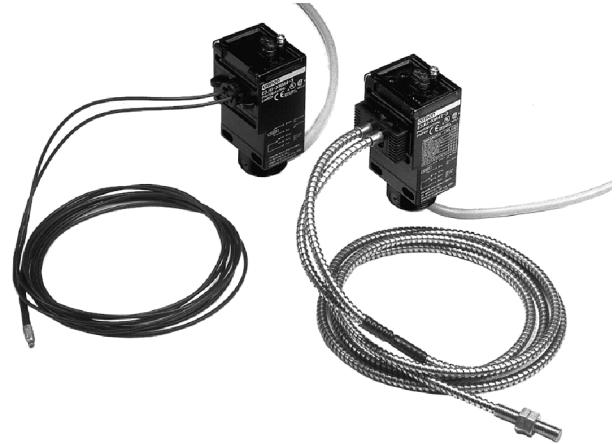


General-Purpose Fiber-optic Sensor

E3JU-X/XR

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 approved
- NEMA 4X, IP66 rated



Ordering Information

■ AMPLIFIERS

Light source			Infrared LED	Red LED
Fiber-optic cable attachment			E32-series large diameter fiber (4.75 mm)	E32-series small diameter fiber (2.2 mm)
Output	Connection	Timer	Part number	
Relay	300-V cable	No	E3JU-XM4-3	E3JU-XRM4-3
	600-V cable		E3JU-XM4-6	E3JU-XRM4-6
	300-V cable	Yes	E3JU-XM4T-3	E3JU-XRM4T-3
	600-V cable		E3JU-XM4T-6	E3JU-XRM4T-6
FET	300-V cable	No	E3JU-XP4-3	E3JU-XRP4-3
	600-V cable		E3JU-XP4-6	E3JU-XRP4-6
	300-V cable	Yes	E3JU-XP4T-3	E3JU-XRP4T-3
	600-V cable		E3JU-XP4T-6	E3JU-XRP4T-6
Relay	MiniChange® Connector	No	E3JU-XM4-MN1	E3JU-XRM4-MN1
		Yes	E3JU-XM4T-MN1	E3JU-XRM4T-MN1
FET	MiniChange® Connector	No	E3JU-XP4-MN1	E3JU-XRP4-MN1
		Yes	E3JU-XP4T-MN1	E3JU-XRP4T-MN1

■ ACCESSORIES

Description	Part number
Mounting bracket	E39-LU1

Specifications

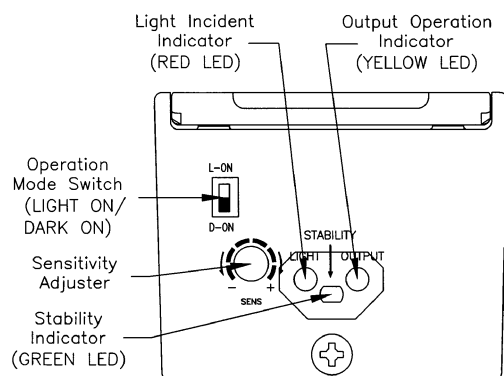
Part number		E3JU-XR□4□-□	E3JU-X□4□-□
Supply voltage		24 to 240 VAC ±10%, 50/60 Hz; 12 to 240 VDC, 10% max. peak-to-peak ripple	
Power consumption (up to 264 VDC)		Contact relay type 4.0 W max., solid state relay type 3.5 W max.	
Required fiber-optic cables		E32-series (2.2 mm dia. or 1 mm dia. with E39-F9) (See Note.)	E32-U□B series (4.75 mm dia.)
Light source		Red LED (660 nm)	Infrared LED (950 nm)
Operation mode		Light-ON/Dark-ON, switch selectable	
Sensitivity		Adjustable	
Mutual interference protection		Provided	
Contact output	Contact relay	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 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 relay	Type	Power MOSFET relay
		Max. load	400 mA AC/DC (600 mA up to 40°C), 240 VAC., 100 VDC rated
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 (models with timer)		Type/range	ON-delay, OFF-delay, ON/OFF delay, one-shot, delayed one-shot; switch selectable/0.1 to 10 seconds
Circuit protection		Output short-circuit	Not provided
Indicators		Light incident (red LED), output operation (yellow LED), stability (green LED)	
Materials		Case	Plastic ABS/PC
		Holder	Plastic ABS/PC
		Clamp	Plastic POM
		Cover	Plastic PC
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 in-lbs.	
Connections		Prewired	(-6) 600 V-rated, AWG 20: 4-wire cable, AWG 21: 5-wire cable or (-3) 300 V-rated, AWG 22: 4-wire, 5-wire cables
		Connector	MiniChange® type connector: 4 and 5 pins
Weight		Cable type	(-6): 305 g (10.68 oz); (-3): 225 g (7.88 oz)
		Connector type	135 g (4.73 oz)
Enclosure ratings		UL	Type 1
		NEMA	1, 2, 3, 4X, 5, 12
		IEC 144	IP66
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)

Note: Must use fiber that can be inserted 15 mm into amplifier to meet sensing distance specification.

Nomenclature

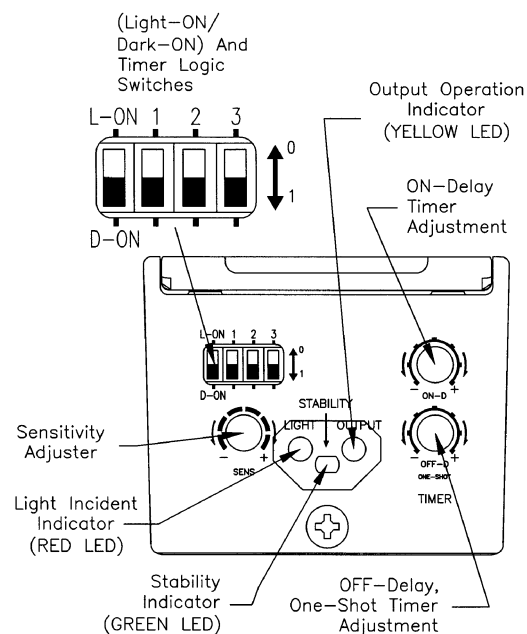
■ SENSOR WITHOUT TIMER

E3JU-□□□4-□



■ SENSOR WITH TIMER

E3JU-□□□4T-□

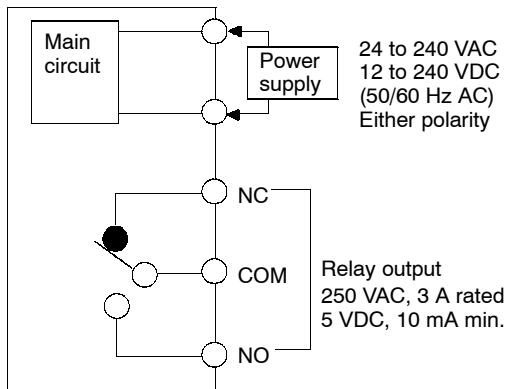


TIMER FUNCTION SWITCH SETTINGS	SW		
	1	2	3
NO TIMER	0	0	0
ON-DELAY (ON-DLY)	0	1	0
OFF-DELAY (OFF-DLY)	1	0	0
ON-DLY + OFF-DLY	1	1	0
ONE-SHOT (O.S.)	1	0	1
O.S. NON-RETRIG	0	1	1
ON-DLY + O.S.	1	1	1
ON-DLY + O.S. NON-RETRIG	0	0	1

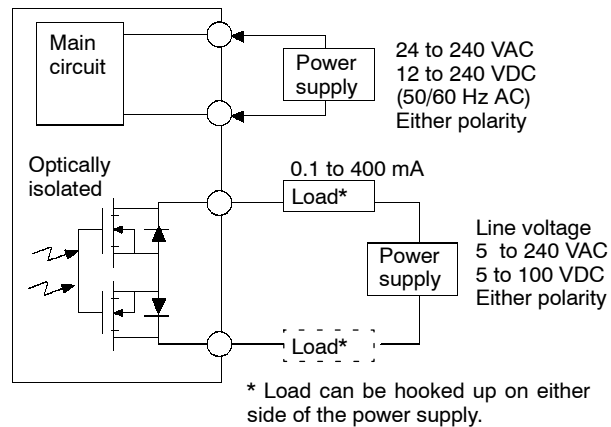
Operation

■ OUTPUT CIRCUIT DIAGRAMS

Relay Output Types E3JU-□□M□□-□

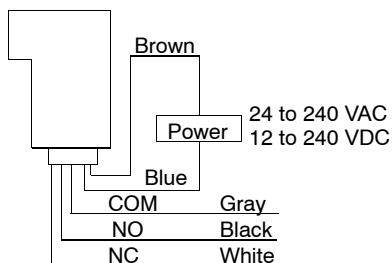


Solid State Relay Output Types E3JU-□□P□□-□

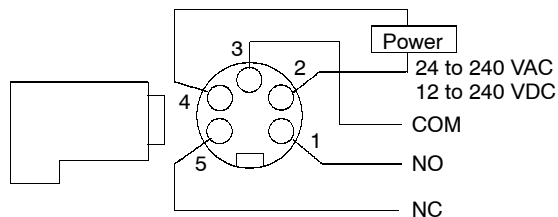


■ CONNECTIONS

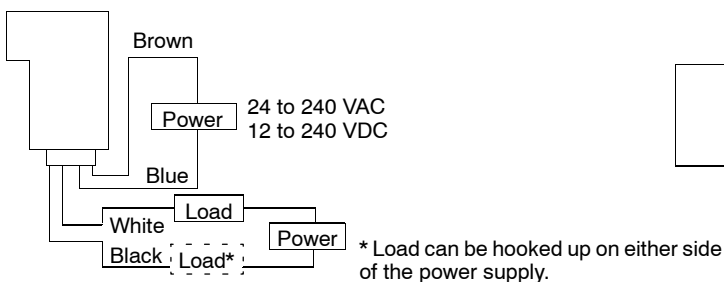
Relay Output Types E3JU-□□M□□-3 E3JU-□□M□□-6



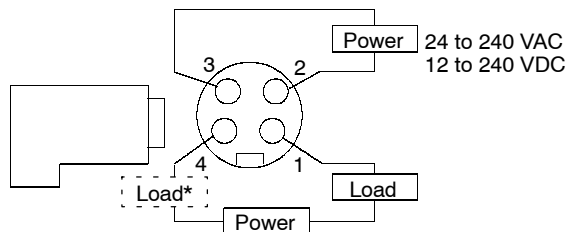
Relay Output Types E3JU-□□M□□-MN1



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



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



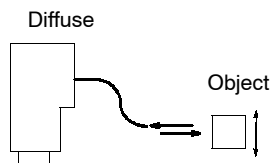
TIMING CHART

TIMER FUNCTIONS	TIMER SWITCH SETTINGS				t1: ON-DELAY TIME t2: OFF-DELAY AND ONE-SHOT TIME	LIGHT LIGHT INCIDENT INDICATOR (RED LED)	INCIDENT INTERRUPTED 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 Type

- Place the target object in the desired position for detection and set the sensitivity adjustment to maximum.
- Maximum stability is achieved by varying both horizontal and vertical alignment of the fiber until it is in the center of a range in which both the LIGHT (Red) and STABILITY (Green) indicators illuminate (Light-ON mode).
- Remove the object and ensure the LIGHT indicator turns off and the STABILITY indicator illuminates. If the LIGHT indicator does not turn off, decrease the sensitivity and check that there is no other object in line with the fiber.
- Ensure the STABILITY indicator illuminates in both detecting and non-detecting states. (Refer to table below.)

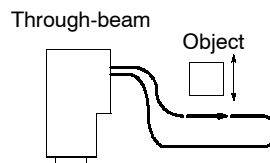


LED Status (Light-ON Mode)

Indicators	Incident	Interrupt
Light (Red)	ON	OFF
Stability (Green)	ON	ON
Output (Yellow)	ON	OFF

Through-beam Type

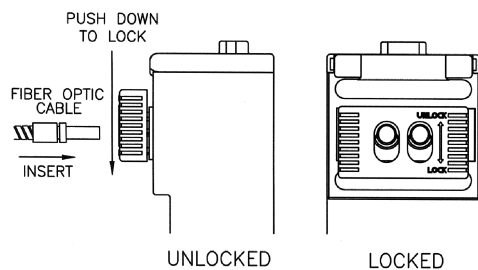
- Turn the sensitivity adjustment to maximum.
- Position the fiber optic cable ends opposite each other and adjust the horizontal and vertical alignment until the STABILITY indicator (Green), LIGHT indicator (Red), and OUTPUT indicator (Yellow) turn on (Light-ON mode).
- Once the desired position is set, introduce the object to the beam pattern and ensure that the LIGHT and OUTPUT indicators turn off and the STABILITY indicator illuminates.
- If the LIGHT and OUTPUT indicators do not turn off, decrease the sensitivity until the desired result is achieved.
- Ensure that the STABILITY indicator illuminates in both detecting and non-detecting states. (Refer to table below.)



■ FIBER CONNECTION AND DISCONNECTION

E3JU-X□4□-□

- Uses E32 series fiber-optic cable with grooved tip (4.75 mm diameter).
- Make sure the clamp is raised in the unlocked position.
- Firmly insert the fiber-optic cable tips into the amplifier.
- Move the clamp down to the locked position (the ridges in the clamp should slide into the grooves of the tips and hold the fiber cables in place).
- To remove the fiber cables, raise the clamp to the unlocked position and carefully pull the fiber cables out of the unit.

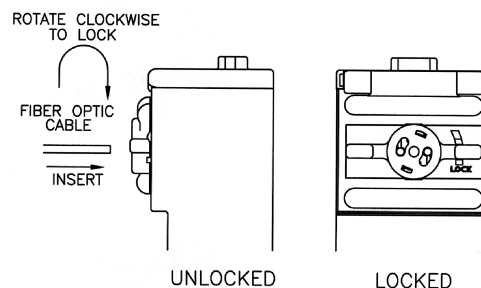


E3JU-XR□4□-□

- Uses E32 series fiber-optic cable (2.2 mm diameter or 1 mm diameter with E39-F9 adapter).
- Make sure the clamp is placed in the unlocked position.
- Carefully insert the fiber cable into the amplifier, approximately 14.0 mm (0.55 in).

Caution: The amplifier may be damaged if excessive force is used when inserting the fiber cables.

- Rotate the clamp to the locked position to secure the fiber cables in place.
- To remove the fiber cables, rotate the clamp to the unlocked position and carefully pull the fiber cables out of the unit.

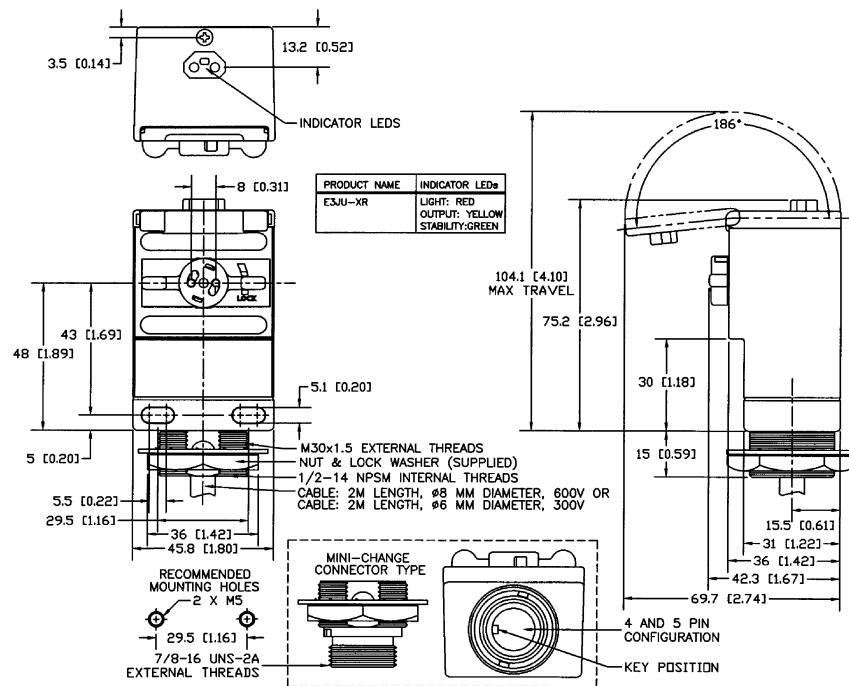


Dimensions

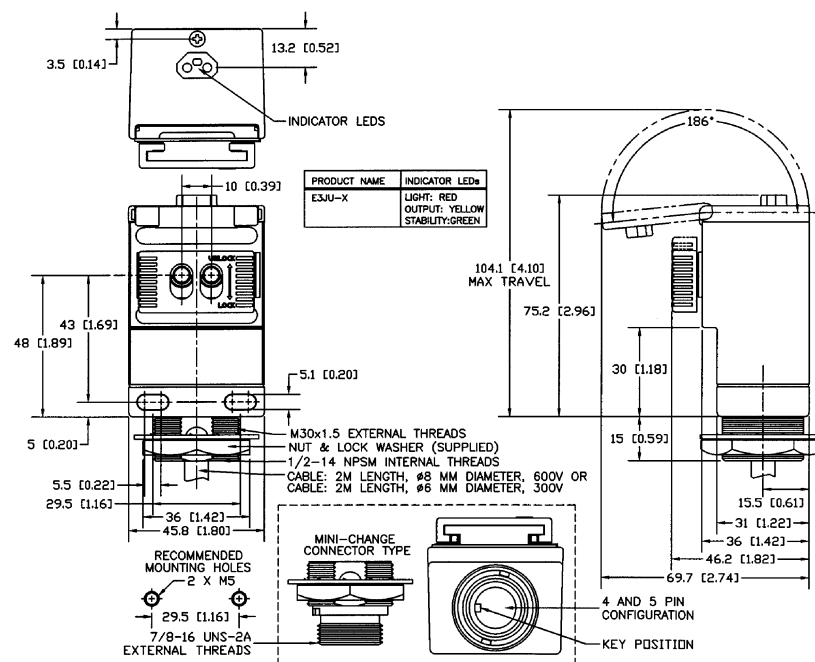
Unit: mm (inch)

■ AMPLIFIERS

E3JU-XR□□□-□

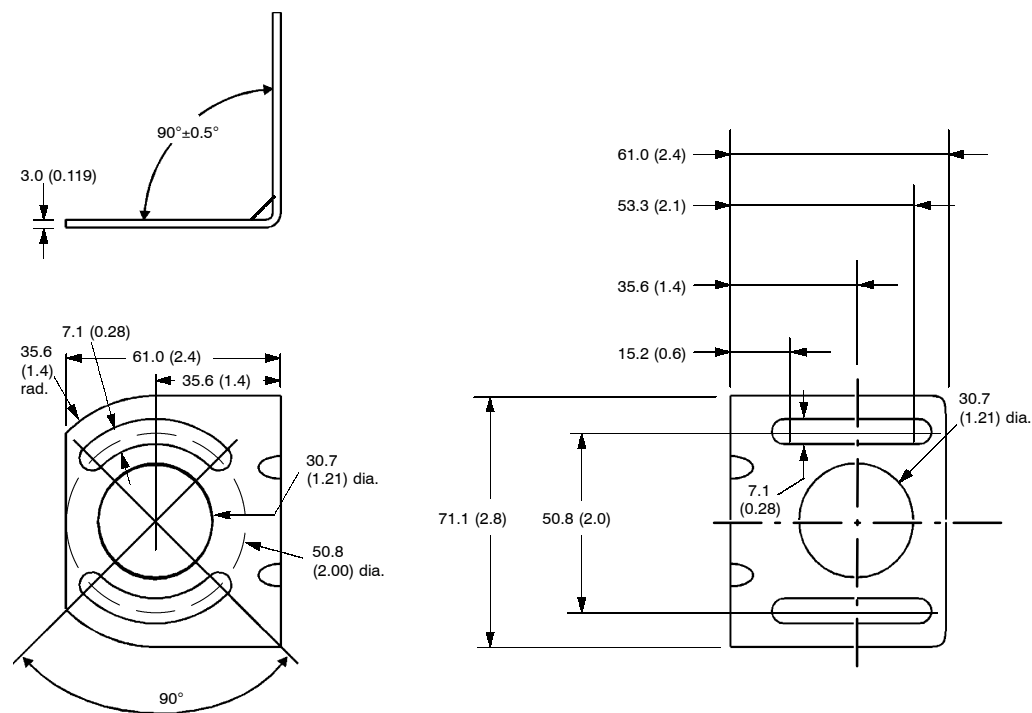


E3JU-X□□□-□



■ MOUNTING BRACKET

E39-LU1 (Order Separately)



MiniChange® Connector

■ 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	41111-90
		12 foot	41109	41112-90
		20 foot	41177	41177-90

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 will 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 with 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 (see mechanical shock specifications).

■ 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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