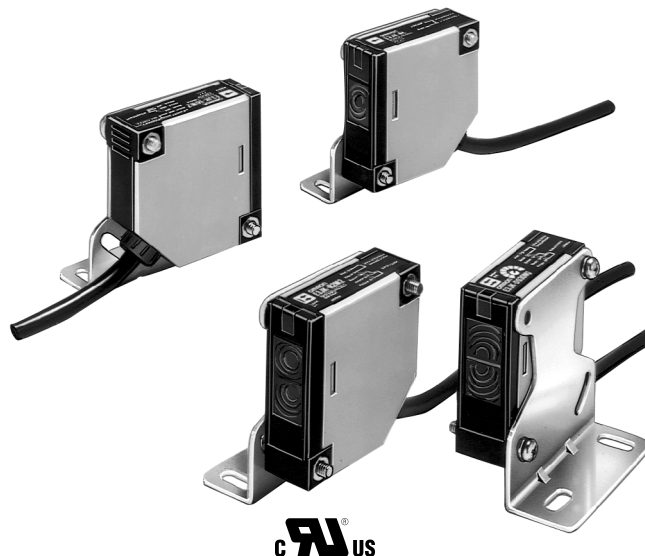


## Universal Voltage Cabled Photoelectric

## E3JK

### Small Cable Sensor with Complementary Outputs

- Universal AC/DC supply voltage
- Relay or NPN/PNP transistor output, light-on or dark-on operation
- Polarized retroreflective models to accurately detect shiny objects
- Cabled models with 2 m (6.56 ft) of cable



## Ordering Information

### ■ SENSORS

|                     |                    |               |             |                    |
|---------------------|--------------------|---------------|-------------|--------------------|
| Method of detection |                    | Through-beam  |             | Diffuse reflective |
| Sensing distance    |                    | 5 m (16.4 ft) |             | 30 cm (11.81 in)   |
| Output type         |                    | Relay         | NPN         | Relay              |
| Part number         | Light-ON operation | E3JK-5M1-US   | E3JK-5S3 2M | E3JK-DS30M1-US     |
|                     | Dark-ON operation  | E3JK-5M2-US   | —           | E3JK-DS30M2-US     |

|                     |                    |                           |                    |                 |
|---------------------|--------------------|---------------------------|--------------------|-----------------|
| Method of detection |                    | Polarized retroreflective |                    | Retroreflective |
| Sensing distance    |                    | 2.5 m (8.2 ft)            |                    | 4 m (13.12 ft)  |
| Output type         |                    | Relay                     | NPN/PNP transistor | Relay           |
| Part number         | Light-ON operation | E3JK-R2M1-US              | E3JK-R2H1-G        | E3JK-R4M1-US    |
|                     | Dark-ON operation  | E3JK-R2M2-US              | E3JK-R2H2-G        | E3JK-R4M2-US    |

### ■ ACCESSORIES

| Description                                             | Part number |
|---------------------------------------------------------|-------------|
| Reflector adapter for stud-mounting E39-R1 reflector    | E39-L7      |
| Optional large reflector for increased sensing distance | E39-R2      |

### ■ REPLACEMENT PARTS

| Description                                       | Part number |
|---------------------------------------------------|-------------|
| Reflector (supplied with retroreflective sensors) | E39-R1      |
| Mounting bracket (supplied with each sensor)      | E39-L40     |

# Specifications

## ■ THROUGH-BEAM AND DIFFUSE REFLECTIVE TYPES

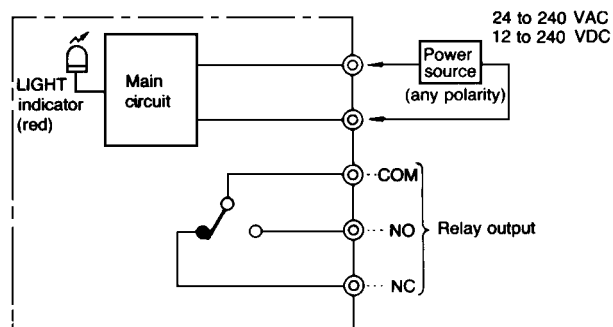
|                                |                                  |                              |                                                                                         |                         |                                                                                        |
|--------------------------------|----------------------------------|------------------------------|-----------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------|
| Part number                    |                                  |                              | E3JK-5M□-US                                                                             | E3JK-5S3 2M             | E3JK-DS30M□-US                                                                         |
| Method of detection            |                                  |                              | Through-beam                                                                            |                         | Diffuse reflective                                                                     |
| Supply voltage                 |                                  |                              | 24 to 240 VAC, 50/60 Hz; 12 to 240 VDC                                                  |                         |                                                                                        |
| Power consumption              | AC operation                     | Emitter: 1.5 VA max.         |                                                                                         |                         | 2 VA max.                                                                              |
|                                |                                  | Receiver: 1.5 VA max.        |                                                                                         |                         |                                                                                        |
|                                | DC operation                     | Emitter: 1.5 W max.          |                                                                                         |                         | 2 W max.                                                                               |
|                                |                                  | Receiver: 1.5 W max.         |                                                                                         |                         |                                                                                        |
| Sensing distance               |                                  |                              | 5 m (16.4 ft)                                                                           |                         | 30 cm (11.8 in)<br>with 10 x 10 cm (3.94 x 3.94 in)<br>90% reflectance white mat paper |
| Light source                   |                                  |                              | Pulse modulated infrared LED                                                            |                         | Pulse modulated infrared LED                                                           |
| Detectable object type         |                                  |                              | Opaque materials, 16 mm (0.63 in) minimum dimension                                     |                         | Opaque and translucent materials                                                       |
| Operation mode                 |                                  |                              | E3JK-□□□1-US: Light-ON<br>E3JK-□□□2-US: Dark-ON                                         |                         |                                                                                        |
| Sensitivity                    |                                  |                              | Fixed                                                                                   |                         | Adjustable                                                                             |
| Mutual interference protection |                                  |                              | Not provided                                                                            |                         |                                                                                        |
| Control output                 | Relay                            | Type                         | SPDT                                                                                    | —                       | SPDT                                                                                   |
|                                |                                  | Max. load                    | 3 A, 250 VAC                                                                            | —                       | 3 A, 250 VAC                                                                           |
|                                |                                  | Min. load                    | 10 mA, 5 VDC                                                                            | —                       | 10 mA, 5 VDC                                                                           |
|                                | DC solid state                   | Type                         | —                                                                                       | NPN                     | —                                                                                      |
|                                |                                  | Max. load                    | —                                                                                       | 100 mA @ 30 VDC         | —                                                                                      |
|                                |                                  | Max. on-state voltage drop   | —                                                                                       | 1 V                     | —                                                                                      |
| Response time                  | On                               | 30 ms max.                   | 3 ms                                                                                    | 30 ms, 3 ms solid state |                                                                                        |
|                                | Off                              | 30 ms max.                   | 3 ms                                                                                    | 30 ms, 3 ms solid state |                                                                                        |
| Circuit protection             | Output short-circuit             | Not provided                 |                                                                                         |                         |                                                                                        |
|                                | DC power supply reverse polarity | Provided                     |                                                                                         |                         |                                                                                        |
| Indicators                     |                                  |                              | Emitter: Power On (red LED)<br>Receiver: Light Incident (red LED)                       |                         | Light Incident (red LED)                                                               |
| Materials                      |                                  | Lens                         | Plastic                                                                                 |                         |                                                                                        |
|                                |                                  | Case                         | Plastic                                                                                 |                         |                                                                                        |
|                                |                                  | Cable sheath                 | Plastic                                                                                 |                         |                                                                                        |
| Mounting                       |                                  |                              | Side surface mount with two through holes; Bracket E39-L40 and hardware included        |                         |                                                                                        |
| Connections                    |                                  | Prewired                     | Emitter: 2-conductor cable, 2 m (6.56 ft)<br>Receiver: 5-conductor cable, 2 m (6.56 ft) |                         | 5-conductor cable, 2 m (6.56 ft)                                                       |
| Weight                         |                                  |                              | Emitter: 140 g (5 oz.)<br>Receiver: 140 g (5 oz.)                                       |                         | 140 g (5 oz.)                                                                          |
| Enclosure ratings              |                                  | NEMA                         | 1, 2, 12                                                                                |                         |                                                                                        |
|                                |                                  | IEC 144                      | IP64                                                                                    |                         |                                                                                        |
| 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) |                                                                                         |                         |                                                                                        |

## ■ RETROREFLECTIVE TYPES

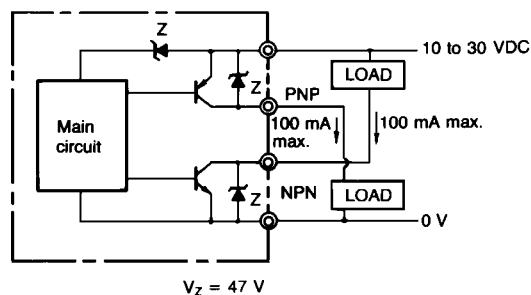
|                                |                                  |                                                                                                |                                                                                                |
|--------------------------------|----------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Part number                    |                                  | E3JK-R2□□-US                                                                                   | E3JK-R4M□-US                                                                                   |
| Method of detection            |                                  | Retroreflective                                                                                |                                                                                                |
| Supply voltage                 |                                  | 24 to 240 VAC, 50/60 Hz; 12 to 240 VDC                                                         |                                                                                                |
| Power consumption              | AC operation                     | 2 VA max.                                                                                      |                                                                                                |
|                                | DC operation                     | 2 W max.                                                                                       |                                                                                                |
| Sensing distance               |                                  | 2.5 m (8.2 ft) with E39-R1 reflector (included)<br>3 m (9.8 ft) with E39-R2 optional reflector | 4 m (13.1 ft) with E39-R1 reflector (included)<br>5 m (16.4 ft) with E39-R2 optional reflector |
| Light source                   |                                  | Polarized, pulse modulated red LED                                                             | Pulse modulated red LED                                                                        |
| Detectable object type         |                                  | Opaque materials and mirror surface materials<br>56 mm (2.2 in) minimum dimension              | Opaque materials 56 mm (2.2 in) minimum dimension                                              |
| Operation mode                 |                                  | E3JK-□□□1-US: Light-ON<br>E3JK-□□□2-US: Dark-ON                                                |                                                                                                |
| Sensitivity                    |                                  | Fixed                                                                                          |                                                                                                |
| Mutual interference protection |                                  | Not provided                                                                                   |                                                                                                |
| Control output                 | Relay                            | Type                                                                                           | SPDT (E3JK-R□M□-US)                                                                            |
|                                |                                  | Max. load                                                                                      | 3 A, 250 VAC                                                                                   |
|                                |                                  | Min. load                                                                                      | 10 mA, 5 VDC                                                                                   |
|                                | DC solid-state                   | Type                                                                                           | NPN and PNP (E3JK-R2H□)                                                                        |
|                                |                                  | Max. load                                                                                      | 100 mA at 300 VDC                                                                              |
|                                |                                  | Max. on-state voltage drop                                                                     | 1 VDC                                                                                          |
| Response time                  | On                               | 30 ms max. for relay; 3 ms max. for transistor                                                 |                                                                                                |
|                                | Off                              | 30 ms max. for relay; 3 ms max. for transistor                                                 |                                                                                                |
| Circuit protection             | Output short-circuit             | Not provided                                                                                   |                                                                                                |
|                                | DC power supply reverse polarity | Provided                                                                                       |                                                                                                |
| Indicators                     |                                  | Light Incident (red LED)                                                                       |                                                                                                |
| Materials                      | Lens                             | Plastic                                                                                        |                                                                                                |
|                                | Case                             | Plastic                                                                                        |                                                                                                |
|                                | Cable sheath                     | Plastic                                                                                        |                                                                                                |
| Mounting                       |                                  | Side surface mount with two through holes; Bracket E39-L40 and hardware included               |                                                                                                |
| Connections                    | Prewired                         | 5-conductor cable, 2 m (6.56 ft) length                                                        |                                                                                                |
| Weight                         |                                  | 140 g (5 oz.)                                                                                  |                                                                                                |
| Enclosure ratings              | NEMA                             | 1, 2, 12                                                                                       |                                                                                                |
|                                | IEC 144                          | IP64                                                                                           |                                                                                                |
| 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

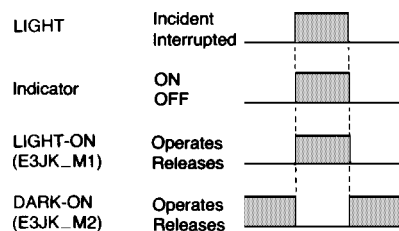
### Relay output types E3JK-□□M□-US



### Transistor output types E3JK-□□H□-US

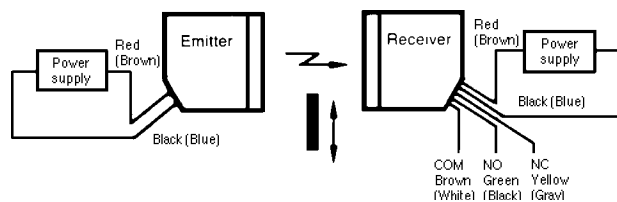


## ■ TIMING CHART

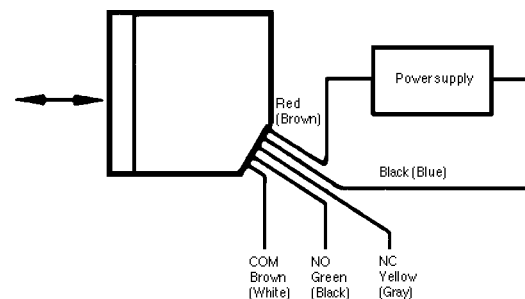


## ■ CONNECTIONS

### Through-beam models



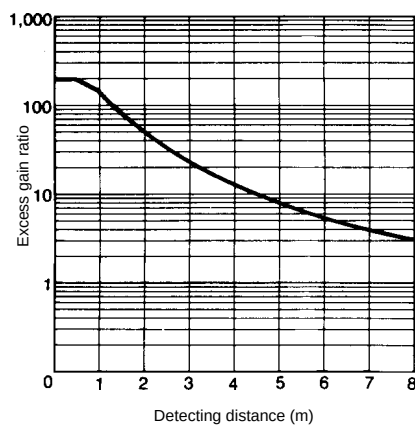
### Diffuse and retroreflective models



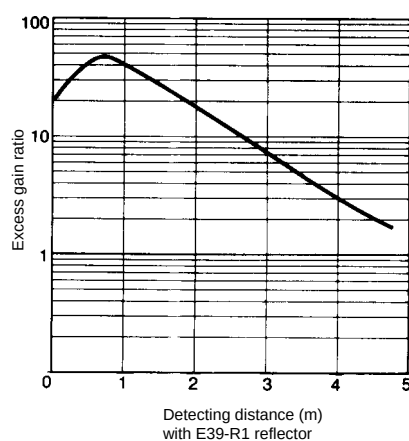
# Engineering Data

## ■ EXCESS GAIN RATIO

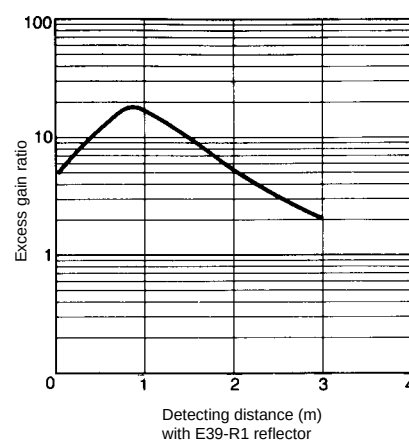
Through-beam type (E3JK-5M□-US)



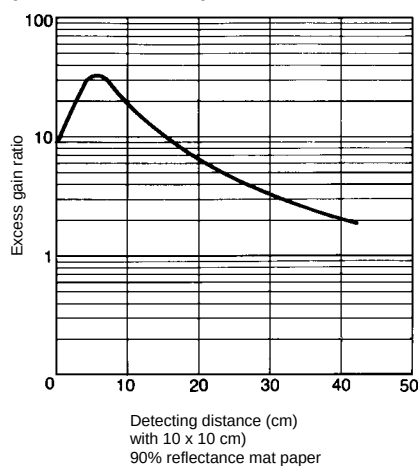
Retroreflective type (E3JK-R4M-US)



Retroreflective type with polarized light source (E3JK-R2M□)

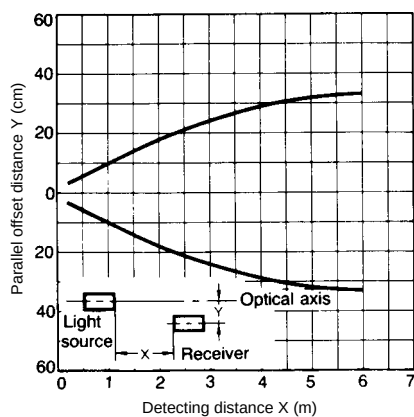


Diffuse reflective type (E3JK-DS30M□-US)

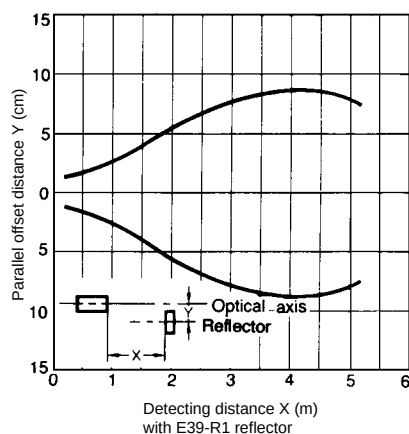


## ■ OPERATING RANGE

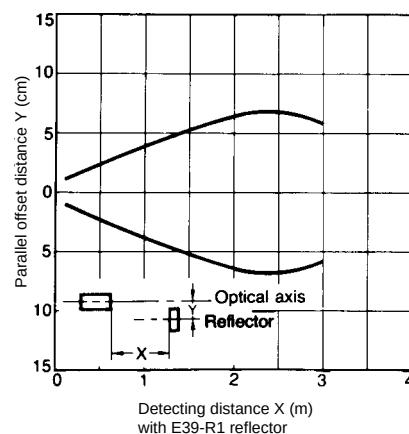
Through-beam type (E3JK-5M□-US)



Retroreflective type (E3JK-R4M□-US)

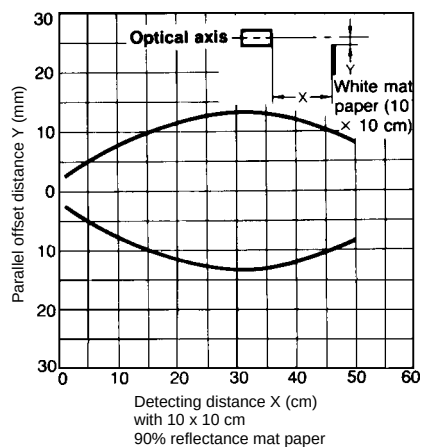


Retroreflective type with polarized light source (E3JK-R2M□)



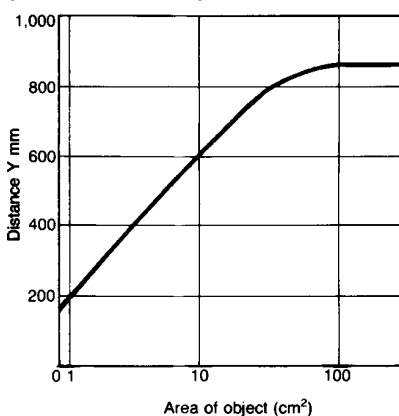
## OPERATING RANGE (continued)

Diffuse reflective type  
(E3JK-DS30M□-US)



■ SIZE OF TARGET vs. DETECTING DISTANCE  
(at maximum sensitivity)

Diffuse reflective type  
(E3JK-DS30M□-US)

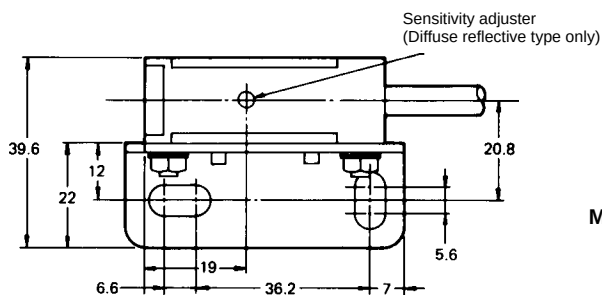
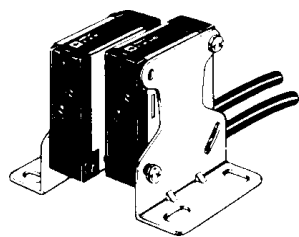


## Dimensions

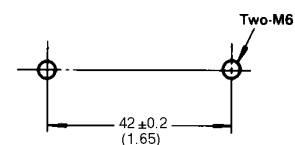
Unit: mm (inch)

■ SENSORS

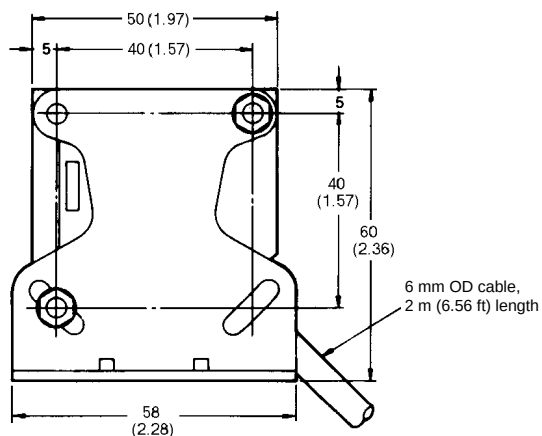
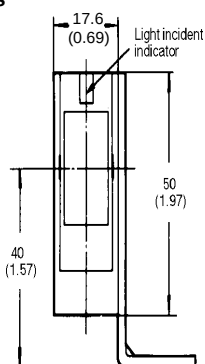
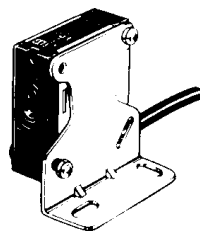
Through-beam type



Mounting holes

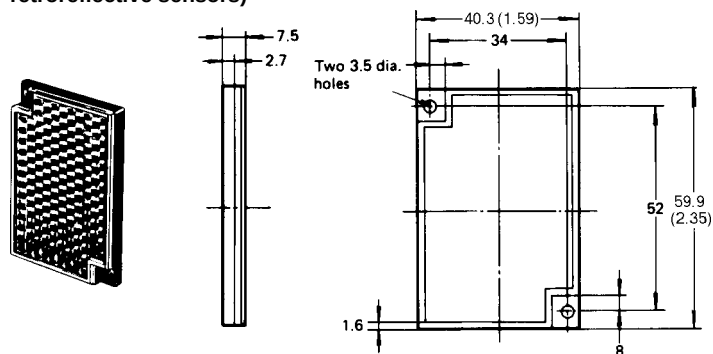


Retroreflective and  
Diffuse reflective types

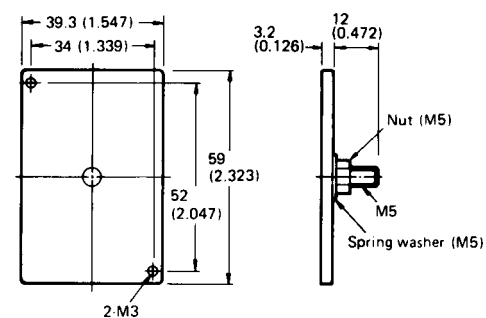


## REFLECTORS

**E39-R1 Reflector (included with retroreflective sensors)**



**E39-L7 Reflector Adapter for E39-R1 (optional)**



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