

Photo-electric sensors - Miniature design



NPN - M8 Connector : XUM8ANXBM8
PNP - M8 Connector : XUM8APXBM8
NPN - 2 m Cable : XUM8ANXBL2
PNP - 2 m Cable : XUM8APXBL2

Background suppression (BGS)



Package Content (Example)



<http://qr.tesensors.com/XU0007>

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⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before servicing equipment.
- Do not connect this device to AC power.
- The power voltage must not exceed the rated range.

Failure to follow these instructions will result in death or serious injury.

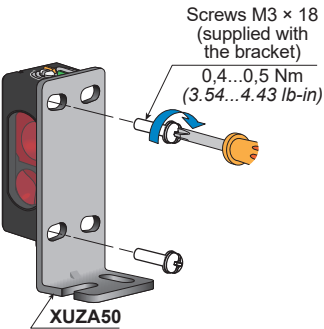
⚠ WARNING

IMPROPER SETUP OR INSTALLATION

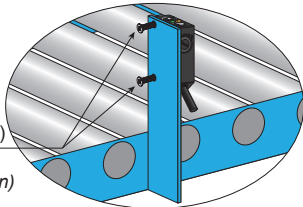
- This equipment must only be installed and serviced by qualified personnel.
- Read, understand, and follow the compliance below, before installing the XUM Photo-electric sensor.
- Do not tamper with or make alterations on the unit.
- Comply with the wiring and mounting instructions.
- Check the connections and fastening during maintenance operations.
- The proper functioning of the XUM photoelectric sensor and its operating line must be checked regularly and according to the application (for example number of operations, level of environmental pollution, etc.).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Mounting and tightening torques

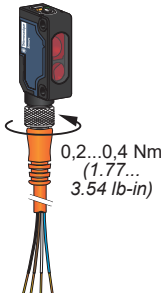


Screws M3 (not provided)
0.4...0.5 Nm
(3.54...4.43 lb-in)

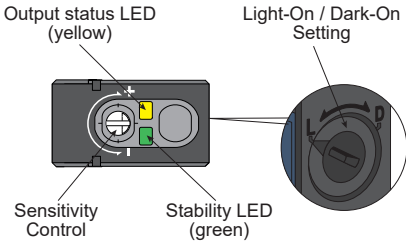


⚠ CAUTION

UNINTENDED EQUIPMENT OPERATION
Do not apply excessive impact on the sensor during the installation process, so as to prevent damage or deterioration in the degree of protection.
Failure to follow these instructions can result in injury or equipment damage.

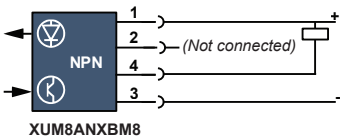
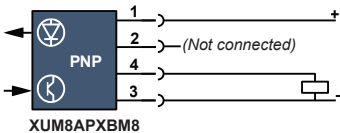
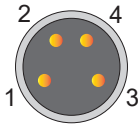


LEDs and settings

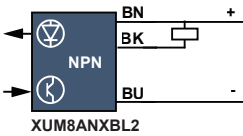
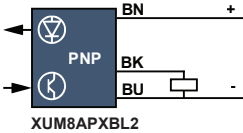


Wiring diagrams

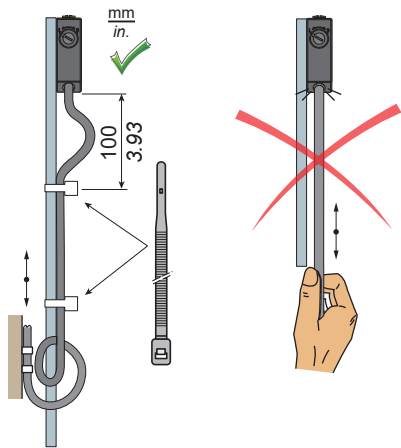
M8 Metal Connector - 4 pins



2 m Cable - 3 wires

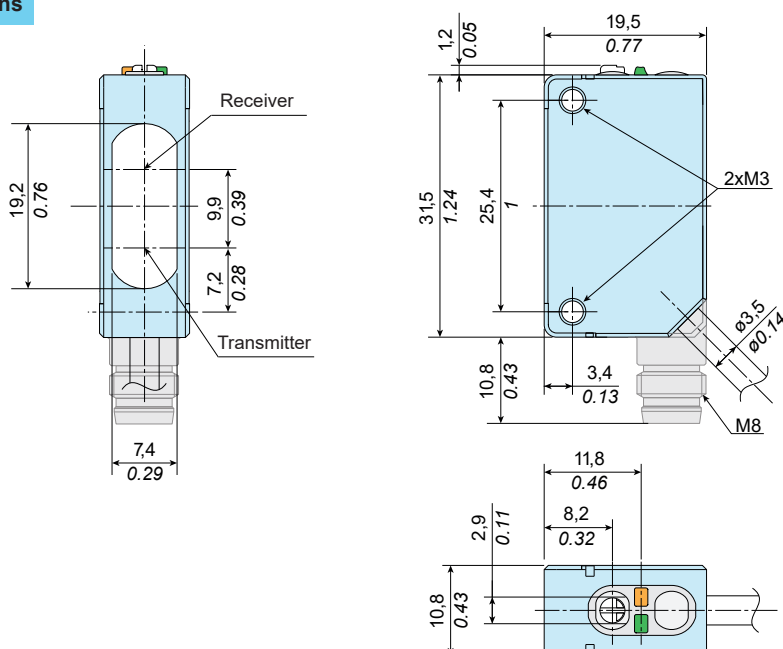


Wiring precaution



NOTICE

UNINTENDED EQUIPMENT OPERATION
Do not pull on the sensor cable so as to prevent damage or deterioration in the degree of protection.
Failure to follow these instructions can result in equipment damage.

$$\frac{\text{mm}}{\text{in.}}$$


Technical drawing of a mechanical part, showing three views: front, side, and top.

Front View:

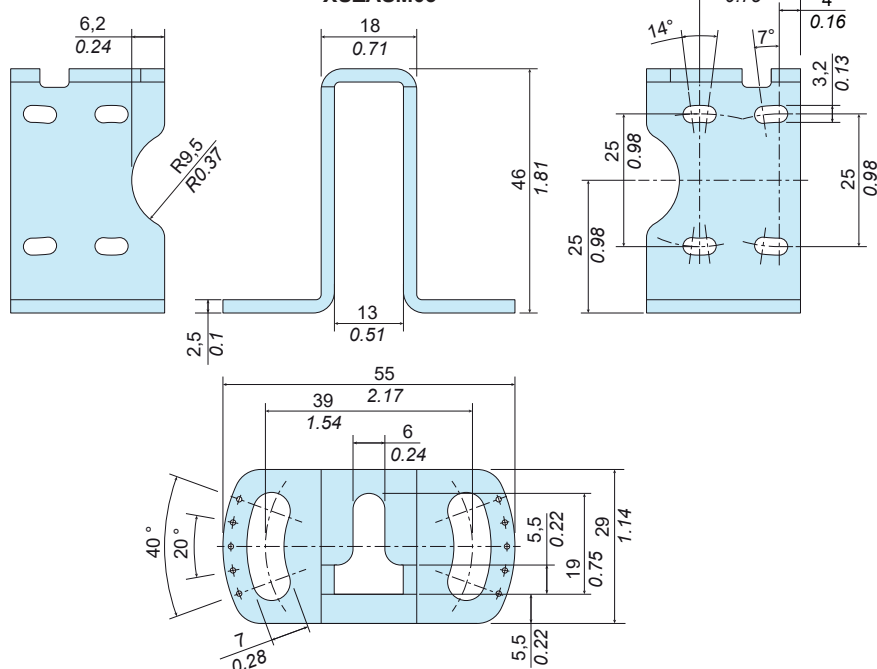
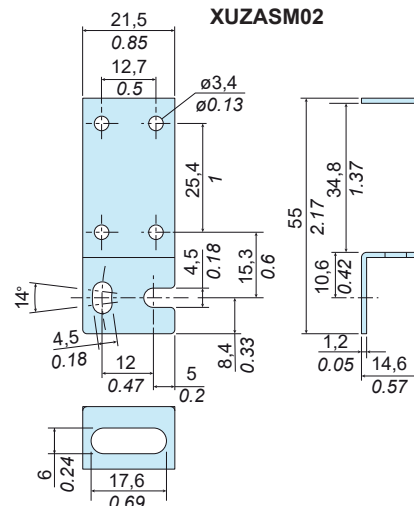
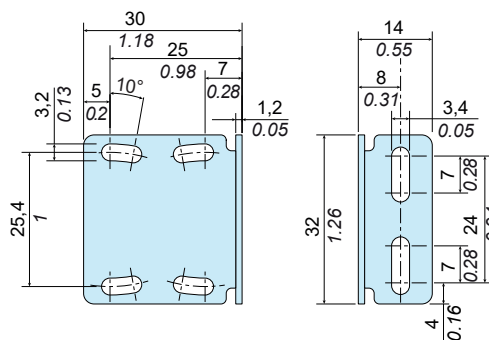
- Overall width: 18
- Overall height: 41
- Two circular holes with diameter $\varnothing 0.71$ and center-to-center distance of 3.
- Dimension lines indicate a distance of 0.12 from the top edge to the center of the upper holes.
- A 5° angle is indicated at the bottom right corner.

Side View:

- Overall height: 41
- Overall width: 0.12
- Dimension lines indicate a distance of 25.5 from the bottom edge to the center of the upper holes.

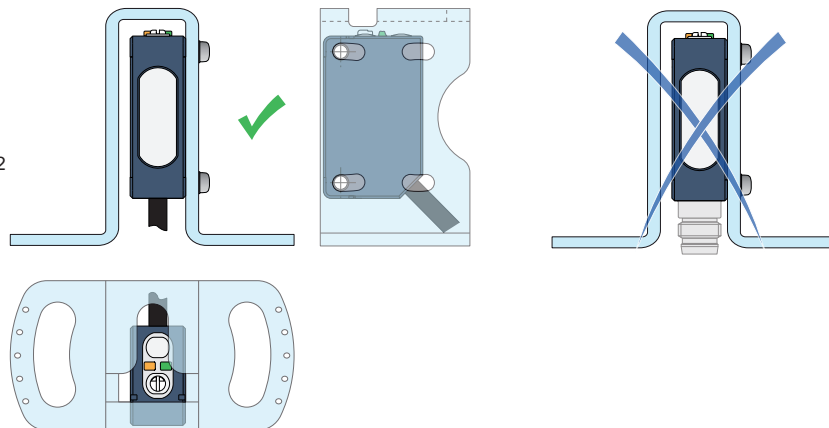
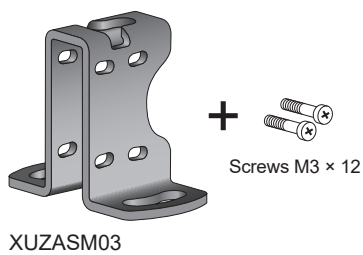
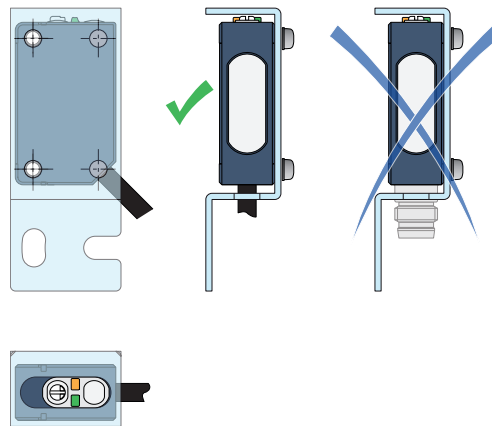
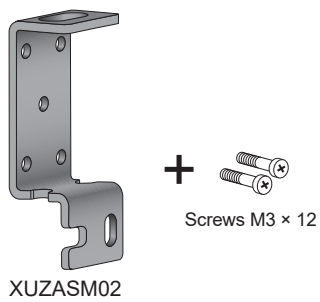
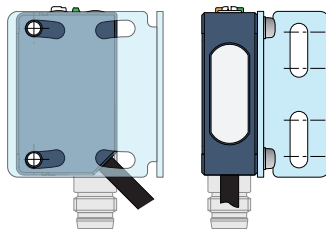
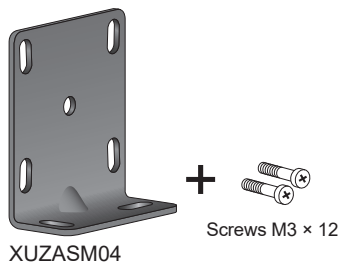
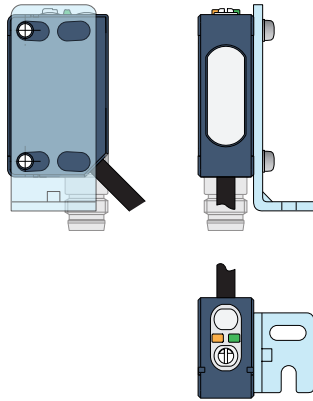
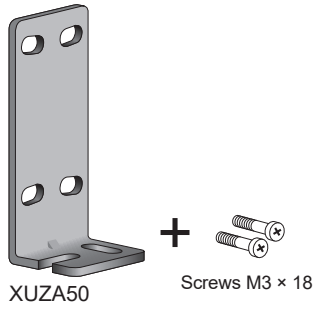
Top View:

- Overall width: 15
- Overall height: 8.3
- Two rectangular holes with dimensions 8.2×3.2 and 0.32×0.73 .
- Dimension lines indicate a distance of 0.16 from the top edge to the center of the upper holes.
- Dimension lines indicate a distance of 0.3 from the bottom edge to the center of the lower holes.
- Dimension lines indicate a distance of 0.33 from the left edge to the center of the left hole.



Accessories

Mounting brackets (to order separately)

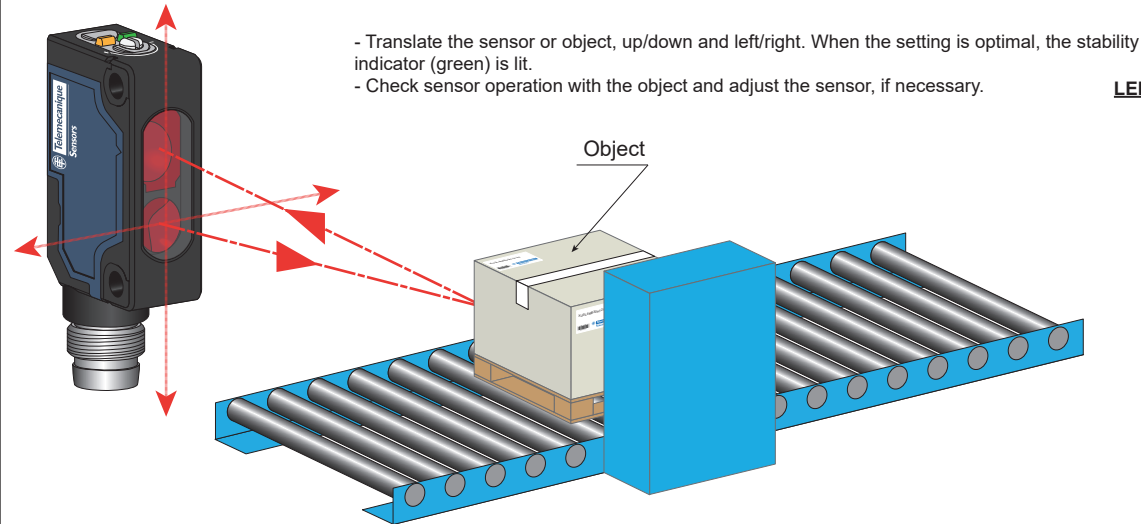


Pre-wired female connectors (examples)

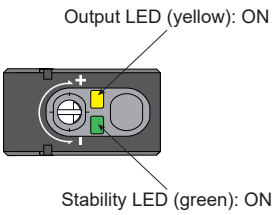
PVC cable for general use
PUR cable for severe industrial environments

M8, 4 pins					M8 - M12, 4 pins		
	PVC	PUR	PVC	PUR		PUR	PUR
Cable length					Jumper length		
2 m / 6.56 ft.	XZCPV0941L2	XZCP0941L2	XZCPV1041L2	XZCP1041L2	1 m / 3.28 ft.	XZCR1509041J1	XZ CR1510041J1
5 m / 16.4 ft.	XZCPV0941L5	XZCP0941L5	XZCPV1041L5	XZCP1041L5	2 m / 6.56 ft.	XZCR1509041J2	XZCR1510041J2
10 m / 32.8 ft.	XZCPV0941L10	XZCP0941L10	XZCPV1041L10	XZCP1041L10			

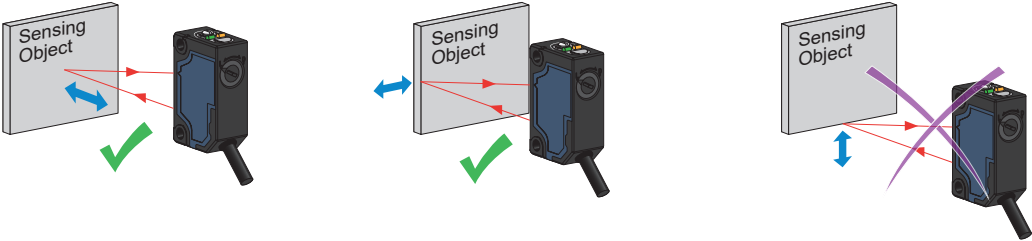
Sensors position adjustment



LED status with LO output function

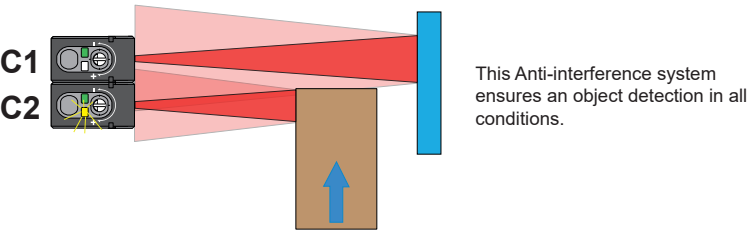
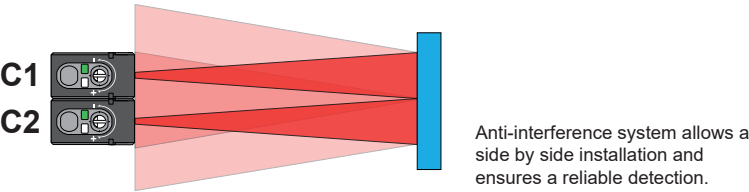


Install the sensor head perpendicular to the object transfer as shown below to ensure good detection.

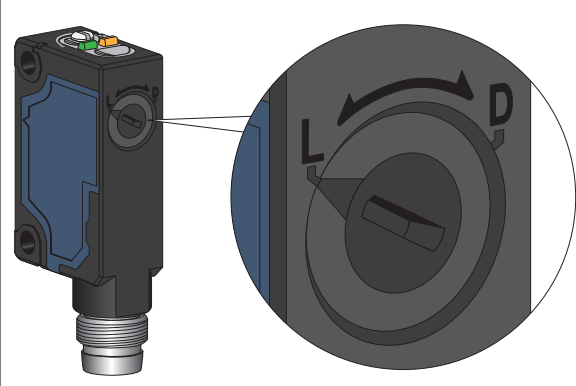


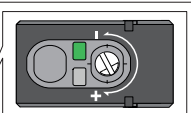
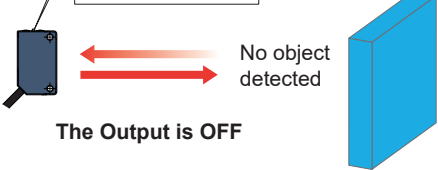
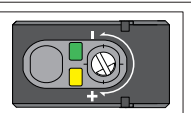
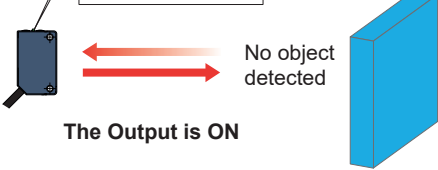
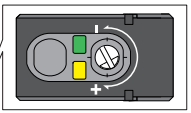
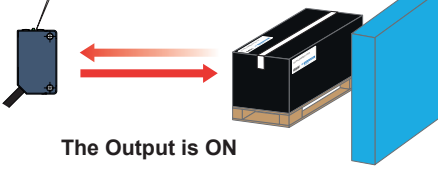
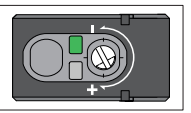
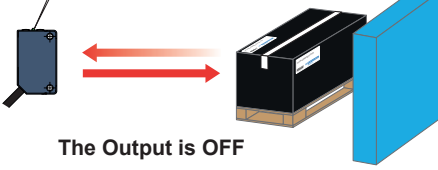
Anti-interference for side by side mounting

Anti-interference system to ensure good detection even disturbed by another sensor when installed side by side.



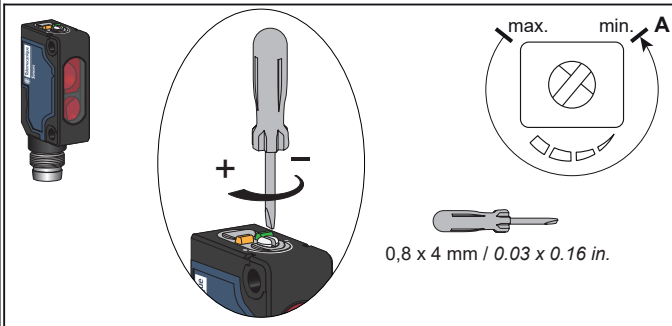
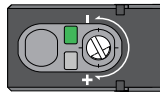
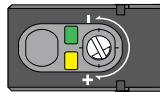
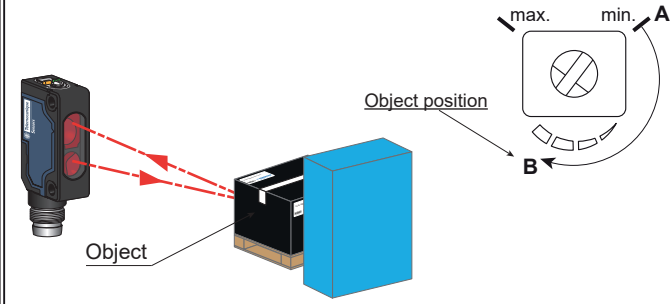
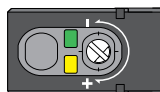
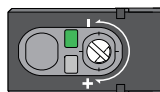
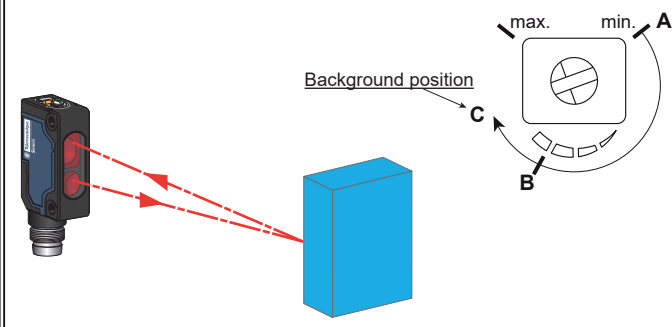
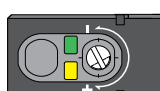
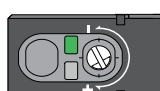
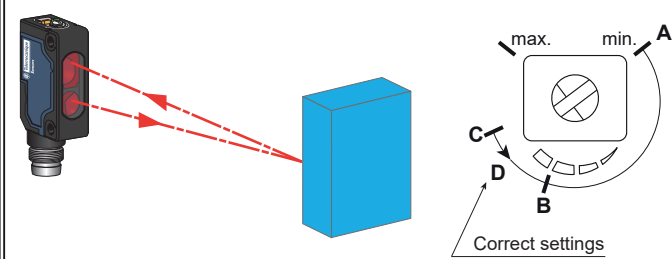
Output mode setting: Light-On or Dark-On (Light-On by default)



Light-On / Normally Open	Dark-On / Normally Closed
  The Output is OFF	  The Output is ON
  The Output is ON	  The Output is OFF

Sensor sensitivity adjustment

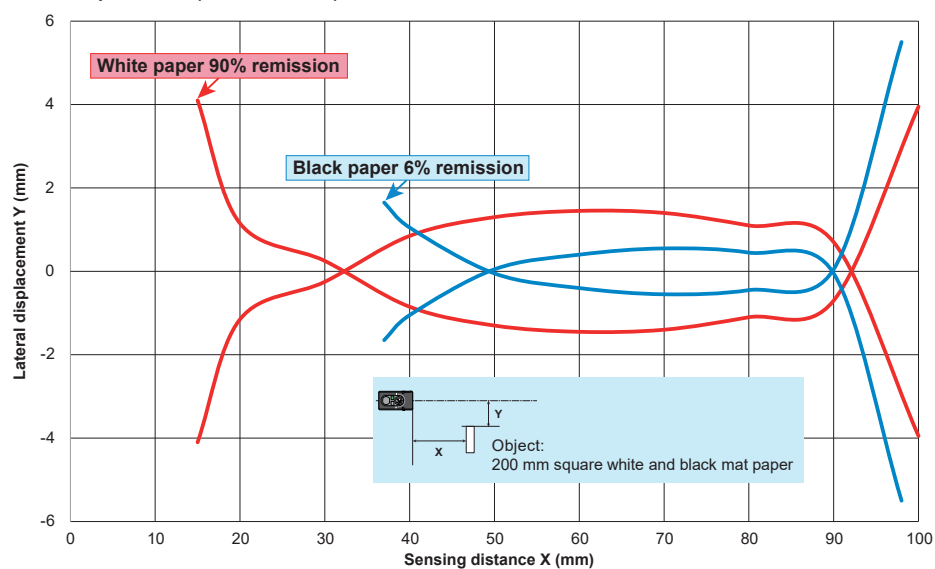
For an accurate detection, follow the set up below. (eg. Dark objects, with holes or with small size to reflect properly the light beam).

	Light-On	Dark-On
	1-Connect the sensor to the power supply (see page 1 for the wire connection & page 8 for the power voltage). Before settings, start with the potentiometer at the minimum position (resulting to point A). 	1-Connect the sensor to the power supply (see page 1 for the wire connection & page 8 for the power voltage). Before settings, start with the potentiometer at the minimum position (resulting to point A). 
	2-Put the object in front of the sensor. Turn the potentiometer clockwise until to detect the object. The output led (yellow) & the stability led (green) switch on (resulting to point B). Several turns can be done to adjust the detection. 	2-Put the object in front of the sensor. Turn the potentiometer clockwise until to detect the object. The output led (yellow) switches off & the stability led (green) switches on (resulting to point B). Several turns can be done to adjust the detection. 
	3-Remove the object to set the background position. Turn the potentiometer clockwise until detecting the background. The output led (yellow) & the stability led (green) switch on (resulting to point C). 	3-Remove the object to set the background position. Turn the potentiometer clockwise until detecting the background. The output led (yellow) switches off & the stability led (green) switches on (resulting to point C). 
	4-Set the middle point between the point B and C (resulting to point D). The Sensor is set and ready to detect. 	4-Set the middle point between the point B and C (resulting to point D). The Sensor is set and ready to detect. 

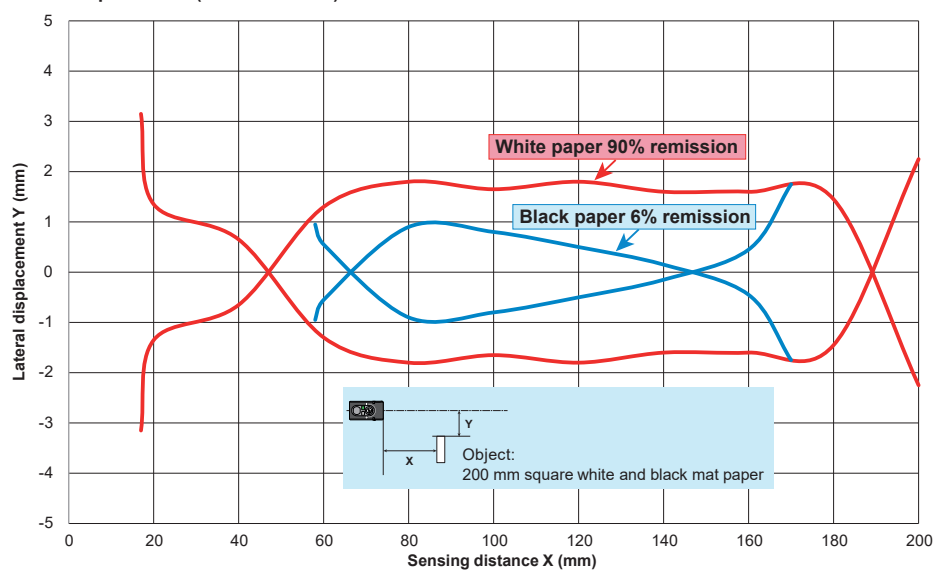
Detection curves

1 mm = 0.0397 in.

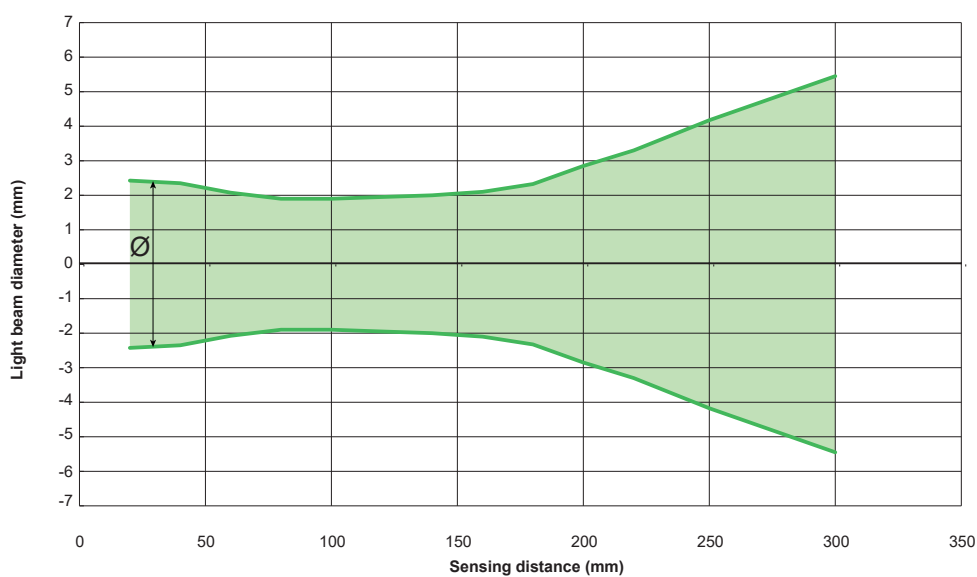
Lateral displacement (Preset 100 mm)



Lateral displacement (Preset 200 mm)

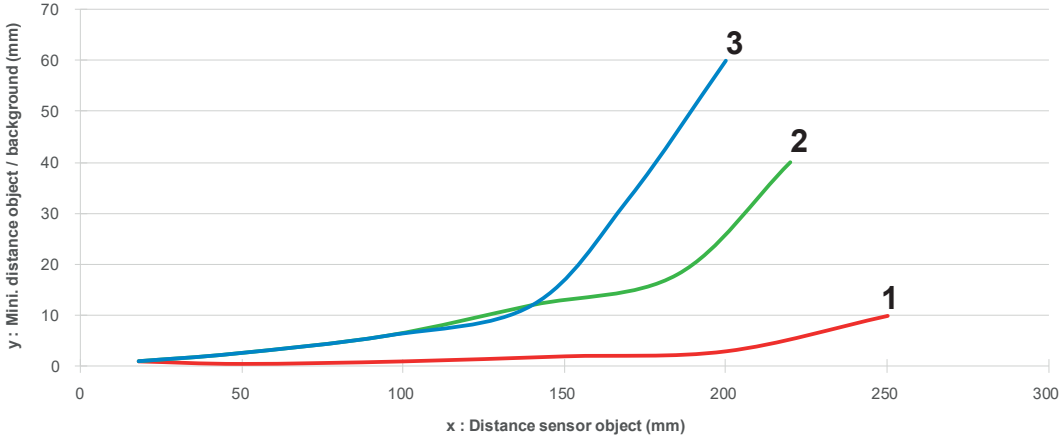
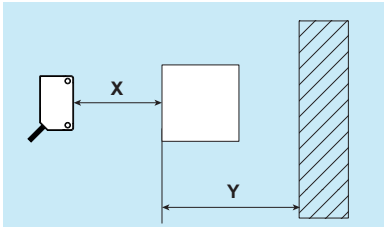


Light beam diameter



Minimum distance between the object to detect and white background (mm)

1 mm = 0.0397 in.



- 1 Min distance white object (90%) / white background (90%) (mm)
- 2 Min distance grey object (18%) / white background (90%) (mm)
- 3 Min distance black object (6%) / white background (90%) (mm)

Characteristics

1 mm = 0.0397 in.

Certification	CE - UKCA - cULus
Sensing Range	Sensing distance (mm) : 4 mm...300 mm (White paper...) White object SN (90%): 4 mm...300 mm Grey object SN (18%): 5 mm...265 mm Black object SN (6%): 8 mm...200 mm
Color of detection light beam	Red
Spot size of the light beam on the target	4,15 mm at 60 mm / 3,8 mm at 100 mm / 4,1 mm at 150 mm / 5,7 mm at 200 mm / 8,35 mm at 250 mm (See the graph, page 6)
Hysteresis	2% < H < 20% at Sn
Sensing distance setting	Potentiometer - 6 turns
Light-On/Dark-On selection	Switch (~ 120 degrees)
Output type	PNP or NPN
ON Voltage drop	< 2 V max.
Current consumption	< 20 mA max.
Switching capacity	100 mA
Response time	0,5 ms max.
Recovery time	0,5 ms max.
Switching frequency	1000 Hz
Electrostatic discharge immunity	4 kV (Contact), 8 kV (Air) conforming to IEC 61000-4-2
Electromagnetic field immunity	10 V/m conforming to IEC 61000-4-3
Fast transients immunity	Burst 5 kHz - 2 kV conforming to IEC 61000-4-4
Conducted disturbances immunity	10 V conforming to IEC 61000-4-6
Emissivity Radiated disturbances	Class A conforming to EN 55011 / CISPR 11
Electrical shock	1 kV 500 Ohm (1,2/50 µs)
Power Voltage	12...24 Vdc Ripple p-p 10% maximum - Operating range 10...30 Vdc (including ripple) 
Product protection	Power supply : Reverse polarity protection Output: Short circuit protection Reverse polarity protection
Light Immunity	Operating atmosphere; Sunlight 40 kLx max. Incandescent light 10 kLx max.
Ambient Temperature	Operating : - 30...+55 °C (-22...+131 °F), Storage : - 40...+70 °C (-40...+158 °F)
Ambient Humidity	Operating : 35...95% RH, Storage : 35...95% RH
Degree of protection	IP65, IP67 conforming to EN/IEC 60529
Vibration resistance	Frequency range: 10 Hz to 500 Hz Acceleration: 9 g _n
Shock resistance	Peak acceleration: 100 g _n Duration of the pulse: 11 ms
Material	Housing: PBT, Lens: PMMA, Operation cover: PC, Adjustment potentiometer: PBT

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Manufacturer :
TMSS France
Tour Eqho, 2 avenue Gambetta
92400 Courbevoie – France



UK Representative :
YAGEO TMSS UK LIMITED
2 North Park Road, Harrogate
HG1 5PA, United Kingdom