 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 that is greater 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.

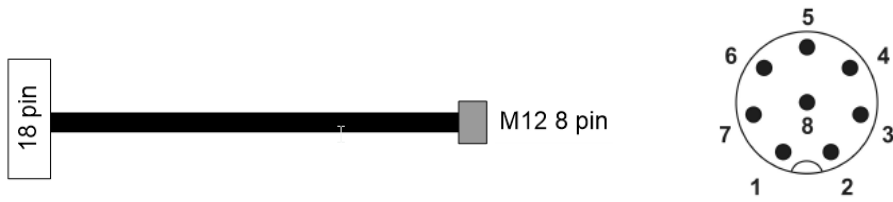


**The failure to respect the safety distance reduces or cancels the ESPE protection function. For more detailed information about calculation of safety distance, please refer to the Instruction Manual.**

**CAUTION**

# CONNECTIONS

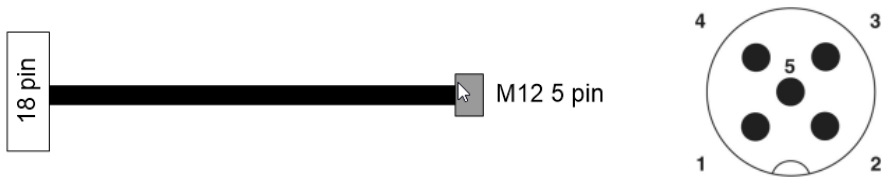
## SG4-N RX



### M12 8 poles

- |   |                      |
|---|----------------------|
| 1. White = RESTART / RESET / EDM / OVERRIDE | 5. Gray = OSSD1      |
| 2. Brown = +24 VDC                          | 6. Pink = OSSD2      |
| 3. Green = MUTING 1                         | 7. Blue = 0 V        |
| 4. Yellow = MUTING 2                        | 8. Red = MUTING LAMP |

## SG4-N TX



### M12 5 poles

- |                 |                  |
|-----------------|------------------|
| 1. Brown = 24 V | 4. Black = EARTH |
| 2. White = TEST | 5. N.C.          |
| 3. Blue = 0 V   |                  |

# 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 or more intermediate beams not aligned		NONE	OFF
	All beams aligned		BAD	ON
	All beams aligned			ON
	All beams aligned			ON
	All beams aligned			ON
All beams aligned		EXCELLENT	ON	

- 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.
- Rotate the emitter, pivoting on the lower optics axis, until the yellow SYNC 2 LED is OFF.
- 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 center of this area.
- 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 "Checks after first installation" of the Instruction Manual).
- Switch OFF and ON the device in standard operating mode. The alignment level is monitored also during device normal operation with the same display. 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.



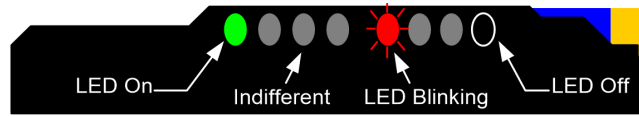
- Keep **CONFIRM** button pressed to enter Basic Configuration Mode.
- A **Test Pattern** is shown on led interface, **carefully check that all LEDs are lit** in sequence from 1 to 8, then current configuration is shown.
- Choose function to set by **SELECT** button, selected led blinks.
- Configure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

SG4N model provides Muting and Override functions along with Automatic/Manual Restart and External Device Monitoring.

RX FUNCTION LIST IN MUTING (DEFAULT) OPERATION MODE (LED 3 ON YELLOW)					
FUNCTION	LED #	SETTING (default in bold)	LED STATUS		ESPE ZONES
Partial Muting	2	Zone (A)			
		Zone (A+B)			
		<b>Zone (A+B+C)</b>			
Muting Exit Delay	3	ON			
		<b>OFF</b>			
EDM	4	<b>Enabled</b>			
		Disabled			
Restart Mode	5	<b>Auto</b>			
		Manual			
Muting Direction	6	<b>T (bidirectional)</b>			
		L (monodirectional)			
Muting Timeout	7	<b>10 min</b>			
		Inf.			
Muting Filter	8	ON			
		<b>OFF</b>			

# DIAGNOSTIC 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. The figure below shows all signaling LEDs modes: OFF, ON, BLINKING, INDIFFERENT (Can be both On or Off depending on actual working mode).



## RX side

ESPE WORKING MODE	INDICATION	LED CONFIGURATION								RECOMMENDATIONS
		PWR	OSSD	EDM	ACM	LEVEL				
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 OP.	OSSD ON	●	●	●	●	●	●	●	●	
SAFE	OSSD OFF	●	●	●	●	●	●	●	●	
-	EDM active	●	●	●	●	●	●	●	●	
FAILURE LOCKOUT	Failure on OSSD(s)	●	●	●	●	●	●	●	●	Activate RESET line. If error persists, contact Datalogic Technical Support
FAILURE LOCKOUT	Failure on microprocessor	●	●	●	●	●	●	●	●	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	BCM configuration failure	●	●	●	●	●	●	●	●	Re-operate Basic Configuration. If error persists, contact Datalogic Technical Support
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
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 side

ESPE WORKING MODE	INDICATION	LED CONFIGURATION	RECOMMENDATIONS
EMISSION	Emission		
TEST	Test		If undesired Test check TEST line connection
FAILURE LOCKOUT	Failure on microprocessor(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
CRITICAL FAILURE LOCKOUT	Generic non-resettable failure		Turn ON/OFF ESPE. Shown Failure Code corresponds to failures above with steady LEDs

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This is an extract from the original instructions (821006103 Rev. D)

(Ref. 2006/42/EC)

## 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 20<sup>th</sup>, 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.

## Patents

See [www.patents.datalogic.com](http://www.patents.datalogic.com) for patent list.

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821005603

(Rev D)

October 2020