Retroreflectors

Contents

Cutler-Hammer® Retroreflectors from Eaton's electrical business are used with reflex-type sensors. Two types of retroreflective target material are available: corner cube and embedded glass bead.

Corner Cube Retroreflectors

This type provides the highest signal return to the sensor, typically 2000 to 3000 times the reflectivity of white paper. Three adjoining sides are arranged at right angles to each other. When a ray of light strikes one of these sides (A), it is reflected to the second (B), then the third (C), and then back to the source parallel to its original course. Thousands of these cube shapes are molded into a rugged plastic reflector or vinyl tape material. Corner cube retroreflectors are suitable for use with both standard reflex and polarized reflex sensors.


Corner cube
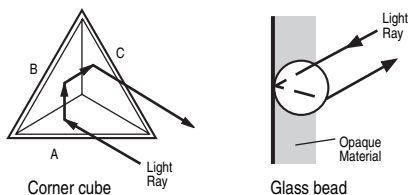
Glass bead

Glass Bead Retroreflectors

Glass bead retroreflectors are available in tape form with an adhesive backing. The bead style surface is typically rated at 200 to 900 times the reflectivity of white paper — much lower than corner cube reflectors. Glass bead retroreflectors are not suitable for use with polarized reflex sensors.
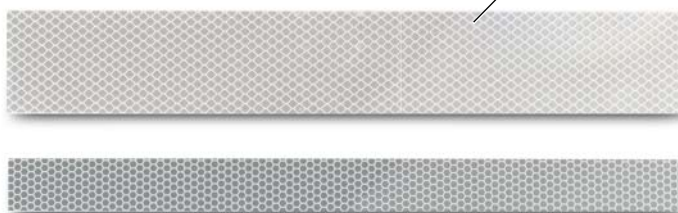
For the most current information on this product, visit our web site: www.EatonElectrical.com

High Quality Retroreflectors and Retroreflective Tape in a Wide Variety of Sizes to Meet Your Needs

Retroreflectors Available in Both Rectangular and Round Form Factors
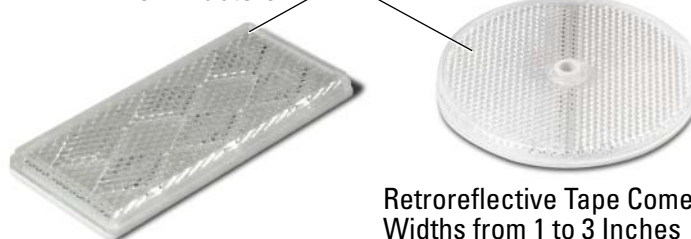
Retroreflective Tape Comes in Widths from 1 to 3 Inches

Retroreflector Size

The size of the retroreflective target has a significant effect on the excess gain and range of a reflex sensor. In general, we recommend you use the largest possible reflector in every reflex sensing application to maximize performance of the sensor and simplify alignment. To provide an even larger reflective area, multiple retroreflectors can be grouped together as shown.

7 Retroreflectors Grouped Together

Using Retroreflectors with Polarized Reflex Sensors

Only corner cube retroreflective material can be used with polarized reflex sensors. When polarized light from the sensor's light source strikes a corner cube retroreflector, it is returned to the sensor in a depolarized state. This allows some of the light to pass through the detector's polarizer, which is positioned at 90° to the source polarizer, to allow the sensor to operate.

Glass bead retroreflectors do not depolarize light and will not work with polarized reflex sensors.
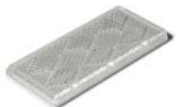
Molded plastic corner cube retroreflectors are always recommended as they provide the highest signal return to the sensor.

Corner cube tape works with polarized reflex sensors but returns less light to the sensor. In all cases, Eaton recommends testing sensor and tape prior to final installation.

For Customer Service in the U.S. call **1-800-356-1243**, in Canada call **1-800-268-3578**. For Application Assistance in the U.S. and Canada call **1-800-426-9184**.

Model Selection — Retroreflectors

|	Description	Catalog Number
Retroreflector		
	1.5 x 3.25 inch, adhesive backed, one per package	**6200A-6507**
	3 inch diameter, with mounting hole, two per package	**6200A-6501**
	Bulk packaged version of above (ordered quantity will be bulk packaged)	**6200AS6501**
	3 inch diameter, with mounting hole, one per package	**E51KR84**
	3 inch diameter, metal backed, with mounting hole, one per package	**6200A-6506**
	2.18 inch diameter, with mounting hole, one per package	**6200A-6505**
	2.18 inch diameter, adhesive backed, one per package	**6200A-6502**
	1.25 inch diameter, adhesive backed, one per package	**6200A-6504**
	Bulk packaged version of above (ordered quantity will be sent bulk packaged)	**6200AS6504**
	1.25 inch diameter, no adhesive, one per package	**E51KR32**

Retroreflective Tape

	Corner Cube Style ①	
	2 inch wide, 1 piece, quantity is length in feet	**6201A-XXXX**
	3 inch wide, 1 piece, quantity is length in feet	**6203A-XXXX**
	Glass Bead Style (Not for use with polarized reflex sensors)	
	1 inch wide, 1 piece, quantity is length in feet	**6200A-XXXX**
	2 inch wide, 1 piece, quantity is length in feet	**6202A-XXXX**

① Although corner cube tape works with polarized reflex sensors, we recommend testing sensor and tape prior to installation.

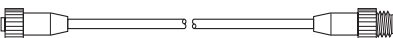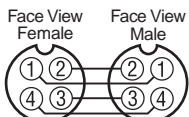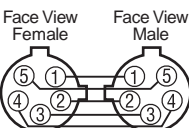## Approximate Dimensions in Inches (mm)
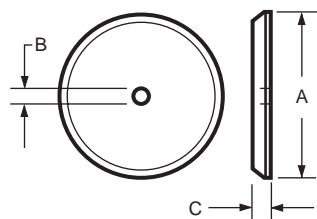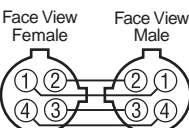
Round Retroreflectors

Catalog Number	Approximate Dimensions in Inches (mm)		
	A — Diameter	B — Hole Size	C — Thickness
6200A-6501	3.30 (84)	0.20 (5)	0.35 (9)
6200A-6502	2.40 (61)	None	0.30 (7.5)
6200A-6504	1.30 (33)	None	0.25 (6)
6200A-6505	2.40 (61)	0.25 (6)	0.30 (7.5)
6200A-6506	3.30 (84)	0.20 (5)	0.30 (7.5)
E51KR32	1.25 (32)	None	0.35 (9)
E51KR84	3.30 (84)	0.20 (5)	0.35 (9)

SENSOR ACCESSORIES

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Model Selection — Micro Style, Double-Connector Cables

	Voltage Style	Number of Pins	Gauge	Length	Catalog Number	Pin Configuration
Standard Cables						
Micro Style Straight Female/Male	DC	4-pin	22 AWG	3.0 feet (1m)	**CSDS4A4CY2201-D**	Face View Female / Face View Male
				5.0 feet (1.5m)	**CSDS4A4CY2201.5-D**	
				6.0 feet (2m)	**CSDS4A4CY2202-D**	
				10.0 feet (3m)	**CSDS4A4CY2203-D**	
				16.4 feet (5m)	**CSDS4A4CY2205-D**	
	AC	5-pin	22 AWG	10.0 feet (3m)	**CSDS5A5CY2203-D**	Face View Female / Face View Male
				16.4 feet (5m)	**CSDS5A5CY2205-D**	
Micro Style Straight Female/Right Angle Male	AC	4-pin	22 AWG	3.0 feet (1m)	**CSDR4A4CY2201-D**	Face View Female / Face View Male
				5.0 feet (1.5m)	**CSDR4A4CY2201.5-D**	
				6.0 feet (2m)	**CSDR4A4CY2202-D**	
				10.0 feet (3m)	**CSDR4A4CY2203-D**	
				16.4 feet (5m)	**CSDR4A4CY2205-D**	

Approximate Dimensions in Inches (mm)

Micro Style Double-Connector Cables, Straight Female/Male

Length
1.77" Ref (45.0 mm)
M12 x 1 (DC)
0.58" (14.8 mm) Dia. Ref
1/2" - 20 UNF–2B (AC)

Micro Style Double-Connector Cables, Straight Female/Right Angle Male

Length
1.77" Ref (45.0 mm)
M12 x 1 (DC)
0.58" (14.8 mm) Dia. Ref
1/2" - 20 UNF–2B (AC)
1.10" Ref (28.0 mm)
M12 x 1 (DC)
0.58" (14.8 mm) Dia. Ref

CONNECTOR CABLES

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For more information visit: **www.EatonElectrical.com**
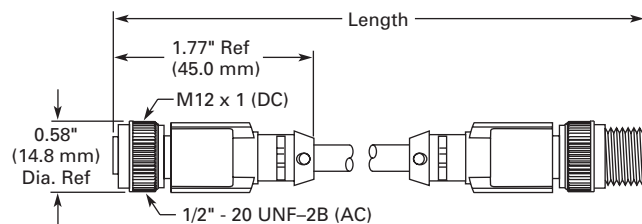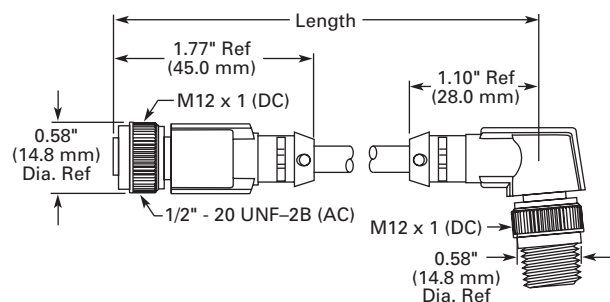
Model Selection — Sensors (Continued)

	Voltage Range	Sensing Range	Optimum Range	Sensing Beam	Output Type	Time Delay	Connection Type	Catalog Number
Fiber Optic Visible ①	10 – 40V DC	Depends on fiber selected ②	Depends on fiber selected	Visible Red	NPN/PNP 250 mA	no	6-foot Cable	1551E-6517
						yes		1551E-8517
						no	4-pin Micro DC Connector	1551E-6547 ⊞
						yes		1551E-8547 ⊞
						no	4-pin Micro DC Connector (pigtail)	1551E-6537 ⊞
						yes		1551E-8537 ⊞
						no	4-pin Mini-Connector	1551E-6507 ⊞
						yes		1551E-8507 ⊞
	12 – 240V DC 24 – 240V AC				Solid-State Relay 300 mA @ 240V AC/DC	no	6-foot Cable	1551E-6513
						yes		1551E-8513
						no	4-pin Micro AC Connector	1551E-6543 ⊞
						yes		1551E-8543 ⊞
						no	4-pin Micro AC Connector (pigtail)	1551E-6533 ⊞
						yes		1551E-8533 ⊞
						no	4-pin Mini-Connector	1551E-6503 ⊞
						yes		1551E-8503 ⊞
					SPDT EM Relay 10A @ 120V AC	no	6-foot Cable	1551E-6514
						yes		1551E-8514
						no	5-pin Micro AC Connector (pigtail)	1551E-6534 ✪
						yes		1551E-8534 ✪
						no	5-pin Mini-Connector	1551E-6504 ✪
						yes		1551E-8504 ✪

Field of View: *Depends on fiber selected*

For a complete system, order one Sensor and one Fiber Optic Cable (see **Page 6-17**)

Visible Fiber Optic Sensors are compatible with Plastic Fiber Optic Cables only

① For brackets compatible with these sensors, see Accessories on **Page 6-19**.

② Diffuse mode — up to 3 inches (76 mm); Thru-beam — up to 35 inches (890 mm).

⊞ ✪ See listing of compatible connector cables on **Page 6-17**.

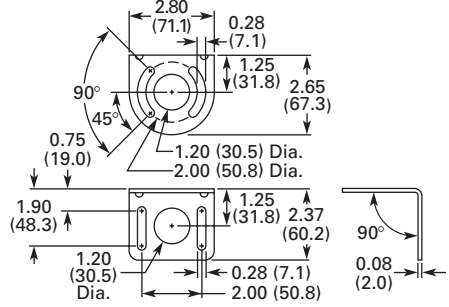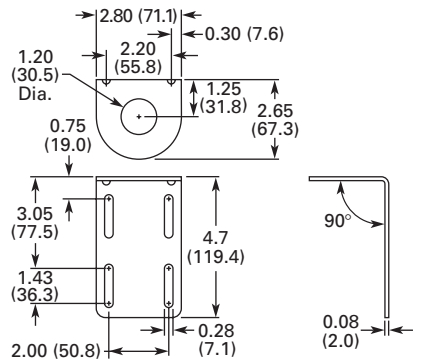## Model Selection — Compatible Connector Cables ③
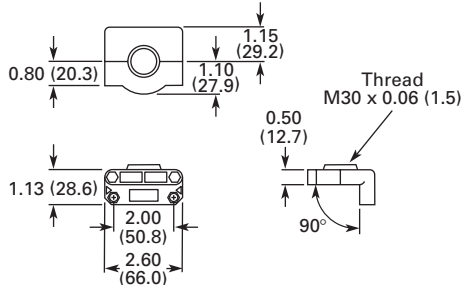
	Voltage Style	Number of Pins	Gauge	Length	Catalog Number			Pin Configuration/Wire Colors (Face View Female Shown)
					PVC Jacket	PUR Jacket	IRR PUR Jacket	
Standard Cables — Micro Style								
Micro Style Straight Female	AC	4-pin 4-wire	22 AWG	6.0 feet (2m)	CSAS4F4CY2202	CSAS4F4RY2202	CSAS4F4IO2202	1-Red/Black 2-Red/White 3-Red 4-Green
	DC	4-pin 4-wire	22 AWG	6.0 feet (2m)	CSDS4A4CY2202	CSDS4A4RY2202	CSDS4A4IO2202	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6.0 feet (2m)	CSDR5A5CY2202	—	—	1-Brown 2-White 3-Blue 4-Black 5-Green/Yellow

	Voltage Style	Number of Pins	Gauge	Length	Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Standard Cables — Mini Style						
Mini Style Straight Female Current Rating @ 600V 3-pin: 13A 4-pin: 10A	AC/DC	4-pin, 4-wire	16 AWG	6 feet (2m)	CSMS4A4CY1602	1-Black 2-Blue 3-Brown 4-White
		5-pin, 5-wire	16 AWG	6 feet (2m)	CSMS5A5CY1602	1-Black 2-Blue 3-Orange 4-Brown 5-White

③ For a full selection of connector cables, see **Section 10**.

▭ Fast turn product with typical one day lead-time to shipment.

July 2005

Model Selection — Accessories

	Description	Catalog Number	Approximate Dimensions in Inches (mm) Except Where Noted
Mounting Bracket Right Angle — Short	Right Angle Mounting Bracket — Provides for full 360° rotation of sensor. Bracket slots allow for up to 1.5 inches of vertical adjustment. Nickel Plated	**6150E-6501**	
Mounting Bracket Right Angle — Tall	Right Angle Mounting Bracket — Provides for full 360° rotation of sensor. Bracket slots allow for up to 1.5 inches of vertical adjustment in each slot, and 3.5 inches of overall positioning adjustment.	**6150E-6502**	
Mounting Bracket Ball Swivel	Right Angle Mounting Bracket with Ball Swivel — Provides for full 360° rotation of sensor. Ball swivel allows for ±30° sensor angle.	**6150E-6503**	
Retroreflectors	Retroreflectors and retroreflective tape	See **Section 8**	
Connector Cables	For use with connector version sensors	See **Page 10-9**	

☐ Fast turn product with typical one day lead-time to shipment.

PHOTOELECTRIC SENSORS

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