OMRON

Glass Edge Detecting Sensor

E3C-L11M

Reliable detection of glass plates, silicon wafers and plastic memory media

- Accurate detection even when objects shift position to stair-step or fanned arrangement
- Detection not affected by rounded edges or curling
- Robotic cable for repeated flexing
- Compact sensing head fits space-confined installations
- Remote amplifier for easy adjustments
- Slim amplifier mounts on DIN rail track

Ordering Information

■ SENSING HEAD

Sensing method	Light source	Sensing distance	**Part number**
Diffuse	Infrared (860 nm)	20±10 mm	**E3C-L11M**

■ AMPLIFIER

Supply voltage	Timing function	Output configuration	**Part number**
12 to 24 VDC	40 ms OFF-delay or disabled	PNP open collector, 100 mA	**E3C-JB4P**
		NPN open collector, 100 mA	**E3C-JC4P**

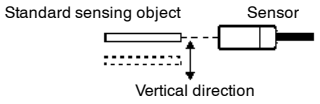
Specifications

■ RATINGS/CHARACTERISTICS

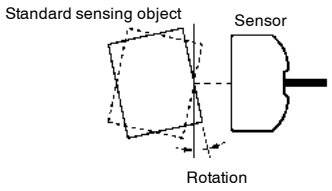
Sensing Head

Sensing distance		20±10 mm
Standard sensing object		Cut edge of transparent glass (t = 0.7 mm)
Differential travel (See Note 1.)		0.5 mm
Light source for emitter (with wavelength)		Infrared LED (860 nm)
Distance between sensing objects		10 mm (at 20-mm sensing distance)
Angle of sensing object (See Note 2.)		±10°
Indicator		Light indicator (orange)
Ambient illumination		Incandescent lamp: 1,500 ℓx
Ambient temperature	Operating	0°C to 40°C (32°F to 104°F) with no icing
	Storage	-40°C to 70°C (-40°F to 158°F) with no icing
Relative humidity	Operating	35% to 85% with no condensation
	Storage	35% to 85%
Insulation resistance		20 MΩ at 500 VDC
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min
Vibration resistance		10 to 150 Hz, 0.75-mm double amplitude or 100 m/s^2 (10G) for 2 hrs each in X, Y, and Z axes
Shock resistance		300 m/s^2 (30G) for 3 times each in X, Y, and Z axes
Enclosure rating		IEC IP50
Connection		2 m robotic cable
Weight		50 g
Material	Case	ABS
	Lens	PVC
	Cable	2.4 x 4.3 robotic cable 1.7 dia. (30/0.08 dia.), 2 conductors
Accessories		Screws and instruction sheet

Note: 1. The differential travel is the hysteresis of the Sensor with the standard sensing object moving vertically.



2.



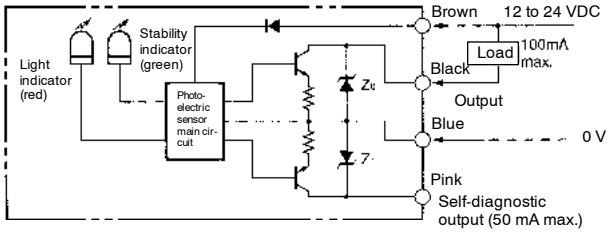
■ AMPLIFIER E3C-J□4P

Supply voltage	12 to 24 VDC ±10%, ripple (p-p): 1 V max.
Current consumption	50 mA max.
Control output	NPN open collector with 100-mA max. load current at 24 VDC (with 1-V residual voltage max.)
Indicators	Light indicator (red) and stability indicator (green)
Response time	1 ms ON, 1 ms OFF
Timer function	OFF-delay (0 or 40 ms selectable)
Sensitivity adjustment	4-turn adjuster
Connection	2 m cable

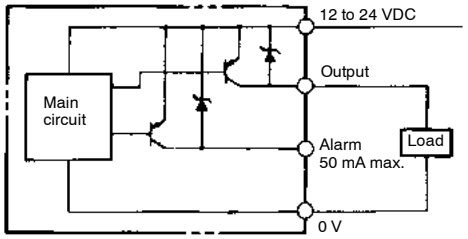
Operation

■ OUTPUT CIRCUIT

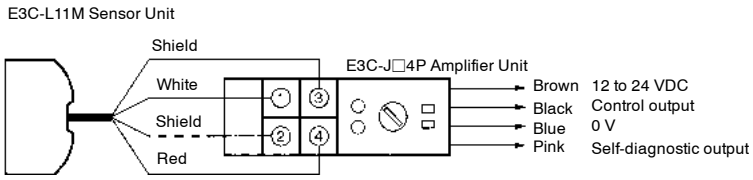
E3C-JC4P NPN Amplifier



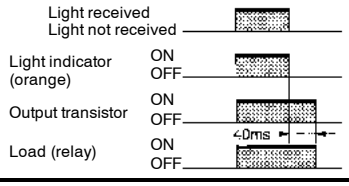
E3C-JB4P PNP Amplifier



■ CONNECTION

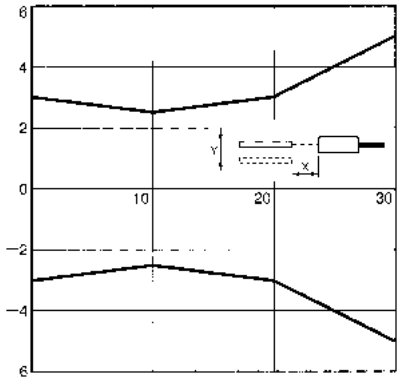


■ E3C-L11M AND E3C-J□4P

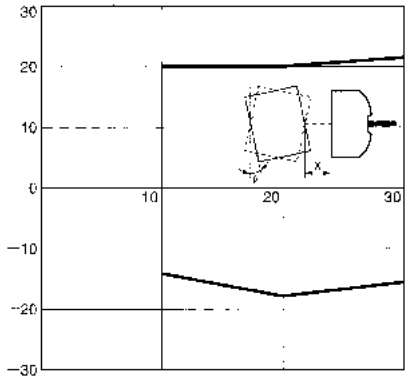
Timing chart	

Engineering Data

■ OPERATING RANGE



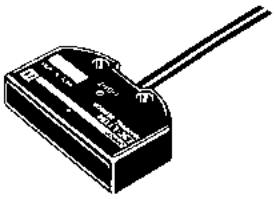
■ SENSING ANGLE

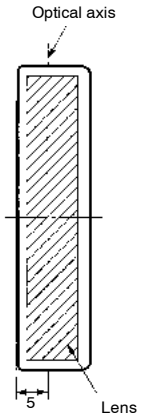


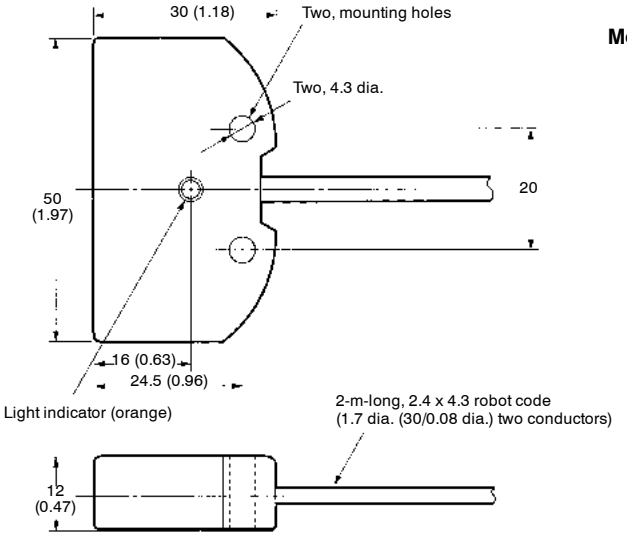
Dimensions

Unit: mm (inch)

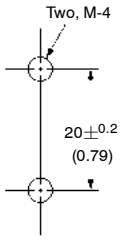
■ E3C-L11M



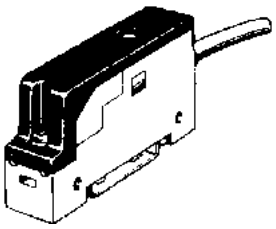


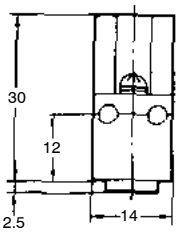


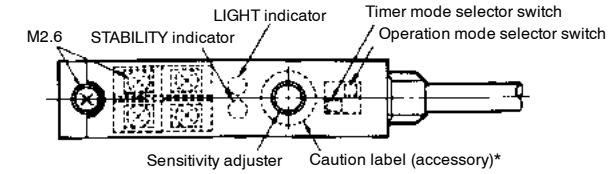
Mounting Dimensions

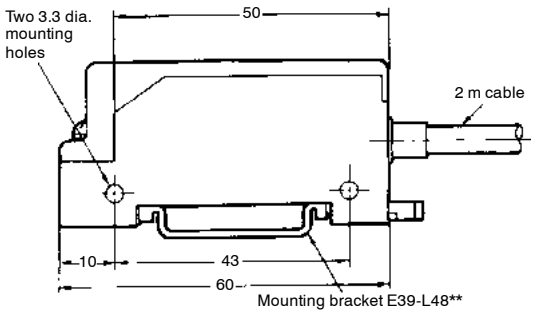


■ E3C-JB4P, E3C-JC4P









* Attach the caution label after adjusting the sensitivity adjuster.
** This is not necessary when mounting the amplifier on DIN rail track.

Precautions

■ ENVIRONMENT

Do not use the E3C-L11M in the following places:

- Places exposed to direct sunlight.
- Places with high humidity that may cause condensation.
- Places with corrosive gas.
- Places with vibration or shock directly affecting the Sensor.

Do not use the E3C-L11M at a voltage that exceeds the rated voltage range, or the E3C-L11M may be damaged.

Do not make mistakes in wiring, such as mistakes in polarity, or the E3C-L11M may be damaged.

Do not short-circuit the load, or the E3C-L11M may be damaged.

Do not connect AC to the E3C-L11M, or the E3C-L11M may be damaged.

■ CONNECTION AND MOUNTING

- A maximum of 24 VDC±10% can be imposed on the E3C-L11M. Check that the voltage of the power supply is within the permissible range before turning on the E3C-L11M. The power supply must be constructed so that the secondary circuit is insulated with an isolating transformer.
- Do not wire power lines or high-tension lines alongside the lines of the E3C-L11M in the same conduit, otherwise the E3C-L11M may be damaged or malfunction due to induction. Be sure to wire the lines of the E3C-L11M separated from power lines or high-tension lines or laid in an separate, shielded conduit.
- Do not strike the E3C-L11M with a hammer when mounting the E3C-L11M, or the water-resistant properties of the E3C-L11M will be lost.

■ CLEANING

Do not attempt to clean the E3C-L11M using paint thinner, or the surface of the E3C-L11M will be damaged.

■ MOUNTING

The torque required to tighten each screw must be 7 kgf • cm (0.71 N • m) maximum. Excessive tightening torque may damage the Sensor Unit and Amplifier Unit.

■ POWER SUPPLY

If a standard switching power supply is connected to the E3C-L11M, be sure to ground the FG (frame ground) and G (ground) terminals of the switching power supply. The E3C-L11M may malfunction due to switching noise that will be generated from the switching power supply if these terminals are not grounded.

NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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