

## SG-BODY MUTING 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 SG-BODY 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 2.4.3 of the manual included in the CD supplied 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 3; 4; 5; 7) 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.
- 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 SG-BODY device (Type2/Type4) is compatible with the real danger level of the machine to be controlled, according to EN 954-1 and EN 13849-1.*

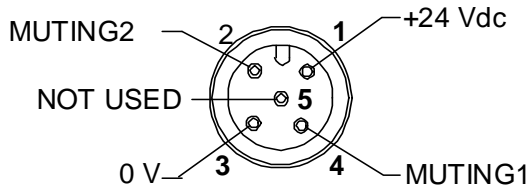
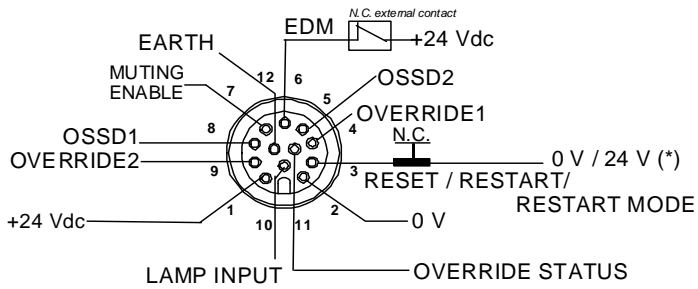
- The outputs (OSSD) of the ESPE must be used as machine stopping devices and not as command devices. The machine must have its own START command.
- The dimension of the smallest object to be detected must be larger than the resolution level of the device.
- The ESPE must be installed in a room complying 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 jeopardise device operation. This condition has to be carefully evaluated with the support of the DATALOGIC AUTOMATION 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.



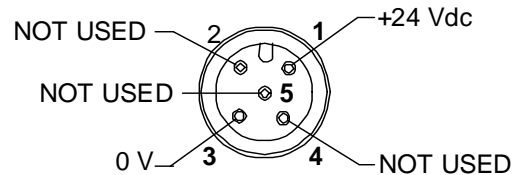
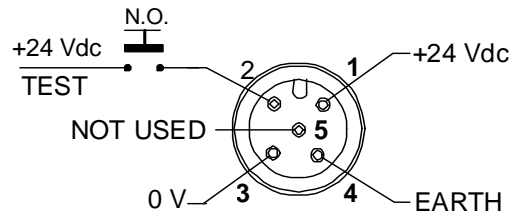
*The failure to respect the safety distance reduces or cancels ESPE the protection function.  
For more detailed information about calculation of safety distance,  
please refer to the complete manual contained in the CD supplied.*

# CONNECTIONS

## RECEIVER (RX)



## EMITTER (TX)



### **M12 12 Poles:**

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

### **M12 5 Poles:**

- 1 = brown = +24 Vdc
- 2 = white = MUTING2
- 3 = blue = 0V
- 4 = black = MUTING1
- 5 = grey = NOT USED

### **M12 5 Poles:**

- 1 = brown = +24 Vdc
- 2 = white = TEST
- 3 = blue = 0V
- 4 = black = EARTH
- 5 = grey = NOT USED

### **M12 5 Poles:**

- 1 = brown = +24 Vdc
- 2 = white = NOT USED
- 3 = blue = 0V
- 4 = black = NOT USED
- 5 = grey = NOT USED

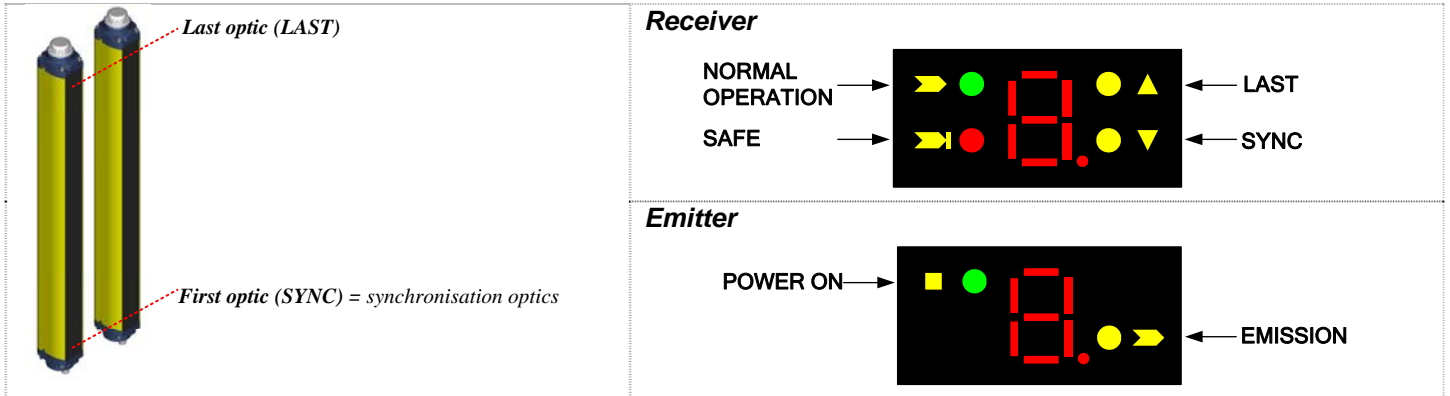
(\*) Connected to 24V → Automatic RESTART → NC: RESET function  
 Connected to 0V → Manual RESTART → NC: RESET/RESTART function

## 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.

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.

The beam used to synchronise the two units is the first after the connector. SYNC is the optics connected with this beam and LAST is the optics connected to the last beam after the SYNC unit.



Signals are clearly identified through symbols allowing immediate reading, independent of bars directions.

A short description of the signalling LEDs is necessary to avoid misunderstandings.

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

### Correct alignment procedure

The light curtain alignment can be effected only after having completed the mechanical installation and the electrical connections. The following procedure has to be followed:

**NOTE:** SG-BODY is equipped with a system which informs the user on the alignment obtained.

The alignment function can be activated when powering the device, by keeping the normally open RESET/RESTART contact closed for at least 0.5 seconds. In alignment mode, OSSD state is always OFF.

In alignment mode the internal and external lamps blink as quickly as more the alignment level increases.

Visualization	Alignment state	Alignment quality	OSSD state out of alignment-function
	No sync → check 1 <sup>st</sup> beam	Bad	OFF
	Last beam isn't aligned	Bad	OFF
	One or more intermediate beams are not aligned	Bad	OFF
		Good	ON
	Every beam over the lower threshold and up to 25% of beams over the upper threshold		ON
	Every beam over the lower threshold and up to 50% of beam over the upper threshold		ON
	Every beam over the lower threshold and up to 75% of beam over the upper threshold		ON
	Every beam over the lower threshold and up to 100% of beam over the upper threshold		Excellent

- A** Keep the receiver in a steady position and set the emitter until the yellow LED (▼ SYNC) is OFF. This condition shows the effective alignment of the first beam (synchronisation beam).
- B** Rotate the emitter, pivoting on the lower optics axis, until the yellow LED (▲ LAST) is OFF.

**NOTE: Ensure that the green LED (➤ NORMAL OP.) is steady ON.**

- C** Delimit the area in which the green LED (➤) is steady through some micro adjustments - for the first and then for the second unit - so to have the maximum alignment (4) and then place both units in the centre of this area.
- D** Fix the two units firmly using brackets.  
Verify that the green LED (➤) on the RX unit is ON and beams are not interrupted, then verify that the red LED turns ON if even one single beam is interrupted SAFE (➤I, 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 (refer to paragraph 3.2.6 "Controls after first installation").


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

The alignment level is monitored also during device normal operation mode via display (see paragraph 7.1 on the manual inside of the attached CD-ROM).

Once the 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.

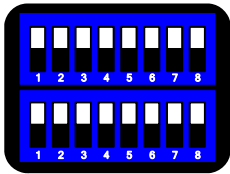
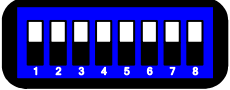
## DIP SWITCHES CONFIGURATION

- 

The device does not accept configuration changes during normal functioning. A change is accepted only beginning from the successive powering of the device. Particular attention has to be taken during the configuration dip-switch 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.**

**NOTE:** For RX side the top and bottom dip-switches must be configured in the same manner. The “ON” position is the default.

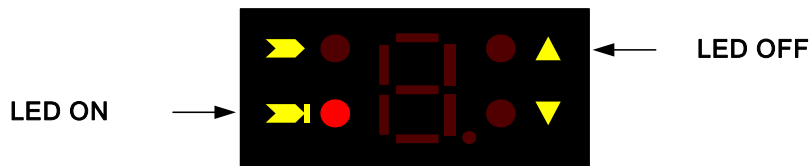
RX			TX		
					
	ON	OFF		ON	OFF
Dip switches n°1: Muting timeout	10 min	∞	Dip switch n°1: coding selection	<i>See table</i>	<i>See table</i>
Dip switches n°2: Muting T/L	T	L	Dip switch n°2: coding selection	<i>See table</i>	<i>See table</i>
Dip switches n°3: Muting filter	Disabled	Enabled	Dip switch n°3: not used	-	-
Dip switches n°4: Override restart	Manual	Automatic	Dip switch n°4: not used	-	-
Dip switches n°5: Override mode	Maintained	Impulsive	Dip switch n°5: not used	-	-
Dip switches n°6: EDM enable	EDM on	EDM off	Dip switch n°6: not used	-	-
Dip switches n°7: coding selection	<i>See table</i>	<i>See table</i>	Dip switch n°7: not used	-	-
Dip switches n°8: coding selection	<i>See table</i>	<i>See table</i>	Dip switch n°8: not used	-	-

Dip-switches 7	Dip-switches 8	CODE
ON	ON	NO CODE
OFF	ON	Code 1
ON	OFF	Code 2
OFF	OFF	Not used

Dip-switch 1	Dip-switch 2	CODE
ON	ON	NO CODE
OFF	ON	Code 1
ON	OFF	Code 2
OFF	OFF	Not used

## DIAGNOSTICS FUNCTION












The operator can visualise the operating condition of the light curtains thanks to a one-digit display positioned on both the RX and TX unit. SG-BODY also has four LEDs on the RX unit and two LEDs on the TX unit. The figure below shows all signalling LEDs modes: OFF, ON.



The operator can evaluate the main causes of the system stopping or failure using the 7-segment display and LEDs used to visualise the functions. For the receiver:

Visualization	Status	Description	Action
	INTERLOCK	Free beams, OSSDs OFF	User can take device in normal operation activating restart line.
	INTERLOCK	Interrupted beams, OSSDs OFF	User must free beams path before activating restart line.
	NORMAL OPERATION	OSSDs ON	
	SAFE	OSSDs OFF, No code	
	SAFE	OSSDs OFF, Code 1	
	SAFE	OSSDs OFF, Code 2	
	NORMAL OPERATION, SAFE, INTERLOCK	EDM function active	
		EDM function not active	
	SAFE, INTERLOCK	Override function ready to be activated	User can activate Override function activating the correct sequence on Override lines.
	FAILURE LOCKOUT (recoverable)	Failure on one or both OSSDs, OSSDs OFF	User must activate RESET line. If ESPE does not reset user must contact Datalogic Automation Technical Support.
		Microcontroller failure, OSSDs OFF	User must turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
	FAILURE LOCKOUT (recoverable)	Optical failure, OSSDs OFF	User must activate RESET line. If ESPE does not reset user must contact Datalogic Automation Technical Support.
		EDM failure, OSSDs OFF	User must check EDM ENABLE line or dip-switches, EDM line, external switching device and activate RESET line. If ESPE does not reset user must contact Datalogic Automation Technical Support.
	FAILURE LOCKOUT (not recoverable)	Override connection failure, OSSDs OFF	User must check Override lines connection and turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
		Override sequence failure, OSSDs OFF	User must check Override lines activation sequence timings and repeat Override sequence. If the problem persists user must contact Datalogic Automation Technical Support.
	FAILURE LOCKOUT (not recoverable)	Dip switch failure, OSSDs OFF	User must check dip-switch configuration (see par." DIP SWITCHES CONFIGURATION") and turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
		Internal and external lamp failure, OSSDs OFF	User must check LAMP INPUT line and activate RESET line. If ESPE does not reset user must contact Datalogic Automation Technical Support.
	ESPE OFF	Power supply failure, OSSDs OFF	User must check power supply connection. If the problem persists user must contact Datalogic Automation Technical Support.

For emitter:

Visualization	Status	Description	Action
	EMISSION	Emission, No code	
	EMISSION	Emission, Code 1	
	EMISSION	Emission, Code 2	
	TEST	No Emission	
 	FAILURE LOCKOUT (not recoverable)	Microcontroller failure	User must turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
 	FAILURE LOCKOUT (not recoverable)	Optical failure	User must turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
 	FAILURE LOCKOUT (not recoverable)	Dip switch failure	User must check dip-switch configuration and turn OFF/ON ESPE. If the problem persists user must contact Datalogic Automation Technical Support.
	ESPE OFF	Power supply failure	User must check power supply connection. If the problem persists user must contact Datalogic Automation Technical Support.

## ORIGINAL INSTRUCTIONS (ref. 2006/42/EC)

This product is covered by one or more of the following patents.  
Italian Patent IT 1,363,719      Additional patents pending

---

### DECLARATION OF CONFORMITY

We DATALOGIC AUTOMATION 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 AUTOMATION warrants its products to be free from defects.  
DATALOGIC AUTOMATION 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 AUTOMATION products.



#### DATALOGIC AUTOMATION

Via Lavino 265 - 40050 Monte S.Pietro - Bologna – Italy  
Tel: +39 051 6765611 - Fax: +39 051 6759324  
www.automation.datalogic.com e-mail:info.automation.it@datalogic.com

 DATALOGIC AUTOMATION cares for the environment: 100% recycled paper.  
DATALOGIC AUTOMATION reserves the right to make modifications and improvements without prior notification.

*Datalogic and the Datalogic logo are registered trademarks of Datalogic S.p.A. in many countries,  
including the U.S.A. and the E.U.*