DATALOGIC

SG4-Extended SERIES

Safety light curtains with infrared beams

QUICK GUIDE

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 manual included in the supplied CD 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 user 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 user 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

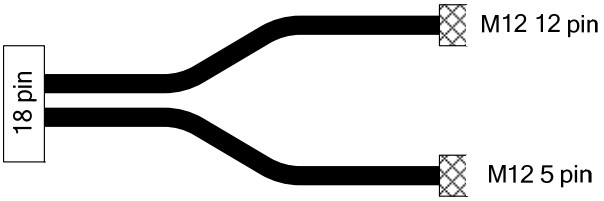
Make sure that the protection level assured by the SG4-E device is compatible with the real danger level of the machine to be controlled, according to EN 954-1 and EN 13849-1.

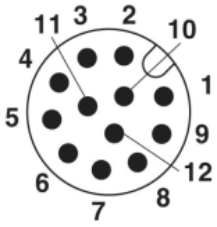
- The outputs (OSSD) of the ESPE must be used as machine stopping devices and not as command devices. The machine must have its own START command.
- The dimension of the smallest object to be detected must be larger than the resolution level of the device.
- The ESPE must be installed in a room complying with the technical characteristics indicated in section 11 “Technical data” of the manual included in the CD supplied.
- 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 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.

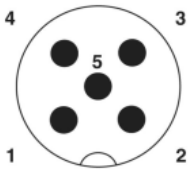
The failure to respect the safety distance reduces or cancels ESPE protection function. For more detailed information about calculation of safety distance, please refer to the complete manual contained in the supplied CD.

CONNECTIONS

SG4-E RX (Muting Operation)



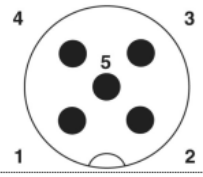




M12 12 pole:
1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. OVERRIDE1 (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. MUTING ENABLE (black)
8. OSSD1 (grey)
9. OVERRIDE2 (red)
10. MUTING LAMP (violet)
11. OVERRIDE STATUS (grey-pink)
12. EARTH (red-blue)

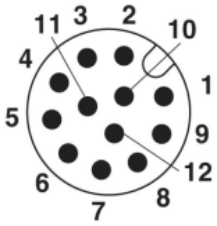
M12 5 pole:
1. 24V (brown)
2. MUTING2 (white)
3. 0V (blue)
4. MUTING1 (black)
5. N.C. (grey)

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)



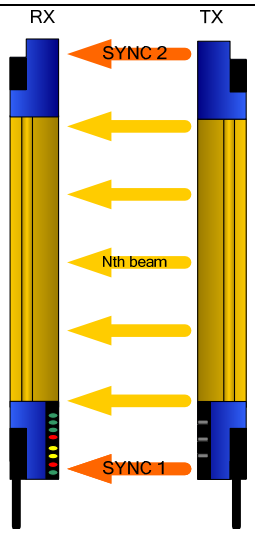
M12 12 pole:
1. 24V (brown)
2. 0V (blue)
3. RESET/RESTART/ALIGN (white)
4. TEACH IN (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. N.C. (black)
8. OSSD1 (grey)
9. TOLERANCE (red)
10. LAMP (violet)
11. N.C. (grey-pink)
12. EARTH (red-blue)

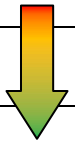
ALIGNMENT PROCEDURE

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 untill 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	ON

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.

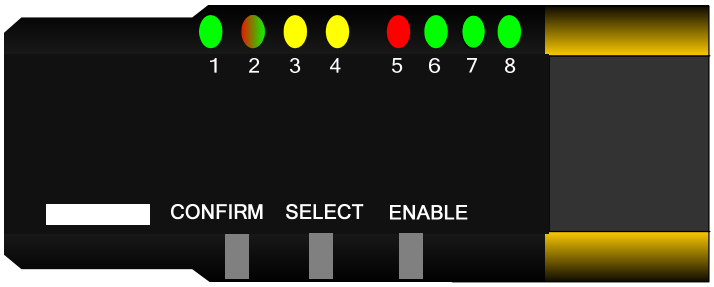
This verification shall be made with the special cylindrical “Test Piece” having a size suitable to the resolution of the device used (refer to paragraph 2.2.5 “*Checks after first installation*” of user manual).

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

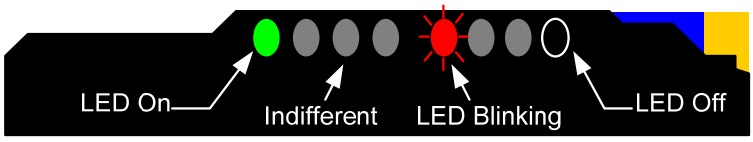
RX Function list in Muting (default) operation Mode (Led3 ON Yellow)			
Function	**Led #**	**Setting (default in bold)**	**Led Status** 1 2 3 4 5 6 7 8
Coding	2	Code 1	
		Code 2	
		No Code	
Muting/Blanking Selection	3	**Muting**	
		Blanking	
EDM	4	**Enabled**	
		Disabled	
Restart mode	5	**Auto**	
		Manual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

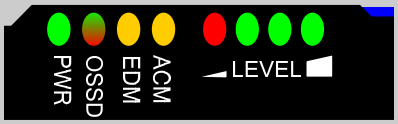
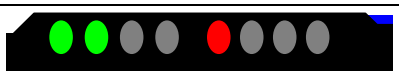
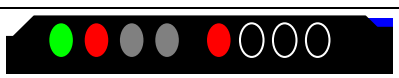
Function list in Blanking operation Mode (Led3 OFF)			
Function	**Led #**	**Setting (default in bold)**	**Led Status** 1 2 3 4 5 6 7 8
Coding	2	Code 1	
		Code 2	
		No Code	
Muting/Blanking Selection	3	**Muting**	
		Blanking	
EDM	4	**Enabled**	
		Disabled	
Restart mode	5	**Auto**	
		Manual	
Floating Blanking 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	

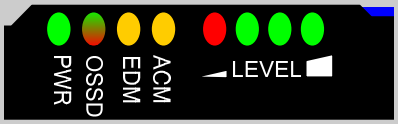
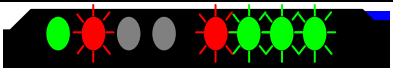
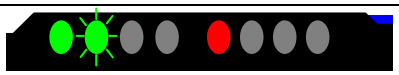
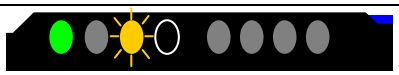
Tx Function list			
Function	**Led #**	**Setting (default in bold)**	**Led Status** 1 2 3 4 5 6 7 8
Coding	2	Code 1	
		Code 2	
		No Code	
Range Selection	3	**Long**	
		Short	

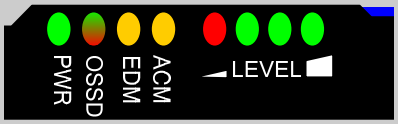
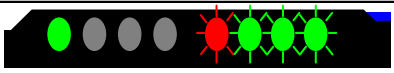
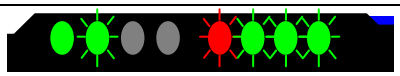
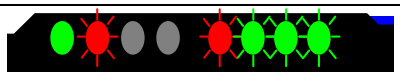
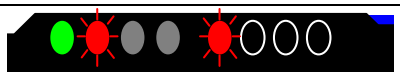
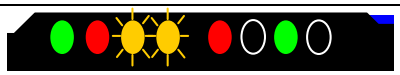
DIAGNOSTICS FUNCTION

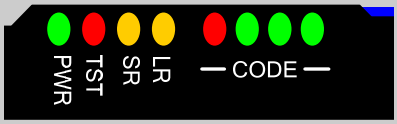
The operator can visualize the operating condition of the light curtains thanks to the 8 led positioned on both the RX and TX unit. SG. The figure below shows all signalling LEDs modes: **OFF, ON, BLINKING, INDIFFERENT** (Can be both On or Off depending on actual working mode)



RX UNIT			
ESPE Working Mode	**Indication**		**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	Comunication 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	Comunication 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.

DECLARATION OF CONFORMITY

We DATALOGIC declare under our sole responsibility that these products are conform to the IEC 61496-1 (2004) and IEC 61496-2 (2006) Standards and successive amendments

WARRANTY

DATALOGIC warrants its products to be free from defects.

DATALOGIC will repair or replace, free of charge, any product found to be defective during the warranty period of 36 months from the manufacturing date.

This warranty does not cover damage or liability deriving from the improper application of DATALOGIC products.

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