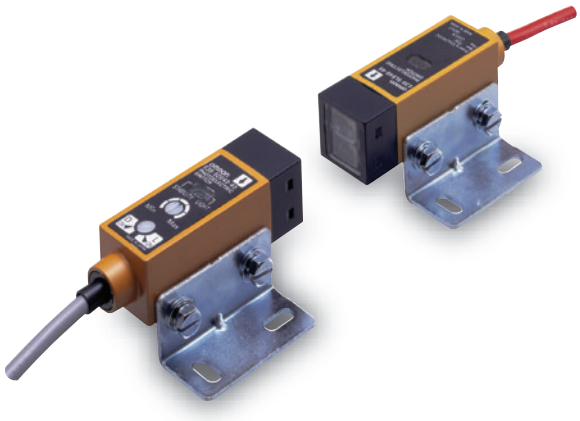
Paper Bag Contents Sensor

E3S-5E4S-45

CSM_E3S-5E4S-45_DS_E_5_1

Liquid Detection in Paper Bags!

- Reliable operation in environments subject to water (IP 67 protection).
- Rugged die-cast case.



⚠ Be sure to read *Safety Precautions* on page 3.

Ordering Information

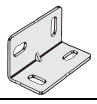
Sensors [Refer to *Dimensions* on page 4.]

Infrared light

Sensing method	Appearance	Sensing distance	Model
Through-beam		200 mm	**E3S-5E4S-45 2M**

Accessories (Order Separately)

Mounting Brackets **A Mounting Bracket is not provided with the Sensor.**

Appearance	Model	Quantity	Remarks
	**E39-L6**	1	Provided with the Sensor.

Note: Order one Mounting Bracket for the Emitter and one for the Receiver.

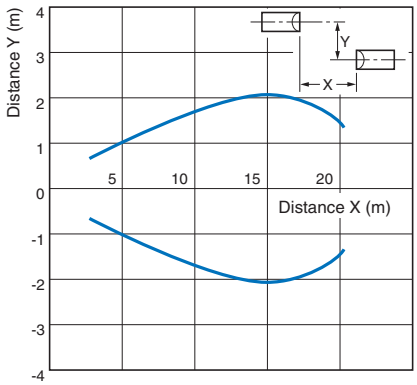
Ratings and Specifications

Item \ Sensing method		Through-beam
Item \ Model		E3S-5E4S-45
Sensing distance		Through-beam for paper bags: 200 mm (For standard through-beam use: 10 m)
Standard object		Liquid or solid object, Opaque of 11-mm dia. min.
Directional angle		Emitter/Receiver: 10 to 30° each
Light source (wavelength)		Red LED (890 nm)
Power supply voltage		12 to 24 VDC±10%, ripple (p-p): 10% max.
Current consumption		45 mA max. (Emitter: 25 mA max., Receiver: 20 mA max.)
Control output		Load power supply voltage: 24 VDC max., Load current: 80 mA max. (residual voltage: 1 V max.) NPN voltage output configuration Light-ON/Dark-ON mode selector
Self-diagnosis output		Load power supply voltage: 24 VDC max., Load current: 50 mA max. (residual voltage: 1 V max.) Voltage output type
External-diagnosis input		Emission OFF: Short-circuit to 0 V or 1.5 V max. (Outflow current 1 mA max.), Emission ON: Disconnected (Leakage current 0.1 mA max.)
Protective circuits		Power supply reverse polarity protection, Output short-circuit protection
Response time		Operate or reset: 10 ms max.
Sensitivity adjustment		One-turn adjuster
Ambient illumination (Receiver side)		Incandescent lamp: 3,000 lx max., Sunlight 10,000 lx max.
Ambient temperature range		Operating: −10 to 55°C (with no icing and condensation), Storage: 0 to 65°C (with no icing and condensation)
Ambient humidity range		Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)
Insulation resistance		20 MΩ min. at 500 VDC
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions
Shock resistance		Destruction: 500 m/s^2 3 times each in X, Y and Z directions
Degree of protection		IEC 60529 IP67
Connection method		Pre-wired Models (Standard cable length: 2 m)
Weight (packed state)		Approx. 300 g
Material	Case	Zinc die-cast
	Lens	Polycarbonate (PC)
	Mounting Brackets	Iron
Accessories		Mounting Bracket (with screws), Screw driver for adjustment, Sensitivity adjuster, Instruction manual

Engineering Data (Reference Value)

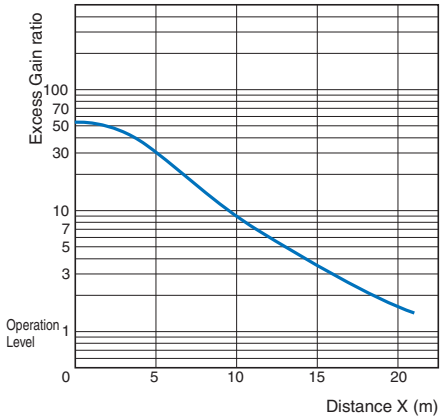
Parallel Operating Range

Through-beam



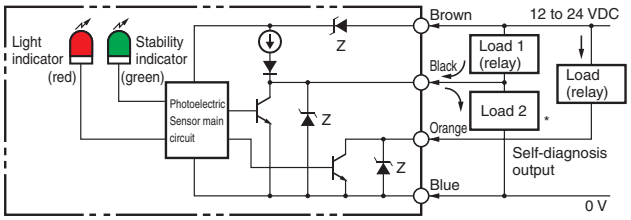
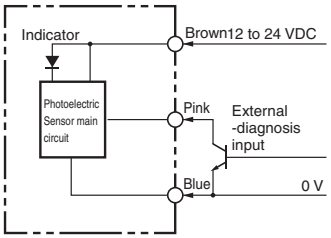
Excess Gain vs. Set Distance

Through-beam



I/O Circuit Diagrams

NPN output

Model	Operation mode	Timing charts	Operation selector	Output circuit
E3S -5E4S-45	Light-ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load 1 (relay) Operate Reset (Between brown and black leads) Load 2 H L (Between blue and black leads)	L side (LIGHT ON)	Through-beam Receivers 
	Dark-ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load 1 (relay) Operate Reset (Between brown and black leads) Load 2 H L (Between blue and black leads)	D side (DARK ON)	
	---	External -diagnosis input ON OFF (Between blue and pink leads) Semiconductor laser diode for emission ON OFF Indicator ON OFF	---	Through-beam Emitters 

* Voltage output (when connecting a transistor circuit, etc.)

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.

Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

- The paper bag sensors are used to detect whether paper bags contain contents inside.Note, however, that the sensors are not available for some types of paper bags.

Inside paper bag	Type of paper bag	Remarks
Detect-able	Light colored paper bags	Empty paper bags allow beam-through while paper bags contain-ing liquid or solid objects do not. Detection uses this difference.
Not de-tectable	Dark colored pa-per bags, Paper bags having inner coating of alumi-num foil	Paper bags prevent beam-through. Detection cannot be made.

Note: Make sure in which of the types your paper bag is categorized before use.

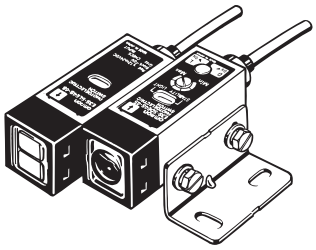
- About the lens The inside of the emitter lens looks cloudy. This is due to the characteristics of the lens and not abnormal. Use it as it is.

Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

Sensors

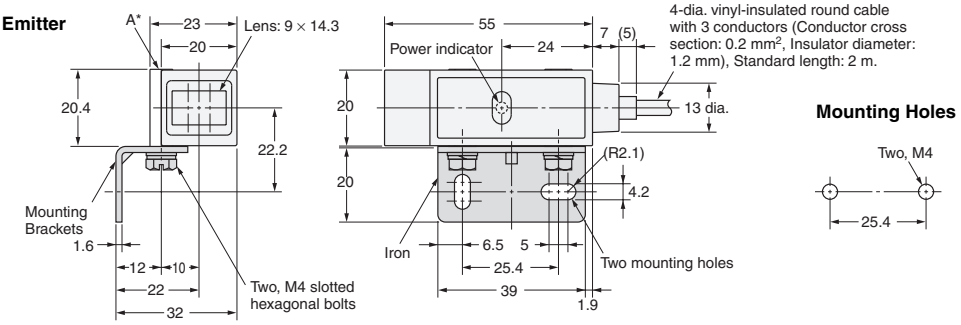
E3S-5E4S-45



Emitter: E3S-5LE4S-45
Receiver: E3S-5DE4S-45

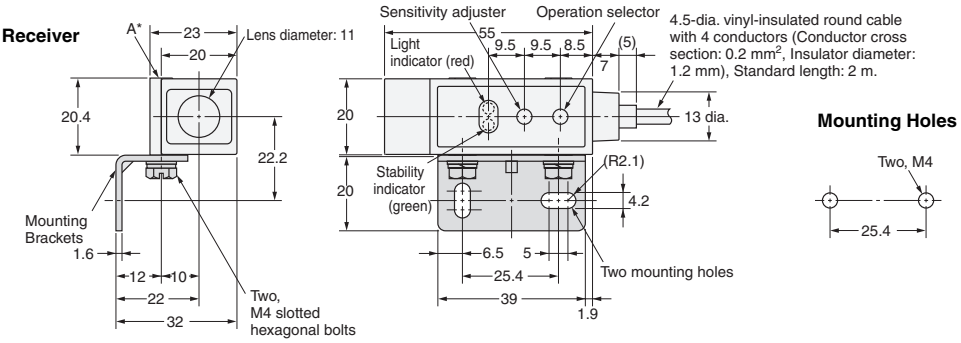
With Mounting Bracket Attached

Emitter



* The Mounting Bracket can be attached to side A.

Receiver



* The Mounting Bracket can be attached to side A.

Accessories (Order Separately)

Mounting Brackets

Refer to *E39-L/F39-L/E39-S/E39-R* for details.

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