

Universal AC/DC Photoelectric Sensor with Built-in Timer

- Easy-to-wire terminal block
- Built-in timer offers selectable ON-delay, OFF-delay and one-shot
- Relay or transistor output models
- Polarized, through-beam and diffuse models
- Light-ON/Dark-ON operation switch selectable



Ordering Information

■ SENSORS WITHOUT TIMER

| Method of detection | | Through-beam | Polarized retroreflective | Diffuse reflective |
|---------------------|----------------|---------------------|---------------------------|-----------------------|
| Sensing distance | | 10 m (32.8 ft) | 4 m (13.1 ft) | 70 cm (2.3 ft) |
| Output type | Relay | E3JM-10M4-US | E3JM-R4M4-US | E3JM-DS70M4-US |
| | NPN transistor | E3JM-10S4-US | E3JM-R4S4-US | E3JM-DS70S4-US |
| | PNP transistor | E3JM-10R4-US | E3JM-R4R4-US | E3JM-DS70R4-US |

■ SENSORS WITH BUILT-IN TIMER

| Method of detection | | Through-beam | Polarized retroreflective | Diffuse reflective |
|---------------------|----------------|----------------------|---------------------------|------------------------|
| Sensing distance | | 10 m (32.8 ft) | 4 m (13.1 ft) | 70 cm (2.3 ft) |
| Output type | Relay | E3JM-10M4T-US | E3JM-R4M4T-US | E3JM-DS70M4T-US |
| | NPN transistor | E3JM-10S4T-US | E3JM-R4S4T-US | E3JM-DS70S4T-US |
| | PNP transistor | E3JM-10R4T-US | E3JM-R4R4T-US | E3JM-DS70R4T-US |

■ ACCESSORIES

| Description | Part number |
|--|----------------|
| Mounting bracket for E39-R1 reflector | E39-L7 |
| Small reflector for retroreflective sensors | E39-R3 |
| Glass-bead reflector with tape backing for retroreflective sensors | E39-RSB |

■ REPLACEMENT PARTS

| Description | Part number |
|---|----------------|
| Mounting bracket (supplied with each sensor) | E39-L53 |
| Reflector (supplied with retroreflective sensors) | E39-R1 |

Specifications

| | | | | |
|--------------------------------|----------------------------------|--|---|---|
| Part number | | E3JM-10□4□-US | E3JM-R4□4□-US | E3JM-DS70□4□-US |
| Method of detection | | Through-beam | Polarized retroreflective | Diffuse reflective |
| Supply voltage | | 24 to 240 VAC ±10%, 50/60 Hz 12 to 240 VDC, 10% max. ripple peak-to-peak | | |
| Current consumption | | Emitter: 1 W max. Receiver: 2 W max. | 2 W max. | 2 W max. |
| Sensing distance | | 10 m (32.8 ft) | 4 m (13.1 ft) with E39-R1 reflector (supplied) | 70 cm (2.3 ft) with 20 x 20 cm (7.9 x 7.9 in) white mat paper |
| Light source | | Infrared LED | Polarized red LED | Infrared LED |
| Detectable object type | | Opaque, 16 mm (0.63 in) minimum | Opaque, 56 mm (2.2 in) minimum with E39-R1 | Opaque and translucent |
| Operation mode | | Light-ON/Dark-ON, switch selectable | | |
| Sensitivity adjustment | | Fixed | Fixed | Adjustable |
| Mutual interference protection | | Not provided | | |
| Control output | Contact | Type | SPDT relay (E3JM-□□M4□-US) | |
| | | Max. load | 3 A, 250 VAC maximum (p.f. = 1) | |
| | | Min. load | 10 mA, 5 VDC minimum | |
| | | Response time | 30 ms for ON, 30 ms for OFF (models without timer) 0.1 to 5 sec (adjustable) ON-delay, OFF-delay or one-shot (models with timer) | |
| | DC solid-state | Type | NPN open collector solid-state output (E3JM-□□S4□-US) PNP open collector solid-state output (E3JM-□□R4□-US) | |
| | | Max. load | 100 mA, 48 VDC max. | |
| | | Max. ON-state voltage drop | 2 V max. | |
| | | Response time | 5 ms max. (models without timer) 0.1 to 5 seconds (adjustable) ON-delay, OFF-delay or one-shot (models with timer) | |
| Timing functions | Type | ON-delay, OFF-delay, and one-shot; switch selectable (E3JM-□□□□4T-US) | | |
| | Range | 0.1 to 5 seconds | | |
| Circuit protection | Output short-circuit | Provided on DC solid-state output models (E3JM-□□R4□-US and E3JM-□□S4□-US) | | |
| | DC power supply reverse polarity | Not provided | | |
| Indicators | | Light Incident (red LED) on models without timer (E3JM-□□□□4-US) Output Operation (red LED) on models with timer (E3JM-□□□□4T-US) | | |
| Materials | Lens | Plastic, PMMA | | |
| | Case | Plastic, ABS base/PMMA cover | | |
| Mounting | | Two side mount through hole or mounting bracket E39-L53 (supplied) | | |
| Connections | Conduit | 1/2-14 NPT; use 5-conductor cable of 6 to 8 mm (0.24 to 0.32 in) OD | | |
| Weight | | Emitter: 110 g (3.9 oz.) Receiver: 130 g (4.6 oz.) | 130 g (4.6 oz.) | 130 g (4.6 oz.) |
| Enclosure ratings | UL | — | | |
| | NEMA | — | | |
| | IEC 144 | IP66 | | |
| Approvals | UL | Recognized, File Number E41515 | | |
| | CSA | Certified, File Number LR45951 | | |
| Ambient temperature | Operating | -25° to 55°C (-13° to 131°F) | | |
| | Storage | -30° to 70°C (-22° to 158°F) | | |

■ OUTPUT CIRCUIT DIAGRAMS

Relay Output (E3JM-□□M4□-US)



NPN Transistor Output (E3JM-□□S4□-US)



PNP Transistor Output (E3JM-R4□-US)



■ CONNECTIONS

Through-beam type



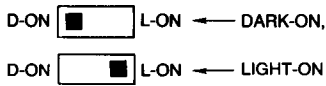
■ TIMING CHARTS

Sensors without Timer

Switch configuration



Switch setting



Timing chart



Sensor with Timer

The timing function cannot be disabled. Allow a minimum 0.1 sec. delay in response time if set for ON-delay.

Switch configuration



Timer chart and switch setting

| | | | | |
|--|--|------------------------|-------------------------|------------------------------|
| <p>Timer mode setting</p> | | <p>ON-delay</p> | <p>OFF-delay</p> | <p>One-shot delay</p> |
| <p>Light</p> <p>Light-ON operation mode</p> <p>Dark-ON operation mode</p> | <p>Incident Interrupted</p> <p>Output (NO circuit)</p> <p>ON OFF</p> <p>ON OFF</p> | | | |

Engineering Data

■ EXCESS GAIN

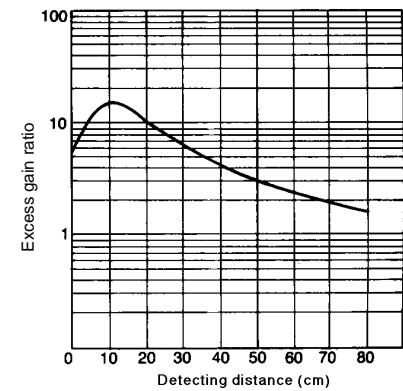
Through-beam type
E3JM-10□□4□-US



Retroreflective type
E3JM-R4□□4□-US



Diffuse reflective type
E3JM-DS70□□4□-US



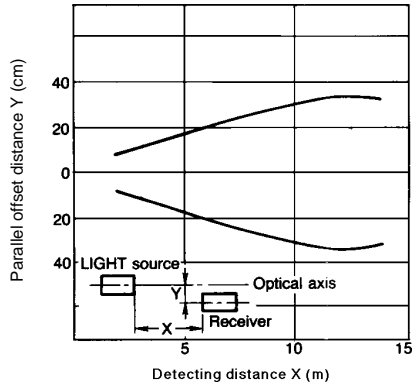
Excess Gain (continued)

Retroreflective with Optional reflectors E39-R3 and E39-RSB

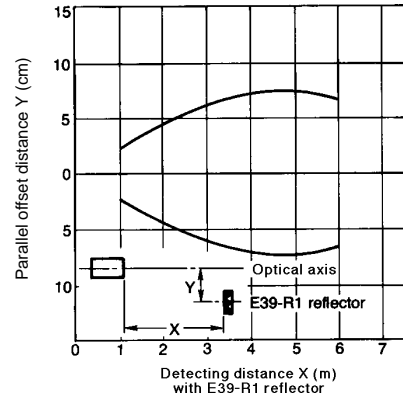


OPERATING RANGE

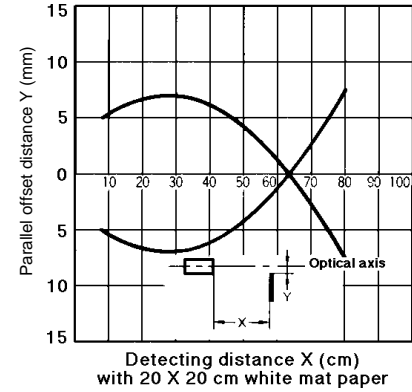
Through-beam type



Retroreflective type



Diffuse reflective type

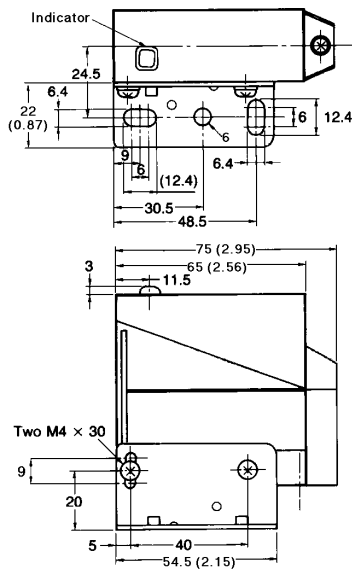
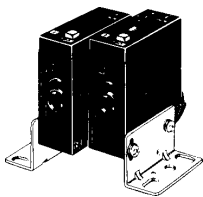


Dimensions

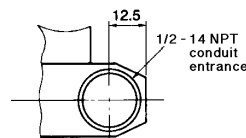
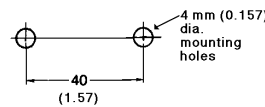
Unit: mm (inch)

THROUGH-BEAM TYPE

E3JM-10□4□-US



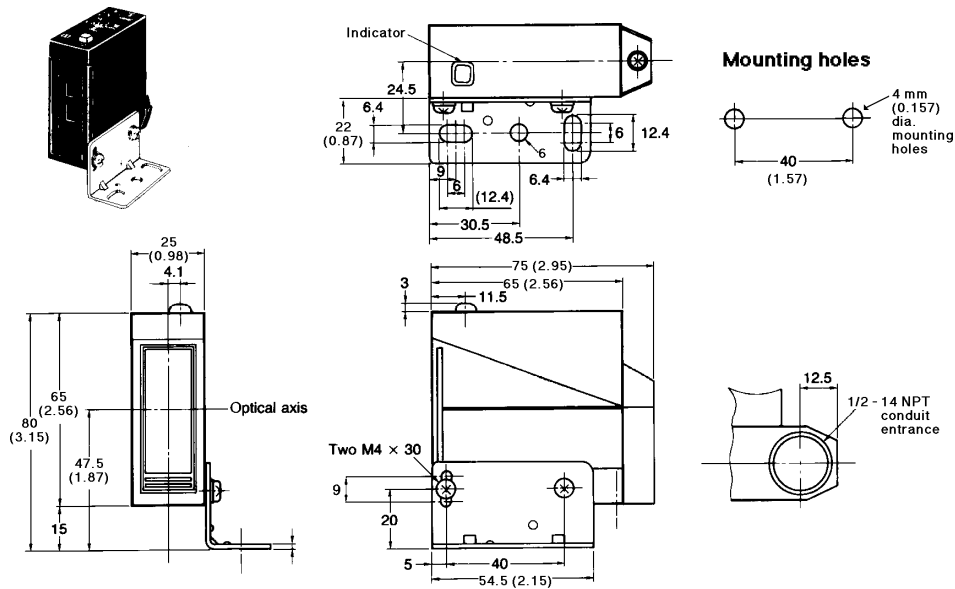
Mounting holes



DIMENSIONS (continued)

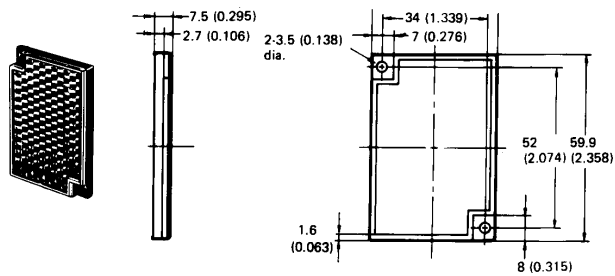
REFLECTIVE TYPES

E3JM-R4□4□-US,
E3JM-DS70□4□-US

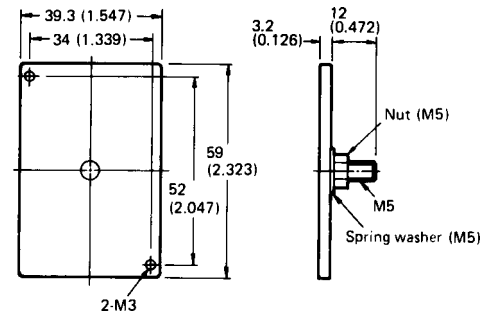


ACCESSORIES

E39-R1 Reflector (supplied with retroreflective sensors)



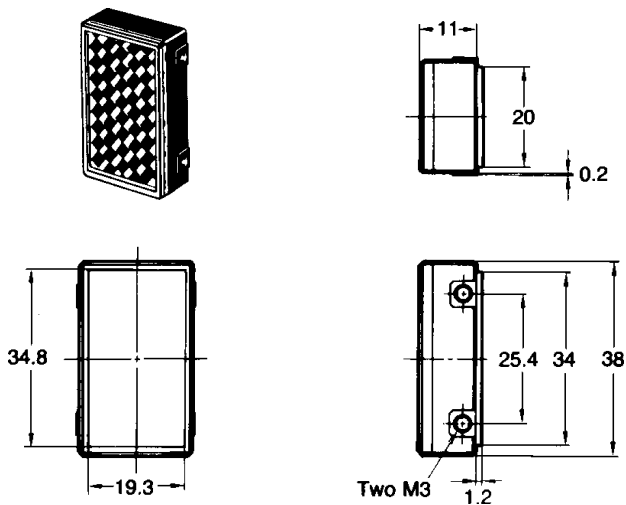
E39-L7 Mounting bracket for E39-R1 reflector



■ OPTIONAL REFLECTORS

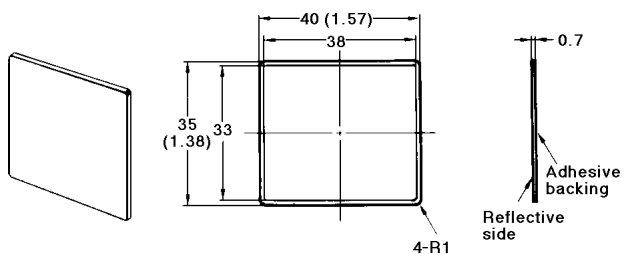
The following optional reflectors for polarized retroreflective sensors provide space saving installation.

E39-R3 Small reflector



| Reflector | E39-R3 small | E39-RSB glass bead |
|---------------------------------|-----------------|----------------------------------|
| Detecting distance with E3JM-R4 | 3.5 m (11.5 ft) | 25 cm to 1 m 9.8 in. to 3.28 ft. |

E39-RSB Glass Bead, adhesive back reflector





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