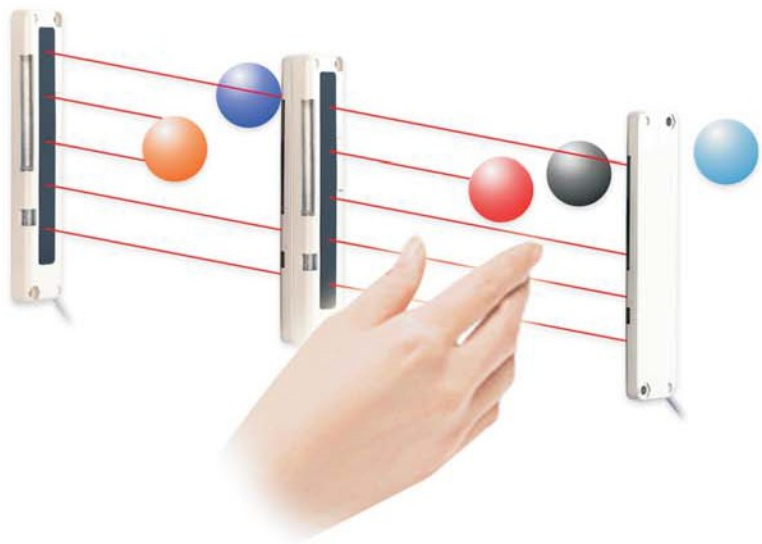




# *icon*

## **SL1 SERIES**

### **Photoelectric Area Sensor**

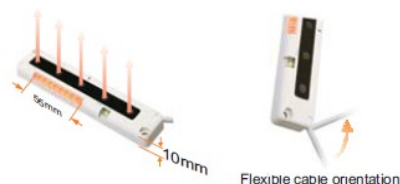


- Ultra-slim body 10mm thick
- 25mm beam pitch
- Long sensing range: 3m
- lighting pattern selectable
- Clearly visible job indicator
- Supply Voltage: 10-30VDC
- CE Approvals

# SL1 SERIES PHOTOELECTRIC AREA SENSOR

## Ultra-slim Body 25mm Beam Pitch Area Sensor

10mm Thick: It fits into a small space, without obstructing normal operation. Clearly visible job indicator



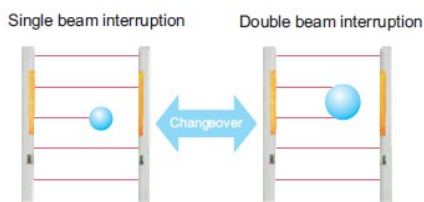
Parallel installation  
Long sensing range:3m



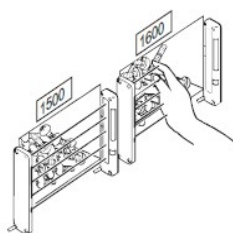
The job indicator operation can be selected as either continuous lighting or blinking



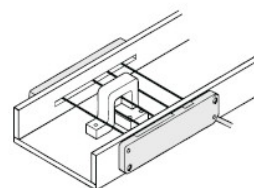
Detection operation selectable









Preventing wrong parts picking



Detecting parts having wide positioning area



Type	Receiver	SL1-05P-C2R	SL1-05P-P4R	SL1-05P-E4R	SL1-05N-C2R	SL1-05N-P4R	SL1-05N-E4R
Output	Emitter	SL1-05P-C2E	SL1-05P-P3E	SL1-05P-E3E	SL1-05N-C2E	SL1-05N-P3E	SL1-05N-E3E
Output		PNP output	PNP output	PNP output	NPN output	NPN output	NPN output
Sensing range		0.2-3m	0.2-3m	0.2-3m	0.2-3m	0.2-3m	0.2-3m
Picture							
Nominal Voltage		10-30VDC					
Ripple		10% or less					
Sensing height		100mm					
Number of beam channels		5 beam channels					
Beam pitch		25mm					
Sensing object		ø35mm or more opaque object					
Power consumption		Emitter:0.5W or less, Receiver:0.8W or less			Emitter:0.6W or less, Receiver:0.9W or less		
Output		NPN open-collector transistor			PNP open-collector transistor		
Maximum sink current		100 mA					
Applied voltage		30 V DC or less (between output and 0 V)					
Residual voltage		1.5V or less (at 100 mA sink current)					
Output operation		ON or OFF when one or more beams are interrupted / ON or OFF when two or more beams are interrupted, selectable by operation mode switch					
Short-circuit protection		Incorporated					
Response time		10 ms or less					
Indicators	Emitter	Power indicator: Green LED; Job indicator: Orange LED					
	Receiver	Operation indicator: Red LED ; Job indicator: Orange LED					
Interference prevention function		Incorporated					
Pollution degree		3(Industrial environment)					
Protection		IP62 (IEC)					
Ambient temperature		-10 to +55 ℃ (No dew condensation or icing allowed)					
Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH					
Ambient illuminance		Incandescent light: 3,000 lx at the light-receiving face					
EMC		Emission: EN50081-2, Immunity: EN50082-2					
Voltage withstand ability		1,000 V AC for one min. between all supply terminals connected together and enclosure					
Insulation resistance		20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure					
Vibration resistance		10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each					
Shock resistance		490m/s <sup>2</sup> acceleration(50G approx.) In X,Y and Z directions for three times each					
Emitting element		Infrared LED (synchronized scanning system)					
Material		Enclosure: Heat-resistant ABS, Lens cover: Acrylic, Indicator cover: Acrylic					
Cable/Connectors		Emitter:ø4 3x0.34mm <sup>2</sup> Receiver:ø4 3x0.34mm <sup>2</sup> Cable length 2m PVC	M8 pico type 4pin	Pigtailed type M12 4pin Cable length 0.3m	Emitter:ø4 3x0.34mm <sup>2</sup> Receiver:ø4 3x0.34mm <sup>2</sup> Cable length 2m PVC	M8 pico type 4pin	Pigtailed type M12 4pin Cable length 0.3m
Weight(Approximately)		Emitter: 70g Receiver: 80 g	Emitter: 40g Receiver: 50 g	Emitter: 60g Receiver: 70g	Emitter: 70g Receiver: 80 g	Emitter: 40g Receiver: 50 g	Emitter: 60g Receiver: 70 g

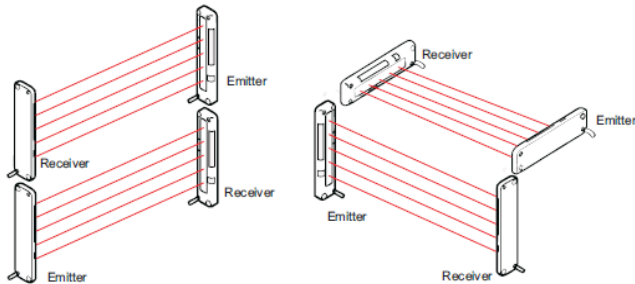
**WARNING** Never use this product in any personnel safety application. It is a normal object detection sensor



## Precautions For Proper Use

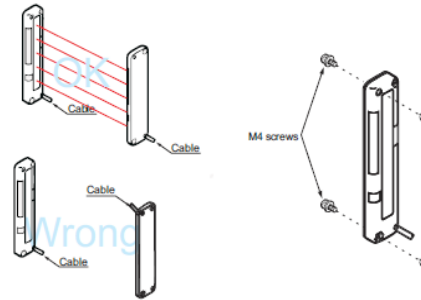
### • Interference prevention function

By setting different emission frequencies, two units of **SL1** can be mounted close together, as shown in the figure below.



### • Mounting

Use M4 screws with washers and m4 nuts. The tightening torque should be 0.5N.m or less.



### • LONG/SHORT selection switch(incorporated on the emitter)

Select the switch setting according to the setting distance between the emitter and the receiver as given below

Setting distance	Operation mode switch
0.05 to 1m	LONG <input checked="" type="checkbox"/> SHORT
1 to 3m	LONG <input type="checkbox"/> SHORT <input checked="" type="checkbox"/>

### • Selection of output operation

The output operation mode is selected by the operation mode switch on the receiver.

Output operation	Operation mode switch
ON when one or more beams are interrupted.	SINGLE D/ON <input checked="" type="checkbox"/> DOUBLE L/ON <input type="checkbox"/>
OFF when one or more beams are interrupted (ON when all beams are received).	SINGLE D/ON <input type="checkbox"/> DOUBLE L/ON <input checked="" type="checkbox"/>
ON when any two or more beams are interrupted	SINGLE D/ON <input checked="" type="checkbox"/> DOUBLE L/ON <input type="checkbox"/>
OFF when any two or more beams are interrupted.	SINGLE D/ON <input type="checkbox"/> DOUBLE L/ON <input checked="" type="checkbox"/>

### • Job indicator operation selection

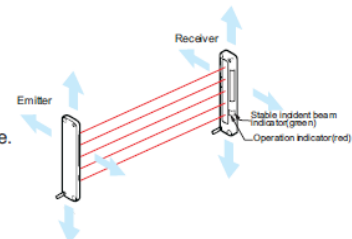
Lighting/Blinking is selected by the operation mode switch on the emitter and the receiver.

	Operation mode switch	
	Emitter	Receiver
Lighting	LIGHT <input checked="" type="checkbox"/> FLASH <input type="checkbox"/>	LIGHT <input checked="" type="checkbox"/> FLASH <input type="checkbox"/>
Blinking	LIGHT <input type="checkbox"/> FLASH <input checked="" type="checkbox"/>	LIGHT <input type="checkbox"/> FLASH <input checked="" type="checkbox"/>

Note: Make sure to set the switch in the power supply off condition. The operation mode does not change even if the setting is changed in the power supply on condition.

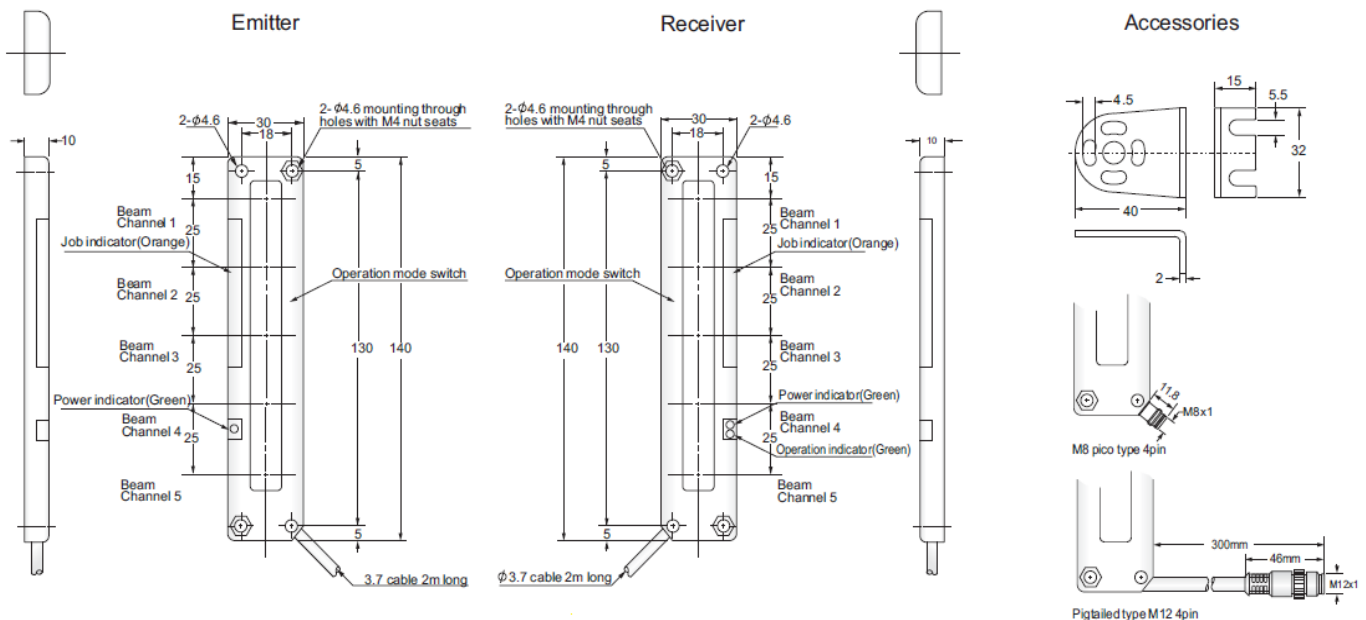
### • Beam axis alignment

1. Place the emitter and the receiver face to face along a straight line.
2. After the cable has been correctly connected, switch the power ON.
3. Move the emitter in the up, down, left and right directions, in order to determine the range of the beam received condition with the help of the operation indicator(red) on the receiver. Then, set the emitter at the center of this range.
4. Similarly, adjust for up, down, left and right angular movement of the emitter.
5. Further, perform the angular adjustment for the receiver also.
6. Check that the stable incident beam indicator(green) lights up.
7. Interrupt each beam channel with the actual sensing object, and confirm that the sensor operates correctly.



Note: The stable incident beam indicator(green) lights up when all the five light beams are stably received by the receiver.

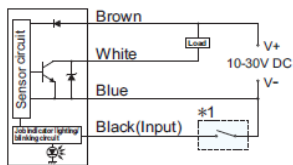
## Dimensions(Unit:mm)



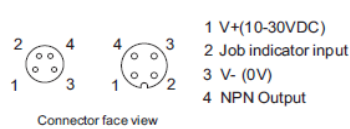
## Wiring Diagrams

### ■ NPN output type

#### ● Cable output

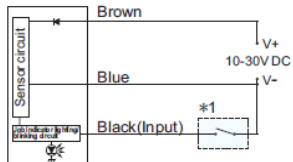


#### ● Pico (M8) Euro (M12)

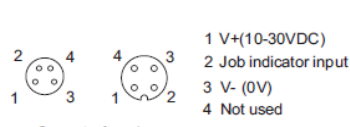


### ■ Emitter: NPN output type

#### ● Cable output



#### ● Pico (M8) Euro (M12)



\*1

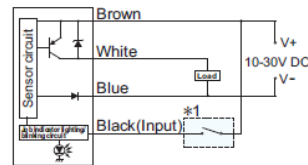
Non-contact voltage or NPN open-collector transistor



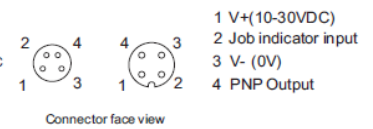
High (0 to 2V): Lights up or Blinks  
Low (5 to 30V, or open): Lights off

### ■ PNP output type

#### ● Cable output

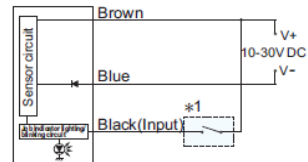


#### ● Pico (M8) Euro (M12)

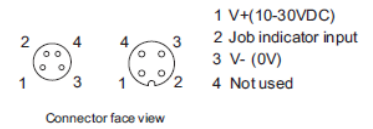


### ■ Emitter: PNP output type

#### ● Cable output



#### ● Pico (M8) Euro (M12)



\*1

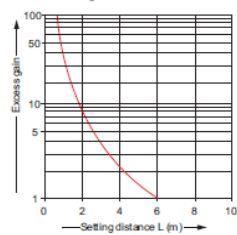
Non-contact voltage or PNP open-collector transistor



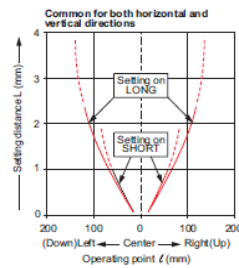
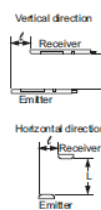
High (4V or more): Lights up or Blinks  
Low (0 to 0.6V, or open): Lights off

## Sensing characteristics (typical)

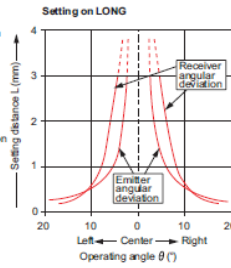
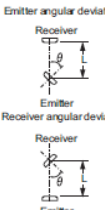
Correlation between setting distance and excess gain



Parallel deviation



Angular deviation



Setting on SHORT

