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OMRON

General-Purpose Photoelectric Sensor | E3JU

Compact Limit Switch Style with Universal Power Supply

- FET output allows for solid state switching of AC or DC
- Universal AC/DC power supply
- Choose cable or connector types
- Sensitivity adjustment standard on all models
- Wide selection of timing options
- UL/CE/CSA certified
- NEMA 4X, IP67 rated



Ordering Information

■ SENSORS

Method of detection			Through-beam	Polarized retroreflective	Diffuse reflective	
Sensing distance			25 m (82 ft)	5 m (16.4 ft)	1 m (3.3 ft)	2 m (6.6 ft)
Output	Connection	Timer	**Part number**			
Relay	300-V cable	No	**E3JU-25M4-3**	**E3JU-R5M4-3**	**E3JU-D1M4-3**	**E3JU-D2M4-3**
	600-V cable		**E3JU-25M4-6**	**E3JU-R5M4-6**	**E3JU-D1M4-6**	**E3JU-D2M4-6**
	300-V cable	Yes	**E3JU-25M4T-3**	**E3JU-R5M4T-3**	**E3JU-D1M4T-3**	**E3JU-D2M4T-3**
	600-V cable		**E3JU-25M4T-6**	**E3JU-R5M4T-6**	**E3JU-D1M4T-6**	**E3JU-D2M4T-6**
FET	300-V cable	No	**E3JU-25P4-3**	**E3JU-R5P4-3**	**E3JU-D1P4-3**	**E3JU-D2P4-3**
	600-V cable		**E3JU-25P4-6**	**E3JU-R5P4-6**	**E3JU-D1P4-6**	**E3JU-D2P4-6**
	300-V cable	Yes	**E3JU-25P4T-3**	**E3JU-R5P4T-3**	**E3JU-D1P4T-3**	**E3JU-D2P4T-3**
	600-V cable		**E3JU-25P4T-6**	**E3JU-R5P4T-6**	**E3JU-D1P4T-6**	**E3JU-D2P4T-6**
Relay	MiniChange® Connector	No	**E3JU-25M4-MN1**	**E3JU-R5M4-MN1**	**E3JU-D1M4-MN1**	**E3JU-D2M4-MN1**
		Yes	**E3JU-25M4T-MN1**	**E3JU-R5M4T-MN1**	**E3JU-D1M4T-MN1**	**E3JU-D2M4T-MN1**
FET	MiniChange® Connector	No	**E3JU-25P4-MN1**	**E3JU-R5P4-MN1**	**E3JU-D1P4-MN1**	**E3JU-D2P4-MN1**
		Yes	**E3JU-25P4T-MN1**	**E3JU-R5P4T-MN1**	**E3JU-D1P4T-MN1**	**E3JU-D2P4T-MN1**

■ ACCESSORIES (ORDER SEPARATELY, NOT INCLUDED WITH SENSOR)

Description		Part number
Mounting bracket		**E39-LU1**
Mounting bracket for E39-R1 reflector		**E39-L7**
Large corner cube reflector	81 x 60 x 7 mm (3.19 x 2.36 x 0.28 inch)	**E39-R2**
Small corner cube reflectors	38 x 22 x 11 mm (1.50 x 0.87 x 0.43 inch)	**E39-R3**
	23 x 14 x 5 mm (0.91 x 0.55 x 0.19 inch)	**E39-R4**
Adhesive backed reflectors	35 x 10 x 0.7 mm (1.38 x 0.39 x 0.03 inch)	**E39-RSA**
	40 x 35 x 0.7 mm (1.57 x 1.38 x 0.03 inch)	**E39-RSB**

■ REPLACEMENT PARTS

Description	Part number
Reflector (supplied with retroreflective sensors)	**E39-R1**

Specifications

Part number			E3JU-25□4□-□	E3JU-R5□4□-□	E3JU-D1□4□-□	E3JU-D2□4□-□
Method of detection			Through-beam type	Polarized retroreflective	Diffuse reflective	
Supply voltage			24 to 240 VAC ±10%, 50/60 Hz 12 to 240 VDC, 10% max. peak-to-peak ripple			
Power consumption			Emitter: 2 W max. Receiver: 3.5 W max.	3.5 W max.	4 W max.	
Sensing distance			25 m (82 ft)	5 m (16.4 ft) with E39-R1 reflector (supplied) 5.5 m (18.0 ft) with E39-R2 3.3 m (10.8 ft) with E39-R3 1.5 m (4.9 ft) with E39-R4 0.8 m (2.6 ft) with E39-RSB 0.5 m (1.6 ft) with E39-RSA	1 m (3.3 ft) Kodak gray card white side 90% reflective	2 m (6.6 ft) Kodak gray card white side 90% reflective
Light source			Infrared LED (950 nm)	Polarized red LED (660 nm)	Infrared LED (950 nm)	
Detectable object type			Opaque, 16 mm (0.63 in) minimum	Opaque, 56 mm (2.2 in) minimum with E39-R1	Opaque and translucent materials	
Operation mode			Light-ON/Dark-ON, switch selectable			
Sensitivity adjustment			Adjustable			
Mutual interference protection			Not provided	Provided		
Control output	Contact	Type	SPDT relay			
		Max. load	3 A, 250 VAC; 30 VDC rated (p.f.=1)			
		Min. load	10 mA, 5 VDC minimum			
		Response time	Models without timer and timer models set to No Timer: 12 ms ON (6 ms typ.), 12 ms OFF (5 ms typ.) Models with timer: 0.1 to 10 sec (adjustable)			
	Solid state	Type	Power MOSFET relay			
		Max. load	400 mA AC/DC (600 mA up to 40° C) 240 VAC max., 100 VDC max.			
		Response time	Models without timer and timer models set to No Timer: 8 ms ON, 12 ms OFF max. Models with timer: 0.1 to 10 sec (adjustable)			
Timer functions		Type	ON-delay, OFF-delay, ON/OFF delay, one-shot, delayed one-shot; switch selectable			
		Range	0.1 to 10 seconds			
Circuit protection			Not provided			
Indicators			Light incident (red LED); output operation (yellow LED); stability (green LED)			
Materials		Lens	Plastic: PMMA			
		Case	Plastic: Case-ABS/Polycarbonate blend, Cover-Polycarbonate			
Mounting			Two M5 front-mounting through holes. M30 externally threaded base and 1/2-14 NPSM internal threads for cable type: conduit torque not to exceed 100 inch-lbs.			
Connections		Prewired	(-6) 600 V rated, AWG 20: 2-wire, 4-wire cables; AWG 21: 5-wire cables; (-3) 300 V rated; AWG 22: 4-wire, 5-wire cables			
		Connector	MiniChange® style connector: 2, 4, and 5 pins			

(This table continues on the next page.)

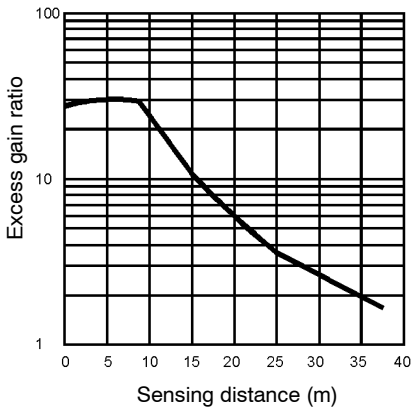
Specifications Table - continued from previous page

Part number		E3JU-25□4□-□	E3JU-R5□4□-□	E3JU-D1□4□-□	E3JU-D2□4□-□
Method of detection		Through-beam type	Polarized retroreflective	Diffuse reflective	
Weight	Prewired	Emitter: (-6): 260 g (9.1 oz); (-3): 180 g (6.3 oz)	(-6): 300 g (10.5 oz); (-3): 220 g (7.7 oz)		(-6): 315 g (11.03 oz); (-3): 235 g (8.23 oz)
		Receiver (-6): 300 g (10.5 oz); (-3): 220 g (7.7 oz)			
	Connector	Emitter: 115 g (4.03 oz)	(-MN1): 130 g (4.55 oz)		(-MN1): 145 g (5.08 oz)
		Receiver: 130 g (4.55 oz)			
Enclosure ratings	NEMA	NEMA 1, 2, 3, 4X, 5, 12			
	IEC 144	IP67			
Approvals	UL	Listing E41515			
	CSA	Certification LR45951			
	CE	IEC947-5-2			
Ambient temperature	Operating	-25°C to 55°C (-13°F to 131°F)			
	Storage	-40°C to 70°C (-40°F to 158°F)			

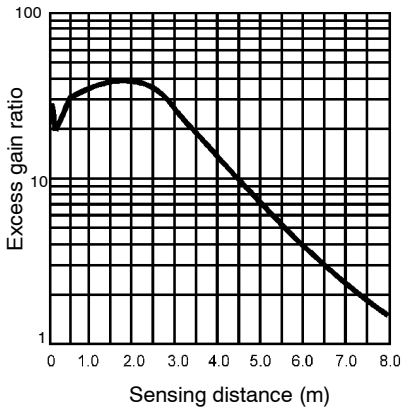
Engineering Data

■ EXCESS GAIN

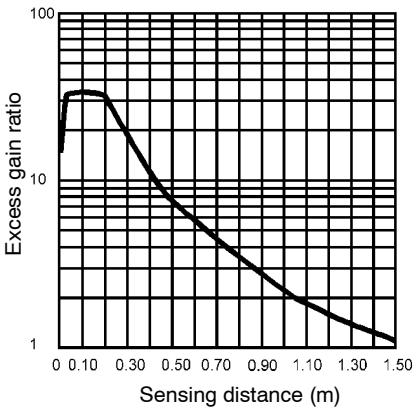
E3JU-25□4□-□



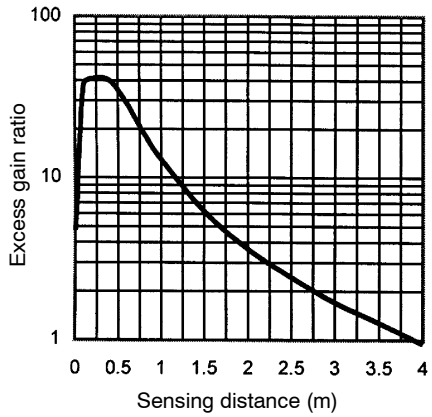
E3JU-R5□4□-□



E3JU-D1□4□-□



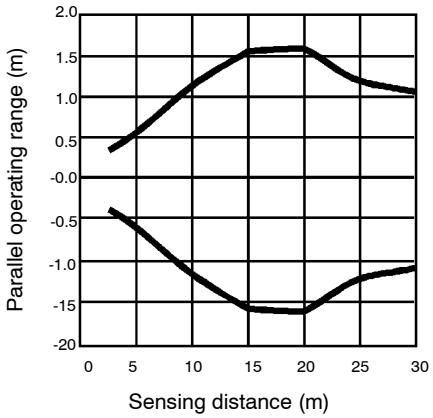
E3JU-D2□4□-□



■ OPERATING RANGE

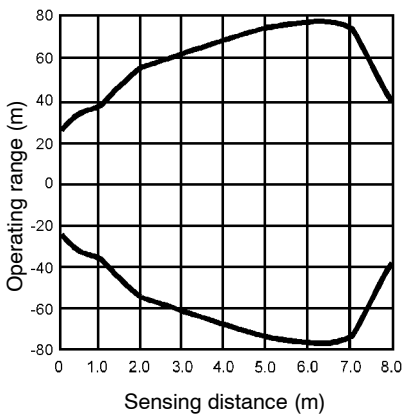
Parallel Operating Range (Typical)

E3JU-25□4□-□

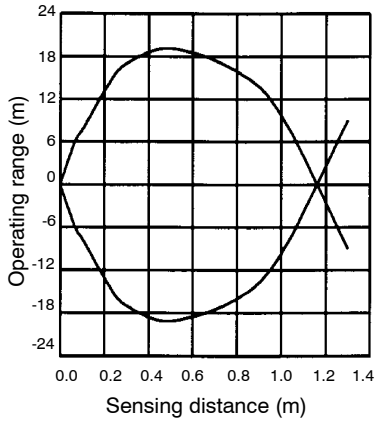


Operating Range (Typical)

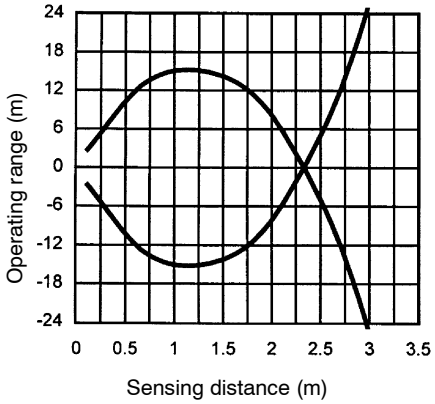
E3JU-R5□4□-□



E3JU-D1□4□-□



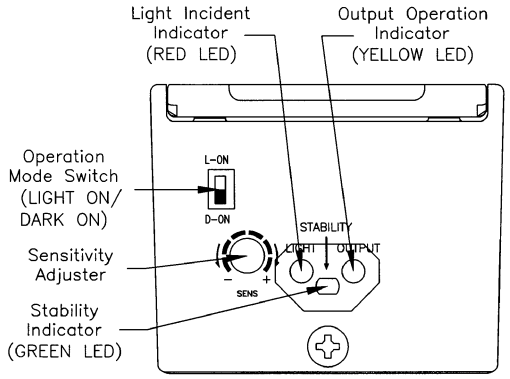
E3JU-D2□4□-□



Nomenclature

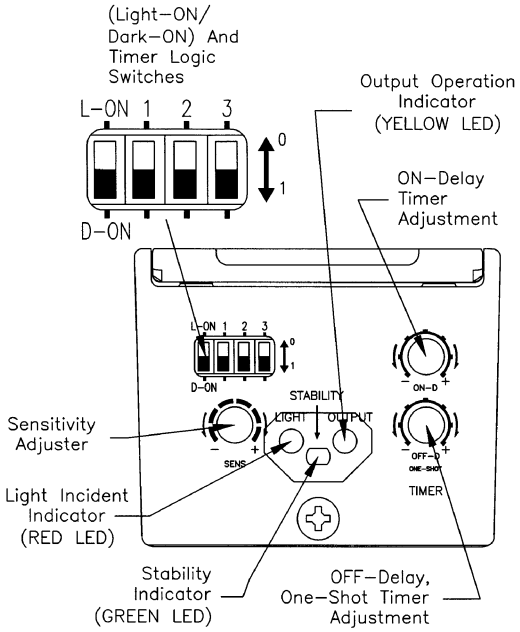
■ SENSOR WITHOUT TIMER

E3JU-□□□4-□



■ SENSOR WITH TIMER

E3JU-□□□4T-□

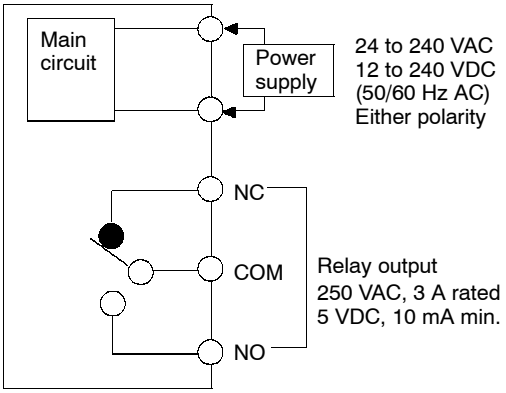


TIMER FUNCTION SWITCH SETTINGS	SW		
	1	2	3
NO TIMER	0	0	0
ON-DELAY (ON-DLY)	0	1	0
OFF-DELAY (OFF-DLY)	1	0	0
ON-DLY + OFF-DLY	1	1	0
ONE-SHOT (O.S.)	1	0	1
O.S. NON-RETRIG	0	1	1
ON-DLY + O.S.	1	1	1
ON-DLY + O.S. NON-RETRIG	0	0	1

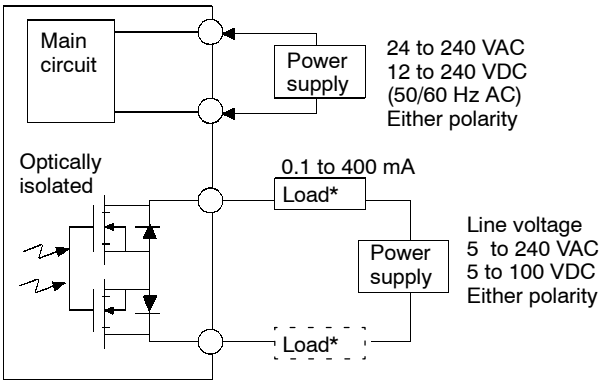
Operation

■ OUTPUT CIRCUIT DIAGRAMS

Relay Output Types
E3JU-□□M□□-□



Solid State Relay Output Types
E3JU-□□P□□-□

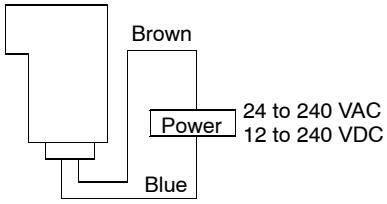


* Load can be hooked up on either side of the power supply.

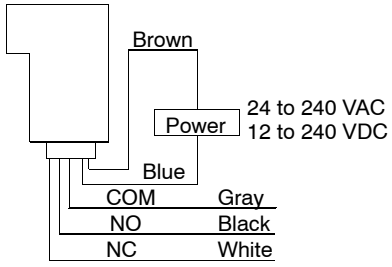
■ CONNECTIONS

Prewired types

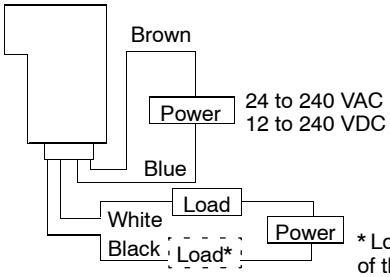
Through-beam Emitter Types
E3JU-25L-3
E3JU-25L-6



Relay Output Types
E3JU-□□M□□-3
E3JU-□□M□□-6



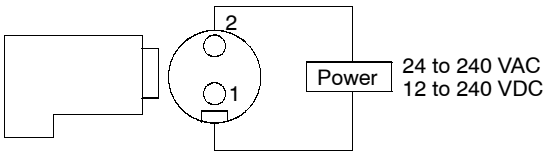
Solid State Relay Output Types
E3JU-□□P□□-3
E3JU-□□P□□-6



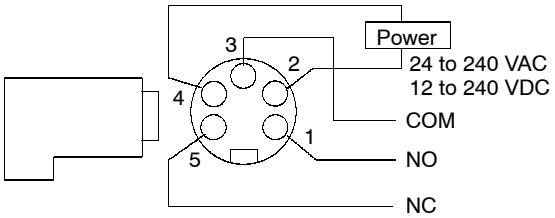
* Load can be hooked up on either side of the power supply.

Connector Types

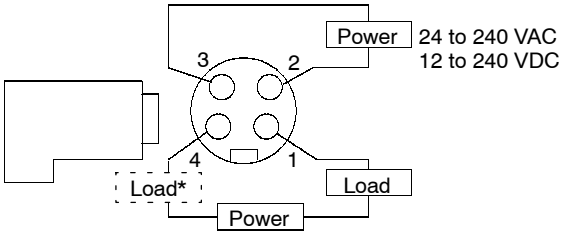
Through-beam Emitter Type
E3JU-25L-MN1



Relay Output Types
E3JU-□□M□□-MN1



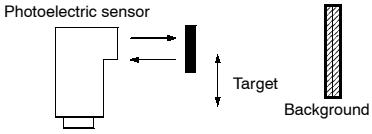
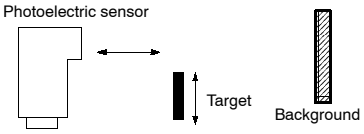
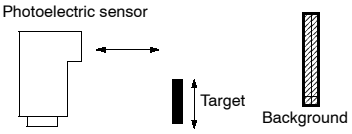
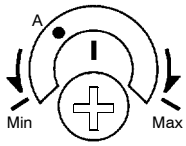
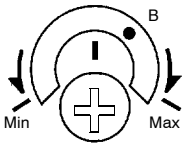
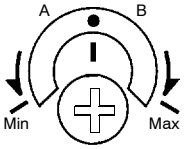
Solid State Relay Output Types
E3JU-□□P□□-MN1



■ TIMING CHART

TIMER FUNCTIONS	TIMER SWITCH SETTNGS				t1: ON-DELAY TIME t2: OFF-DELAY AND ONE-SHOT TIME	LIGHT INCIDENT / INTERRUPTED LIGHT INCIDENT INDICATOR (RED LED) ON / OFF
	D-ON=1 L-ON=0	1	2	3		
NO TIMER	0	0	0	0	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	0	0	0	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ON-DELAY	0	0	1	0	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	0	1	0	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
OFF-DELAY	0	1	0	0	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	1	0	0	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ON-DELAY +OFF-DELAY	0	1	1	0	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	1	1	0	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ONE SHOT	0	1	0	1	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	1	0	1	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ONE SHOT NON-RETRIG	0	0	1	1	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	0	1	1	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ON-DELAY +ONE SHOT	0	1	1	1	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	1	1	1	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
ON-DELAY +ONE SHOT NON-RETRIG	0	0	0	1	LIGHT-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF
	1	0	0	1	DARK-ON MODE	OUTPUT & OUTPUT INDICATOR (YELLOW LED) ON / OFF

■ SENSITIVITY ADJUSTMENT (DIFFUSE REFLECTIVE SENSORS)

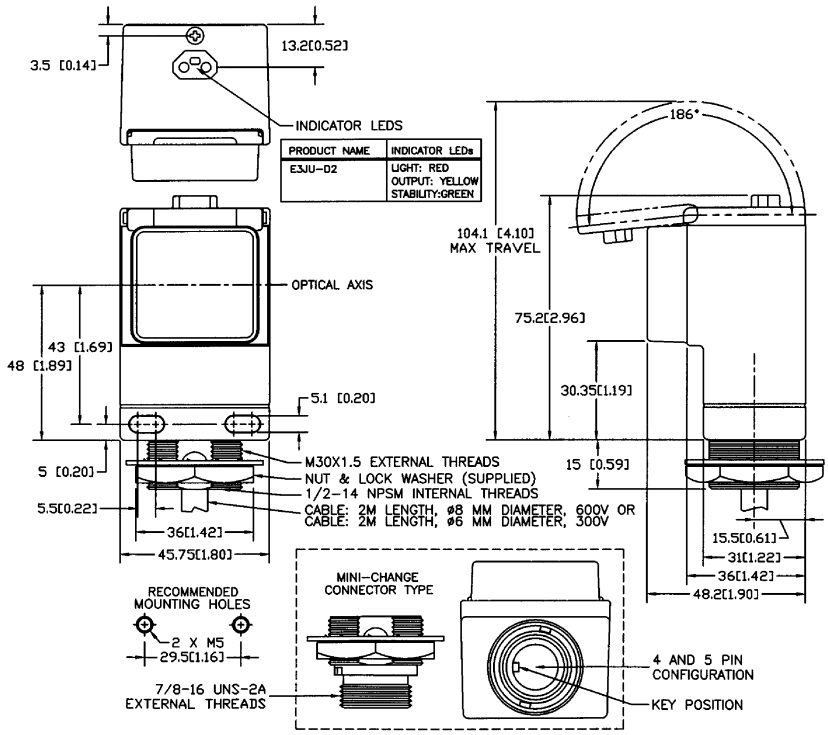
Steps	Step 1	Step 2	Step 3
Function	Determine position A	Determine position B	Adjust to optimum setting
Sensing condition			
Sensitivity adjuster			
Indicators	 LIGHT Incident Indicator (red)	 LIGHT Incident Indicator (red)	 LIGHT Incident Indicator (red)
Procedure	Place target at the desired sensing distance. Set sensitivity adjuster to the minimum scale position, and gradually increase sensitivity by turning the sensitivity adjuster clockwise until the Light Incident indicator (red LED) turns ON. Position A designates the point at which the LED has turned ON.	Remove the target. Starting from the maximum scale position, gradually decrease sensitivity by turning the sensitivity adjuster counterclockwise until the Light Incident indicator (red LED) turns OFF. Position B designates the point at which the LED has turned OFF.	Set the sensitivity indicator to the position between Positions A and B (in some cases, Positions A and B are opposite of the above example). To insure stable sensor operation, the green stability indicator should be fully “on” in both the sensing and non-sensing conditions.

Dimensions

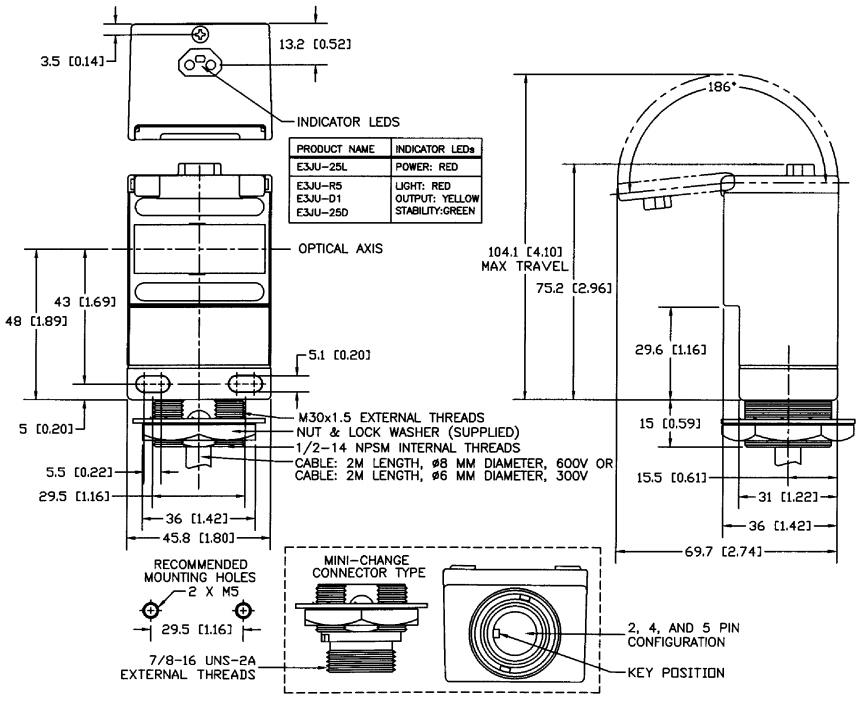
Unit: mm (inch)

■ SENSORS

E3JU-D2□□□-□

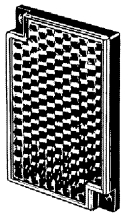


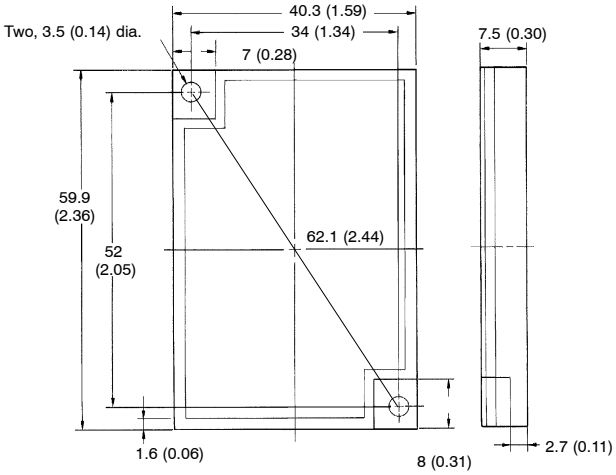
E3JU-[R5, 25, D1]□□□-□



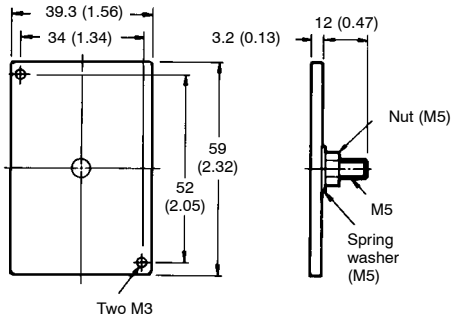
■ CORNER CUBE REFLECTORS

E39-R1 Reflector
(Included with E3JU-R□□□-□)



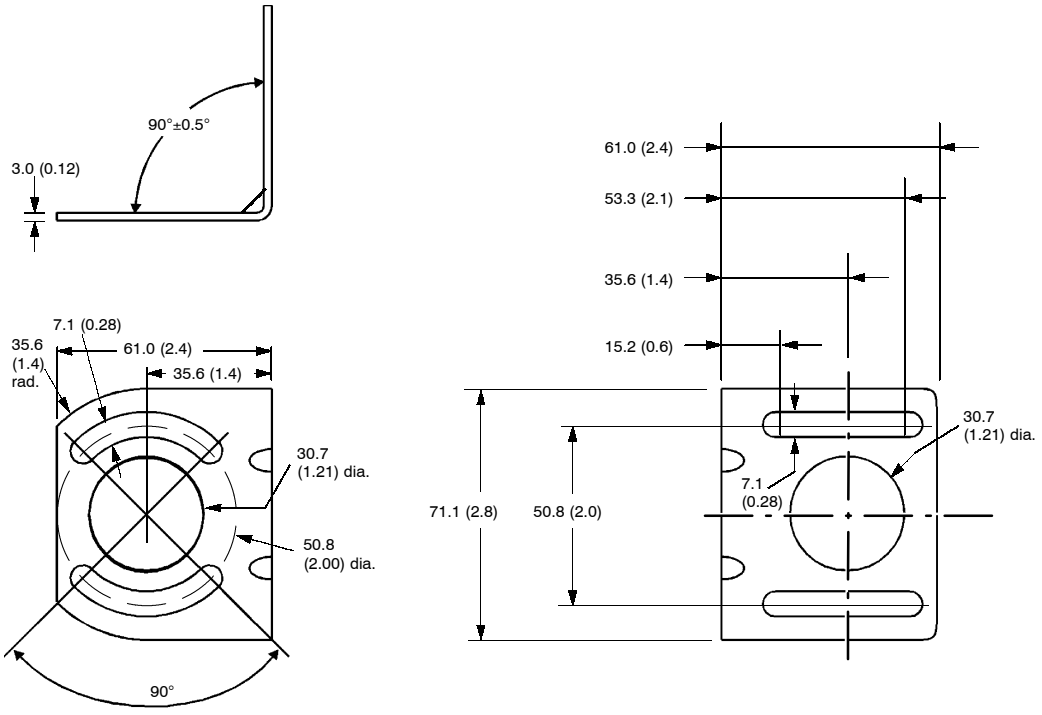


E39-L7 R1 Reflector Adapter
for E39-R1 Reflector
(Order Separately)



■ MOUNTING BRACKET

E39-LU1 (Order Separately)



MiniChange® Connector Cables

■ BRAD HARRISON MINICHANGE® CONNECTOR CABLES

Connector type	Applicable sensors	Length	Straight	Right angle
5-pole female connectors	E3JU-□□M4□-MN1	6 foot	41307	41307-90
		12 foot	41308	41308-90
		20 foot	41322	41322-90
4-pole female connectors	E3JU-□□P4□-MN1	6 foot	41108	41108-90
		12 foot	41109	41109-90
		20 foot	41177	41177-90
2-pole female connectors	E3JU-25□□-MN1 emitter	6 foot	40711	40711-90
		12 foot	40712	40712-90
		20 foot	40748	40748-90

Note: The above part numbers represent Brad Harrison (Daniel Woodhead) part numbers not Omron part numbers. Please contact your local Omron distributor for future availability by Omron and other equivalent Connector Cables.

Precautions

⚠ WARNING

These photoelectric sensors should not be used in personal safety applications. Using the sensor as a safety device may cause an unsafe condition that could lead to serious injury or death.

⚠ CAUTION

Cover Screw Torque:
The torque of the cover screw must not exceed 3.5 kg•cm (3 in•lb). Over-torquing twill cause the plastic parts to crack.

■ HIGH-VOLTAGE LINES

Do not place sensor power supply or signal lines within the same conduit as high-voltage power lines.

■ VOLTAGE RATINGS

Do not exceed rated supply voltage, ripple percent (for DC models), or load current limits.

■ AMBIENT LIGHTING

Do not install sensor in direct sunlight, or other sources of strong ambient light.

■ ENVIRONMENTAL CONDITIONS

Do NOT install sensor in areas that have any of these conditions:

- High humidity, or where condensation would result.
- Corrosive gas.
- High vibration or shock.

■ POWER SUPPLY

If a switching power supply is used, or when using with an inverter or servomotor, ground the FG (frame ground) and G (ground) terminals on the power supply for proper operation to avoid damaging the sensor.

■ WATER EXPOSURE

Do not use the sensor where it may be immersed, is outdoors, or exposed to rain.

■ PROPER MOUNTING SCREWS

Use M5 screws and washers to mount sensor and bracket.

■ MECHANICAL SHOCK

Avoid mechanical shock during installation which may damage the housing.

■ CONNECTOR

- When connecting or disconnecting the connector, hold the connector cover to avoid tension on housing.
- Tighten connector only by hand. Do not use tools, which may damage the connector.
- Always disconnect power before connecting or disconnecting the connector.
- Be sure that the connector is tightened securely. If this is not done, the sensor enclosure rating may be reduced, or the connector may loosen and affect the enclosure rating.

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

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