



LC-120-BL...

Background suppression

INSTRUCTION MANUAL



This product is not a safety sensor. It is not intended to be used to protect life or prevent bodily injury or damage from dangerous machine parts. It is a normal object detection sensor.

CONTROLS

OUTPUT LED (yellow)

The yellow LED ON indicates the output status: N.O. closed and N.C. open.

POWER ON LED (green)

The green LED ON indicates the sensor powering status and laser emission presence.

DISTANCE ADJUSTMENT TRIMMER (ADJ.)

The multiturn trimmer with clutch (6 turn) adjusts the suppression distance through the mechanical variation of the optic triangulation angle. The operating distance increases rotation the trimmer shaft in a clockwise direction. Please refer to "SETTING" paragraph for the correct use procedure.

POSITION INDICATOR

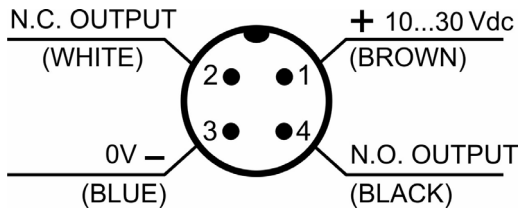
This indicator has a scale numbered from 1 to 6 that allows the precise adjustment of the suppression distance on the entire operating range. Please refer to "SETTING" paragraph for the correct use procedure.

INSTALLATION

The sensor can be positioned by means of the three housing's holes using two screws (M4x25 or longer, 1.5 N•m maximum tightening torque) with washers. Various orientable fixing brackets to ease the sensor positioning are available. The operating distance is measured from the front surface of the sensor optics. The M12 connector can be oriented at two different positions using the specific fastening spring and rotating the block to 180°.

CONNECTIONS

M12 connector



TECHNICAL DATA

	LC-120-BL0015...	LC-120-BL0035...
Power supply:	10 ... 30 VDC	
Ripple:	2 Vpp max.	
Consumption (output current excluded):	30 mA max	
Outputs:	PNP or NPN N.O. / N.C.; 30 VDC max. (short-circuit protection)	
Output current:	100 mA (overload and overvoltage protection)	
Output saturation voltage:	≤ 2 V	
Response time:	140 μs	200 μs
Switching frequency:	3.5 kHz	2.5 kHz
Emission type:	RED LASER (λ = 645...665nm): Class 2 EN 60825-1 (1994), Class II CDRH 21 CFR PART 1040.10 Pulsed emission: pot. max ≤ 5mW; pulse duration = 5μs; frequency = 14KHz (mod. BL0015) / 10KHz (mod. BL0035)	
Focalization point :	60 mm	150 mm
Spot dimension:	< 0.2 mm (at 60 mm)	< 0.4 mm (at 150 mm)
Operating distance (typical values):	30...150 mm	50...350 mm
Adjustment:	4 turns distance adjustment trimmer	6 turns distance adjustment trimmer
Difference (90% white/ 4% black):	< 4 % (see DETECTION DIAGRAM)	
Hysteresis (90% white):	< 1 %	
Indicators:	OUTPUT LED (YELLOW) / POWER ON LED (GREEN)	
Functioning temperature:	-10 ... 55 °C	
Storage temperature:	-20 ... 70 °C	
Insulating strength:	500 Vac 1 min., between electronics and housing	
Insulating resistance:	>20 MΩ 500 VDC, between electronics and housing	
Ambient light rejection:	According to EN 60947-5-2	
Vibrations:	0.5 mm amplitude, 10 ... 55 Hz frequency, for each axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shock for each axis (EN60068-2-27)	
Housing material:	ABS	
Lens material:	PMMA window; PC lens	
Mechanical protection:	IP67	
Connections:	M12-4 pole connector	
Weight:	40 g. max.	

SETTING

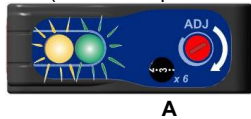
Suppression distance setting

1. Object detection

Position object to detect in front of the sensor at the distance required. Turn distance adjustment trimmer (ADJ) to minimum: yellow LED OFF and green LED ON.



Rotate trimmer in a clockwise direction until the yellow LED and green LED turn ON. *Object detection condition* (A status of position indicator).

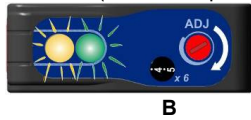


2. Background suppression

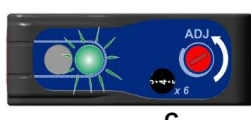
Remove object and ensure that the background is in front of the sensor: yellow LED OFF and green LED ON.



Rotate trimmer in a clockwise direction until the yellow LED and green LED turn ON: *background detection condition* (B status of position indicator).



The trimmer reaches maximum level with yellow LED OFF if the background is outside the operating range. Rotate trimmer in an anticlockwise direction until yellow LED turns OFF and green LED ON: *condition where background is outside operating range* (C status of position indicator).

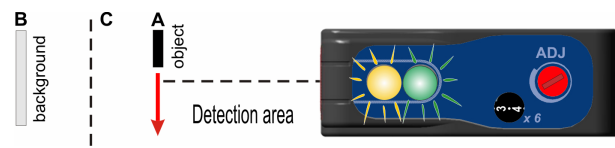


3. Setting and control

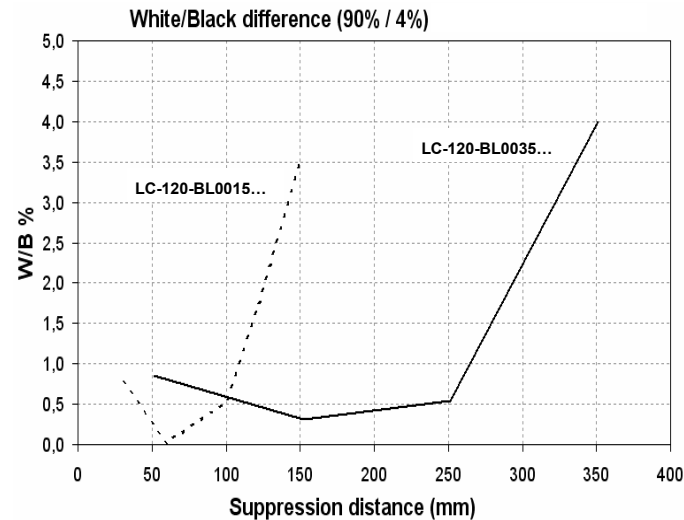
Rotate trimmer in an anticlockwise direction until the indicator reaches an intermediate point between position A and C.



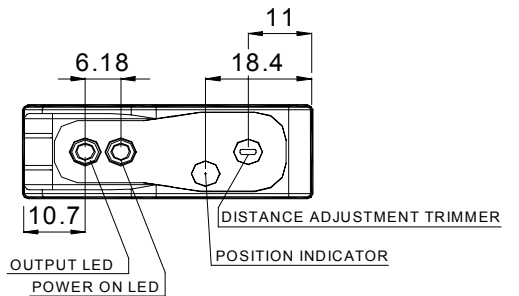
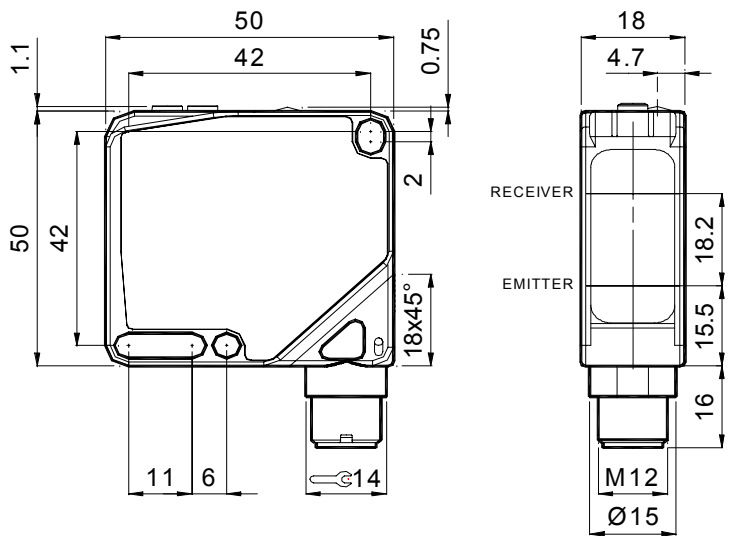
If position A and C are close to each other, leave trimmer on position C. The sensor is now ready to function correctly and in stable conditions.



DETECTION DIAGRAM



DIMENSIONS



SAFETY PRECAUTIONS

All the electric and mechanical safety regulations must be respected while the sensor is functioning. The sensor has to be protected against mechanical damage. Apply the labels supplied in a visible position near the laser emission beam. Do not stare directly into the laser beam! Do not point the laser beam towards people! Exposing your eye to laser radiation for more than 0.25 seconds is dangerous! Please refer to the Class 2 Standard (EN60825-1). These sensors cannot be used for safety applications!



CONFORMITY

