

## S3Z LASER SERIES INSTRUCTION MANUAL

**CLASS 1 EN 60825-1 (2007)  
LASER PRODUCT**

### CONTROLS

#### OUTPUT LED

The yellow LED indicates the output status.

#### STABILITY LED (S3Z...B01/F01)

The green LED ON indicates that the received signal has a safety margin greater than 20% compared to the output switching value.

#### POWER ON LED (S3Z...G00)

The green LED indicates that the sensor is operating.

#### TRIMMER (S3Z...B01/F01)

The trimmer can be used to adjust sensitivity; the operating distance increases turning the trimmer clockwise.

#### ADJUSTMENT SCREW (S3Z...M01)

This control can be used to adjust the cutoff distance (6 turns screw); the operating distance increases turning the control clockwise.

#### LIGHT/DARK TRIMMER

This switch can be used to set light or dark operation mode.

#### WARNING (only for S3Z...B01/F01):

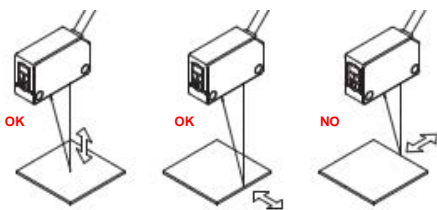
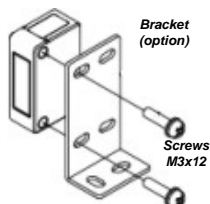
The trimmer rotation is limited to 260° by a mechanical stop. *Do not apply excessive torque when adjusting (max 0.05 Nm).*

### INSTALLATION

- Do not apply excessive impact on the sensor during the installation process, so as to prevent damage or deterioration in the degree of protection.

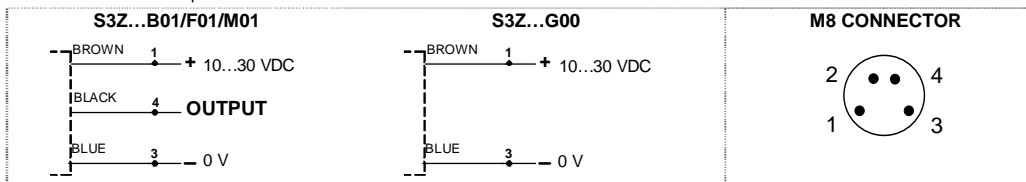
- To install the sensor, tighten the mounting screws to a torque of 0.5 Nm or less.

- Install the Background suppression type sensor head perpendicular to the object transfer as shown below to minimize sensing errors.



### CONNECTIONS

The connections are compliant to the EN 60947-5-2 standard.



### TECHNICAL DATA

	S3Z...B01	S3Z...F01/G00	S3Z...M01
Power supply:	12 ... 24 VDC (operating limit 10...30VDC); reverse polarity protected		
Ripple:	p-p 10% max.		
Current consumption (output current excluded):	35mA max.	30mA max. mod.F01 15mA max. mod.G00	35mA max.
Output:	LIGHT or DARK; PNP or NPN (short-circuit protection)		
Output current:	100 mA max.		
Output saturation voltage:	1.5 V max.		1.5 V max.
Response time:	250 us max.		
Switching frequency:	2KHz max.		
Indicators:	OUTPUT LED (YELLOW) STABILITY LED (GREEN) mod. B01/F01 POWER ON LED (GREEN) mod. G00		
Setting:	Trimmer (270°)		6 turns screw
Detection Mode Setting:	LIGHT/DARK Trimmer		
Operating temperature:	-10 ... +55 °C		
Storage temperature:	-25 ... +70 °C no freezing or condensation		
Operating distance (minimum):	0.3...10 m on R2	0...15 m	20...250mm (white paper 200x200 mm)
Insulating strength:	500 Vac 1 min., between electronics and housing		
Insulating resistance:	>20 MΩ 500 Vdc, between electronics and housing		
Adjustable setting range:	---		40...300 mm
Difference on White 90% / Gray 18%:	---		10%
Spot Size Typical:	Ø5 mm @ 3 m	Ø5 mm @ 3 m	Ø0.5 mm @ 170 mm
Minimum sensing object (typical):	Ø6 mm @ 3 m (opaque)	Ø6 mm @ 3 m (opaque)	Ø0.2 mm @ 170 mm (copper wire)
Emission type:	RED LASER: Class 1 EN 60825-1 (2007) (mod.B01/C01/G00) Class II CDRH 21 CFR PART 1040.10 (mod.B01/C01/G00) Max. power ≤ 7 mW; λ = 650 nm		
Ambient light rejection:	according to EN 60947-5-2		
Vibration:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)		
Shock resistance:	11 ms (30 G) 6 shock for every axis (EN60068-2-27)		
Housing:	Body PBT / indicators cover PC		
Lenses:	PMMA		
Protection class:	IP67		
Connections:	2 m cable Ø 3.5 mm / M8-4 pole connector		
Weight:	50 g. max. cable versions / 10 g. connector versions		

### SETTING

#### Allineamento S3Z...B01

Position the sensor and reflector on opposite sides. Turn the sensitivity trimmer to maximum. Find the points where the yellow LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points. Optimum operation is obtained when the green LED is ON.

If necessary, reduce sensitivity using the trimmer, in order to detect very small or transparent targets. In order to improve alignment, repeat the procedure detailed above whilst progressively reducing the sensitivity.

#### Alignment S3Z...F01/G00

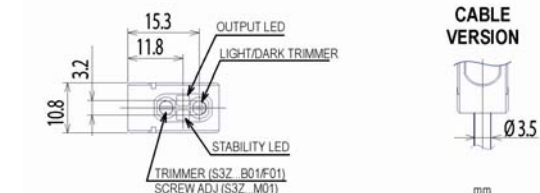
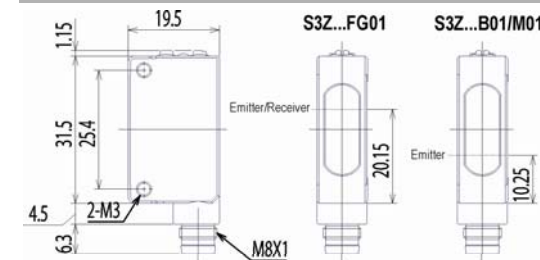
Position the sensors on opposite sides. Find the points where the yellow LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points. Optimum operation is obtained when the green LED is ON.

#### Alignment S3Z...M01

Referring to the table below, adjust the distance of the photoelectric sensor when necessary. The table explains the status of operation LED when the operation mode is set to light ON.

Step	Distance control	Adjusting procedure
1		Install a photoelectric sensor and the sensing object. Turn the control counter-clockwise until the operation LED turns OFF. Then turn clockwise until the operation LED turns ON (point A).
2		Remove the sensing object, then the operation LED turns OFF. Turn clockwise until the operation LED turns ON, the background is detected (point B).
3		Set the middle point between point A and B as point C.

### DIMENSIONS



### SAFETY PRECAUTIONS



Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

- This product emits a visible laser beam. Do not stare into the beam directly. Furthermore, do not look the laser which is reflected at a mirror-like object
  - About safety standards of laser product, IEC60825-1 "Safety of laser products" has been stipulated by the IEC (International Electrotechnical Commission). This product is classified as "CLASS1 product" according to IEC60825-1(2007).
  - This product complies with 21 CFR 1040.10 and 21 CFR 1040.11 according to Laser Notice No.50, dated June 24, 2007, issued by CDRH (Center for Devices and Radiological Health) under FDA (Food and Drug Administration).
  - Labels: Following "Warning label" and "Certification/Identification label" are affixed on this product according to IEC 60825-1 and laser regulation of FDA.
- When this product will be incorporated into final device system which is exported to the USA, make sure that Certification/Identification label is affixed.

### DECLARATION OF CONFORMITY

We DATALOGIC AUTOMATION declare under our sole responsibility that these products are conform to the 2004/108/CE.



### 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.

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