



Light Array Sensors Specifications

Bulletin Numbers 45AST-1JPB1-F4, 45AST-1JPB2-F4, 45AST-1JPB3-F4, 45AST-1JPB4-F4, 45DLA-1LEB1T-F4, 45DLA-1LEB2T-F4, 45DLA-1LEB4T-F4, 45DLA-1LEB6T-F4, 45DLA-1LEB8T-F4, 45MLA-AT0300P25, 45MLA-AT0600P25, 45MLA-AT0600P25, 45MLA-AT0900P25, 45MLA-AT1200P25, 45MLA-AT0300P10, 45MLA-AT0600P10, 45MLA-AT0900P10, 45MLA-AT1200P10, 45PVA-1LEB1-F4, 45PVA-1LEB2-F4, 45PVA-1LEB3-F4, 45PVA-1LEB4-F4, 45PVA-2LEA1-F4, 45PVA-2LEA2-F4

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated 45DLA Wiring Diagrams	6
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45AST Area Light Array Sensor



Specifications

Certifications	c-UL-us Listed and CE Marked for all applicable directives
Shock	30 g, 1 ms pulse duration, meets or exceeds EN 60947-5-2
Vibration	10...55 Hz, 1 mm amplitude, meets or exceeds IEC 60947-5-2
Environmental	
Enclosure type rating	IP67
Operating temperature	-5...+55 °C (23...131 °F)
User Interface	
LED indicator	Emitter: Power indicator (green LED) Receiver: Power indicator (green LED) Operation indicator: (orange LED)
Electrical	
Operating voltage	12...24V DC
Current consumption	Emitter = 80 mA max, Receiver = 110 mA max
Protection type	Short circuit, reverse polarity, false pulse, overload
Outputs	
Response time	8 ms max
Output type	See Product Selection
Output function	Light operate
Load current	100 mA
Leakage current	0.01 mA max
Mechanical	
Housing material	Aluminum
Lens material	Acrylic
Connection type	4-pin micro (M12) on a 150 mm (6 in.) pigtail

Features

Area light array sensors include the following features:

- Two-dimensional array scanning technology
- Minimum object resolution (from 11...17 mm (0.43...0.6 in.))
- Sensing ranges up to 2.5 m (8.2 ft)
- Highly visible alignment light-emitting diode (LED)
- Easy bracket-free mounting
- IP67 rated enclosure

Available Model

Transmitted beam array

Optical and Response Time Characteristics

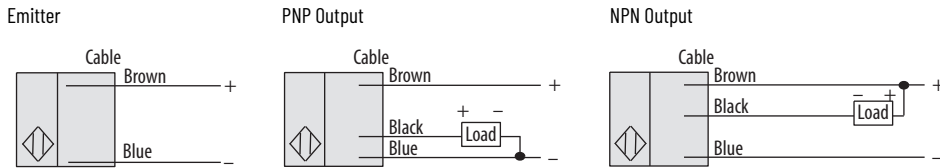
Attribute	Cat. No.			
	45AST-1JxB1-F4 ⁽¹⁾	45AST-1JxB2-F4 ⁽¹⁾	45AST-1JxB3-F4 ⁽¹⁾	45AST-1JxB4-F4 ⁽¹⁾
Number of optical axes	5	10		
Light source	Infrared 860 nm			
Response time	4 ms	8 ms		

(1) Replace the x with one of the following: N = NPN, or P = PNP.

Product Selection

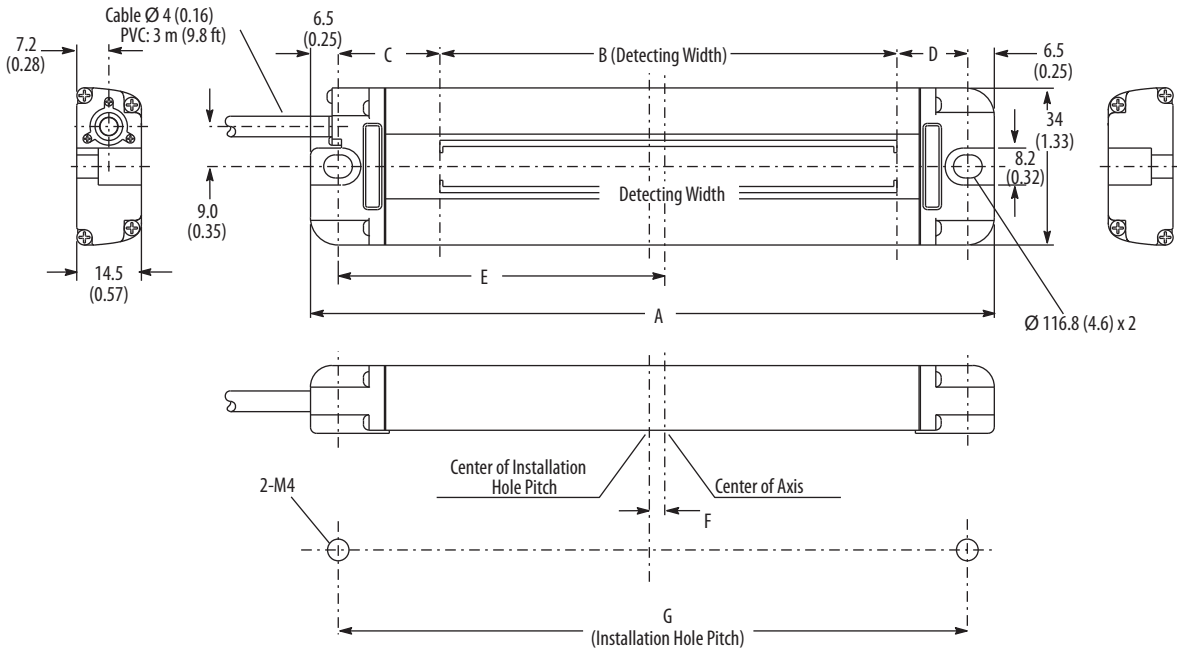
Sensing Mode	Light Source	Sensing Distance [m (ft)]	Sensing Height [mm (in.)]	Resolution Diameter [mm (in.)]	Output Function	Output Type	Cat. No.
Transmitted Beam Area Array 	Infrared 860 nm	0.5... 2 (1.6...6.5)	50 (2)	15 (0.59) min object	Light operate	NPN	45AST-1JNB1-F4
		0.15...0.8 (0.49...2.62)	100 (3.9)	11 (0.43) min object		PNP	45AST-1JPB1-F4
		0.5...2.5 (1.6...8.2)	100 (3.9)	13 (0.51) min object		NPN	45AST-1JNB2-F4
		0.15...0.8 (0.49...2.62)	150 (6)	17 (0.66) min object		PNP	45AST-1JPB2-F4
						NPN	45AST-1JNB3-F4
						PNP	45AST-1JPB3-F4
						NPN	45AST-1JNB4-F4
						PNP	45AST-1JPB4-F4
Recommended standard 4-pin, 2 m (6.5 ft) DC micro (M12) quick-disconnect cordset							889D-F4AC-2
Recommended standard 4-pin, 0.3 m (1 ft) DC micro (M12) quick-disconnect cordset							889D-F4AC-5

Wiring Diagrams



Approximate Dimensions

Figure 1 - 45AST Sensor [mm (in.)]



Cat. No.	A	B	C	D	E	F	G
45AST-1JxB1-F4 ⁽¹⁾	100 (3.93)	50 (1.96)	22.5 (0.88)	14.5 (0.57)	47.5 (1.87)	4 (0.15)	87 (3.42)
45AST-1JxB2-F4 ⁽¹⁾	150 (5.9)	100 (3.93)	22 (0.86)	15 (0.59)	72 (2.83)	3.5 (0.13)	137 (5.39)
45AST-1JPxB3-F4							
45AST-1JxB4-F4 ⁽¹⁾	200 (7.87)	150 (5.9)			97 (3.81)		187 (7.36)

(1) Replace the x with one of the following: N = NPN, or P = PNP.

45DLA Discrete Light Array Sensor



Features

Discreet light array sensors include the following features:

- Integrated light array controller
- 30 mm resolution
- Sensing ranges up to 8 m (26 ft)
- Sensing height of 110...734 mm (4.6...29 in.)
- Optically synchronized (no electrical connection between emitter and receiver required)
- Push/pull (NPN/PNP) outputs help optimize product inventory
- Wiring selectable sensing range and output state (light/dark operate)
- IP54 rated enclosure

Available Model

Transmitted beam array

Specifications

Environmental	
Certifications	c-UL-us Listed and CE Marked for all applicable directives
Operating environment	IP 54
Operating temperature	-20...+55 °C (-4...+131 °F)
Vibration	2 g, 10...200 Hz; 20 sweeps each axis; meets or exceeds EN 60068-2-6
Shock	15 g, 11 ms, 3 x each axis; 10 g, 16 ms, 100 x each axis; meets or exceeds EN 60068-2-27 and EN 60068-2-29
Relative humidity	5...95% (noncondensing)
Ambient light immunity	75,000 lux
Optical	
Sensing modes	Transmitted beam pair
Sensing range	200...1500 mm (7.9...59 in.) or 1000...8000 mm (39...315 in.)
Field of view	Emitter (long range selected): 15° @ 3.0 m (9.8 ft) Receiver (when emitter has long range selected): 35° @ 3.0 m (9.8 ft)
Light source	Infrared LED (880 nm)
User Interface	
LED indicators	Green (transmitter only) = Power Orange (receiver only) = Target present
Adjustments	Selectable range (by wiring input)
Resolution	30 mm (1.2 in.)
Beam pitch	22 mm (0.87 in.)
Electrical	
Voltage	14...30V DC
Current consumption	Typ. 50 mA @ 24V DC without load connected
Sensor protection	Short circuit (SCP), reverse polarity
Inrush current (during power up)	< 2 A per array 10 ms
Outputs	
Response time	25...165 ms (varies by catalog number)
Power-on time	100 ms + response time
Output type	PNP/NPN (single push/pull output)
Output mode	Dark or light operate selectable (by wiring)
Output current	120 mA, max
Mechanical	
Housing material	Aluminum
Lens material	Polycarbonate
Jacket material	PVC
Connection type	4-pin DC micro (M12) QD on a 150 mm (6 in.) cable pigtail

Optical and Response Time Characteristics

Description	Cat. No.				
	45DLA-1LEB1T-F4	45DLA-1LEB2T-F4	45DLA-1LEB4T-F4	45DLA-1LEB6T-F4	45DLA-1LEB8T-F4
Number of beams	4	8	16	24	32
Light source	Infrared 880 nm				
Beam spacing	22 mm (0.9 in.)				
Resolution	30 mm (1.2 in.)				
Response time	25 ms	45 ms	85 ms	125 ms	165 ms

Product Selection

Light Source	Sensing Distance [m (ft)]	Sensing Height [mm (in.)]	Number of Beams	Output Function	Output Type	Cat. No. ⁽¹⁾
Infrared 880 nm	0.2...1.5 (0.7...4.9) or 1...8 (3.3...26.2)	118 (4.65)	4	Selectable light or dark operate by wire	Selectable push/pull (NPN or PNP) by wire	45DLA-1LEB1T-F4
		206 (8.11)	8			45DLA-1LEB2T-F4
		382 (15.04)	16			45DLA-1LEB4T-F4
		558 (21.97)	24			45DLA-1LEB6T-F4
		734 (28.9)	32			45DLA-1LEB8T-F4
Recommended standard 4-pin, 2 m (6.5 ft) DC micro (M12) quick-disconnect cordset						889D-F4AC-2
Recommended standard 4-pin, 0.3 m (1 ft) DC micro (M12) quick-disconnect cordset						889D-F4AC-5

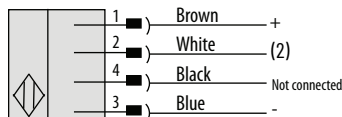
(1) Both emitter (light source) and receiver arrays are included in the package.

Table 1 - User Interface Panel

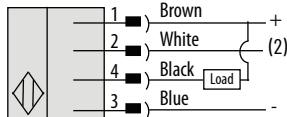
LED	Description	Color	Status
Emitter Array	Emitter status	Off	No power
		Green	Power OK
Receiver Array	Receiver status	Off	No power or target not present
		Orange	Power OK and target present

Wiring Diagrams

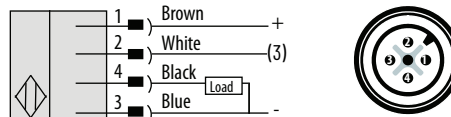
Emitter Quick-disconnect



Receiver Quick-disconnect Wired as NPN Output



Receiver Quick-disconnect Wired as PNP Output



(2) Pin 2 (white wire): Connect to 0V or not connected for 1...8 m (3.3...26.2 ft) range; connect to V+ (24V) for 0.2...1.5 m (0.6...4.9 ft) range.

(3) Pin 2 (white wire): Connect to V+ (24V) or not connected for D.O.; connect to 0V for L.O.

IMPORTANT The 45DLA uses a push/pull transistor output that can be wired as either an NPN or PNP style output.

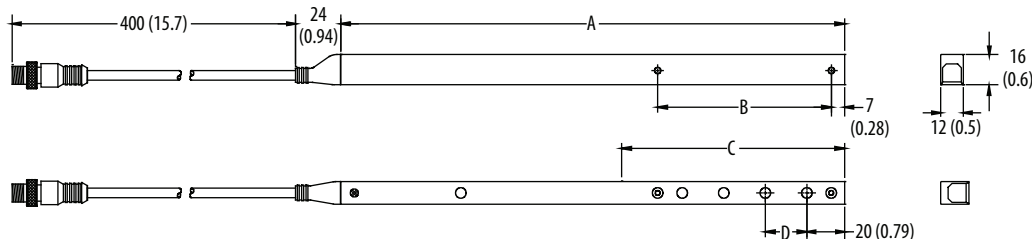


In applications with multiple 45DLA pairs in one area, it is recommended to use the shorter range option (by connecting Pin 2/ white wire to 24V) to reduce the potential for interference between separate pairs.

For applications with a range of less than 1 m (3.3 ft), it is recommended to use the shorter range option to improve the response time.

Approximate Dimensions

Figure 2 - 45DLA Sensor [mm (in.)]



Number of Beams	A: Housing Height	B: Mounting Holes	C: Sensing Height	D: Beam Spacing	Cat. No.
4	266 (10.5)	92 (3.6)	118 (4.65)	22 (0.9)	45DLA-1LEB1T-F4
8	354 (13.9)	180 (7.1)	206 (8.11)		45DLA-1LEB2T-F4
16	530 (20.9)	356 (14.0)	382 (15.04)		45DLA-1LEB4T-F4
24	706 (27.8)	532 (20.9)	558 (21.97)		45DLA-1LEB6T-F4
32	882 (34.7)	708 (27.9)	734 (28.9)		45DLA-1LEB8T-F4

45MLA Measuring Light Array Sensor



Features

Measuring light array sensors include the following features:

- External controller for 45MLA measuring light arrays
- Height measuring capability
- Configurable over-height and overhang outputs
- Analog model offers either 4...20 mA or 0...10V DC output proportional to target height, width, or position
- I/O models feature teach button for configuring four height zones with individual outputs
- Long operating range – 4 m (13 ft)
- RS-485 and CAN communication models provide extra functionality such as individual beam status and detailed height information
- IP54 rated enclosure

Available Model

Transmitted beam array

Response Time Details

The measurement or response time (T) can be roughly calculated from the number of beams (n), the scan time per beam (t_s) and the analysis time (t_A):

$$T = t_A + n \times t_s$$

n = number of optical beams

For t_s and t_A the following approximate values can be assumed:

Model	t_A (ms) ±5%	t_s (ms) ±5%
45MLA-CTRL-ALG single scan mode (default)	4.1	0.13
45MLA-CTRL-ALG double scan mode ⁽¹⁾		0.25
45MLA-CTRL-BSC single scan mode (default)	0.6	0.14
45MLA-CTRL-BSC double scan mode ⁽¹⁾	0.8	0.25
45MLA-CTRL	5.3	0.275
45MLA-CTRL-485	2.1	
45MLA-CTRL-CAN	1.0	

(1) Double-scan mode can be set with the DIP switches on these models.

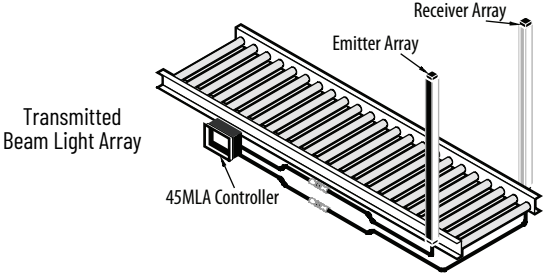
For example, for a 600 mm array with a 10 mm beam spacing with the I/O model controller, the response time is calculated as follows:

$$T = 5.3 + 0.275 = 21.8 \text{ ms}$$

Specifications

Environmental	
Certifications	c-UL-us Listed and CE Marked for all applicable directives
Operating environment	IP 54
Operating temperature	0...55 °C (32...131 °F)
Storage temperature	-20...+70 °C (-4...+158 °F)
Vibration	10...55 Hz, 0.35 mm (0.01 in.) amplitude, meets or exceeds IEC 60068-2-6
Shock	Acceleration 10 g, pulse duration 16 ms; 10...55 Hz; amplitude 0.35 mm (0.01 in.); meets or exceeds IEC 60068-2-29
Relative humidity	15...95%
Optical	
Sensing modes	Transmitted beam pair
Sensing range	0...4 m (0...13 ft)
Field of View	3.2°
Light Source	940 nm
Beam Spacing (pitch)	10 mm (0.4 in.) or 25 mm (1.2 in.)
Minimum detectable object height	18 mm (0.7 in.) or 33 mm (0.3 in.)
Status indicators	Red (status) and green (alignment)
Mechanical	
Housing material	Aluminum
Lens material	Polycarbonate
Cover material	Polycarbonate
Connection types	8-pin DC micro (M12) female QD on 500 mm (20 in.) cable pigtail (for connection to 45MLA controller only)
Accessories	
Supplied accessories	Slim profile: Adjustable mounting kit (445L-AF6143)
Required accessories (Controller)	Controller analog model: 45MLA-CTRL-ALG Controller basic model: 45MLA-CTRL-BSC Controller I/O model: 45MLA-CTRL Controller RS-485: 45MLA-CTRL-485 Controller CAN: 45MLA-CTRL-CAN
Required accessories (Light array to controller connecting cable)	2 m (6.6 ft) M12 – RJ45: 445L-AC8RJ2 3 m (9.8 ft) M12 – RJ45: 445L-AC8RJ3 5 m (16.4 ft) M12 – FJ45: 445L-AC8RJ5 8 m (26.2 ft) M12 – FJ45: 445L-AC8RJ8 Max system length cannot exceed 10 m (32.8 ft)
Optional accessories	Adjustable flat mounting bracket: 445L-AF6149 Flat mounting kit: 445L-AF6145 Cascadable array extension patchcord, M12 8-pin, 3M: 445L-AC8PC3 Reinforced profile: Mounting kit 445L-AF6140 Adjustable mounting kit: 445L-AF6141

Product Selection

Sensing Mode	Sensing Distance [m (ft)]	Sensing Height [mm (in.)]	Beam Spacing [mm (in.)]	Array Type	Cat. No. (1)
	0...4 (0...13.1)	300 (11.8)	10 (0.39)	Standard	45MLA-AT0300P10
				Cascadable	45MLA-CT0300P10
			25 (0.98)	Standard	45MLA-AT0300P25
				Cascadable	45MLA-CT0300P25
		600 (23.6)	10 (0.39)	Standard	45MLA-AT0600P10
				Cascadable	45MLA-CT0600P10
			25 (0.98)	Standard	45MLA-AT0600P25
				Cascadable	45MLA-CT0600P25
		900 (35.4)	10 (0.39)	Standard	45MLA-AT0900P10
				Cascadable	45MLA-CT0900P10
			25 (0.98)	Standard	45MLA-AT0900P25
				Cascadable	45MLA-CT0900P25
1200 (47.2)	10 (0.39)	Standard	45MLA-AT1200P10		
		Cascadable	45MLA-CT1200P10		
	25 (0.98)	Standard	45MLA-AT1200P25		
		Cascadable	45MLA-CT1200P25		
45MLA analog controller (required for 4...20 mA or 0...10V DC analog output applications)					45MLA-CTRL-ALG
45MLA basic controller (required for discrete output applications)					45MLA-CTRL-BSC
45MLA I/O controller (required to configure four separate discrete sensing zones)					45MLA-CTRL
45MLA RS-485 controller (required for RS-485 network communications)					45MLA-CTRL-485
45MLA CAN controller (required for CAN network communications)					45MLA-CTRL-CAN

(1) The 45MLA ships as a transmitted beam pair - both the emitter and receiver arrays are in one package. The "T" in the catalog number represents the transmitted beam pair. For individual parts, replace the "T" with an "E" for emitter or "R" for receiver, for example, 45MLA-AR0300P10. The 45MLA is a "Three Box System." Every setup consists of an emitter array, a receiver array, and an external controller.

User Interface

Table 2 - Emitter and Receiver Light Arrays

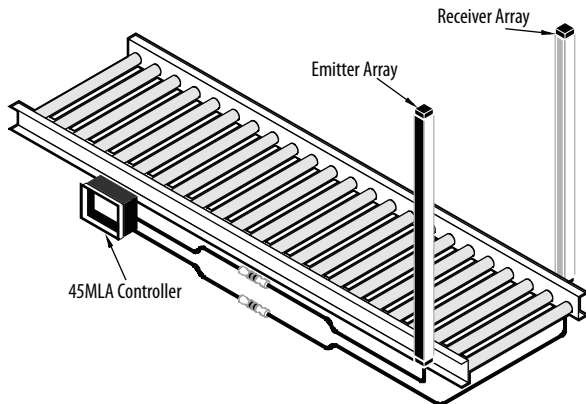
LED Color	Description	State	Status
Green	Light array alignment	Off	Arrays not aligned (or target present)
		On	Arrays aligned (and target not present)
		Flashing	Low margin/light intensity inadequate
Red	Light array status	Off	Target not present (and arrays aligned)
		On	Target present (or arrays not aligned)

Figure 3 - Controller Main PCB

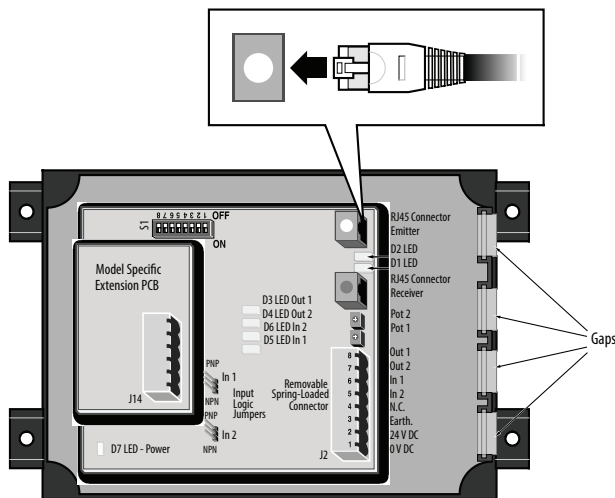
LED Number	Description	State	Meaning
D1	Light array okay	Off	Target present or light arrays not aligned
		Green	Target not present and light arrays aligned
		Green flashing	Low margin/light intensity inadequate
D2	Light array status	Off	Target not present
		Red	Target present
		Red Flashing	Height Measurement Error
D3	Out1	Off	Output 1 inactive
		Green	Output 1 active
D4	Out2	Off	Output 2 inactive
		Green	Output 2 active
D5	In1	Off	Input 1 inactive
		Green	Input 1 active
D6	In2	Off	Input 2 inactive
		Green	Input 2 active
D7	Power	Off	Power off
		Green	Power on

Wiring Diagrams

The 45MLA is a three box system. Every setup consists of an emitter array, a receiver array, and an external controller.



Each controller has the same base PCB and pre-installed extension PCB with model-specific functionality and additional connections.



Connector J2 on the base PCB has the following pinout for all controller models.

Pin	Signal	Description
1	0V DC	Power
2	+24V DC	Power
3	Ground	Ground
4	Not connected	Not connected
5...8	Model-specific functions (see following information)	

Pins 5...8 on connector J2 (on the base PCB) have different functionality with each controller model. The following tables show the pin connections for each specific model.

Table 3 - Analog and Basic Models

Pin	Signal	Description	Remarks
5	In 2	Not used	–
6	In 1	Not used	DIP switch S1(3) = 0
		Remote teach	DIP switch S1(3) = 1
7	Out 2	Error	0V DC = error 24V DC = no error
8	Out 1	Light array interrupted	0V DC = interrupted 24V DC = not interrupted

Table 4 - I/O Model

Pin	Signal	Description	Remarks
5	In 2	Trigger and hold	DIP switch S1(7) = 0
		Overhang back sensor	DIP switch S1(7) = 1
6	In 1	Not used	DIP switch S1(7) = 0
		Overhang front sensor	DIP switch S1(7) = 1
7	Out 2	Light array interrupted ⁽¹⁾	0V DC = interrupted 24V DC = not interrupted
8	Out 1	Overhang	0V DC = overhang 24V DC = no overhang

(1) Or over-height (special function)

Table 5 - RS-485 and CAN Models

Pin	Signal	Description	Remarks
5	In 2	Trigger and hold	Special function
6	In 1	Not used	Not used
7	Out 2	Light array interrupted ⁽¹⁾	0V DC = interrupted 24V DC = not interrupted
8	Out 1	Overhang	0V DC = overhang 24V DC = not interrupted

(1) Or over-height (special function)

The extension PCB has connections specific to the functionality of each individual model. The following tables show the pin connections for each model. The connectors are labeled on the PCB.

Table 6 - Analog Model Connector J15

Pin	Signal
1	Analog current output 4...20 mA
2	0V DC
3	Analog voltage 0...10V DC
4	0V DC

Table 7 - I/O Model Connector J14

Pin	Signal	0V DC	+24V DC
1	Out 3	Zone Z1 interrupted	Zone Z1 not interrupted
2	Out 4	Zone Z2 interrupted	Zone Z2 not interrupted
3	Out 5	Zone Z3 interrupted	Zone Z3 not interrupted
4	Out 6	Zone Z4 interrupted	Zone Z4 interrupted

Table 8 - RS-485 Model Connector J16

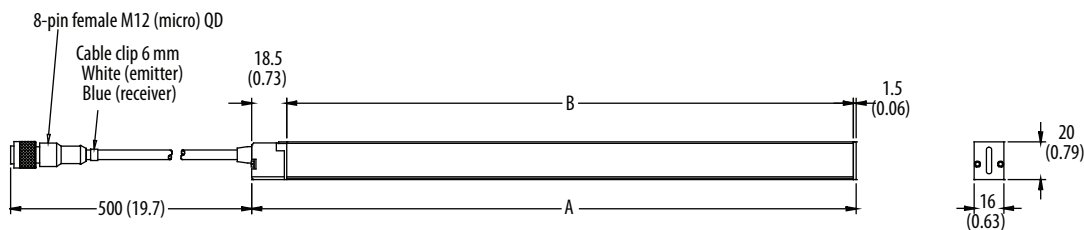
Pin	2 Wire	4 Wire
1	0V DC	0V DC
2	—	Rx+
3	Shielding	Shielding
4	—	Rx-
5	B	Tx+
6	A	Tx-

Table 9 - CAN Model Connectors J12 and J13 (RJ45)

Pin	Signal
1	CAN H
2	CAN L
3	0V DC
4	Not connected
5	Not connected
6	Shield
7	0V DC
8	CAN V+

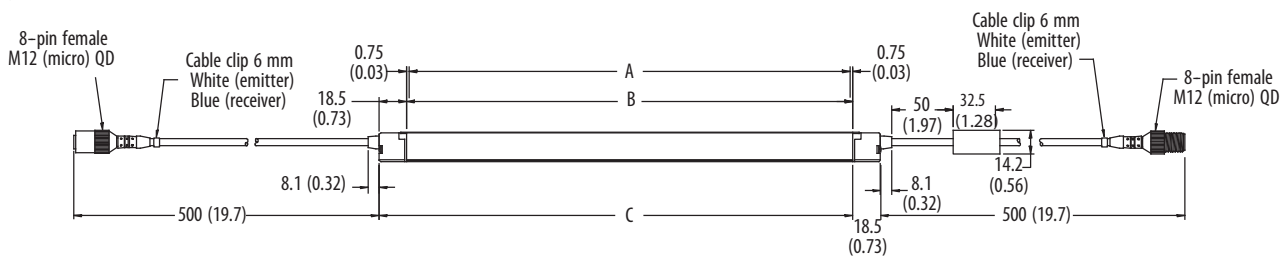
Approximate Dimensions

Figure 4 - Arrays – Standard Models



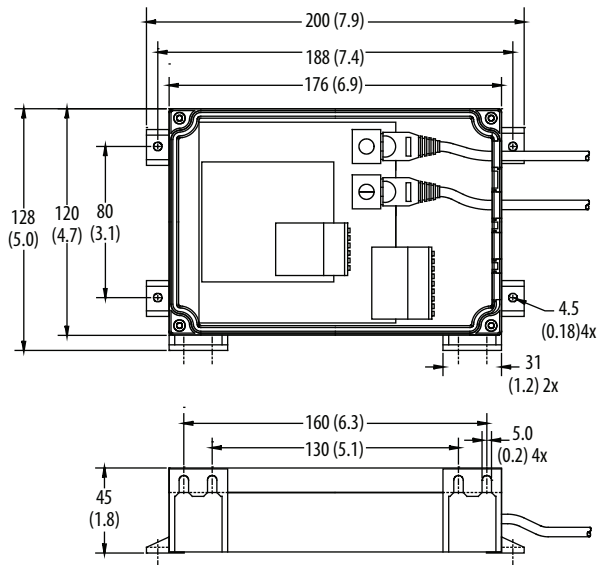
Number of Beams	A: Housing Height [mm (in.)]	C: Sensing Height [mm (in.)]	D: Beam Spacing [mm (in.)]	Cat. No.
12	322 (12.7)	300 (11.8)	25 (0.98)	45MLA-AT0300P25
24	622 (24.5)	600 (23.6)		45MLA-AT0600P25
36	922 (36.3)	900 (35.4)		45MLA-AT0900P25
48	1222 (48.1)	1200 (47.2)		45MLA-AT1200P25
30	322 (12.7)	300 (11.8)	10 (0.39)	45MLA-AT0300P10
60	622 (24.5)	600 (23.6)		45MLA-AT0600P10
90	922 (36.3)	900 (35.4)		45MLA-AT0900P10
120	1222 (48.1)	1200 (47.2)		45MLA-AT1200P10

Figure 5 - Arrays – Cascadable Models



Number of Beams	A: Housing Height [mm (in.)]	C: Sensing Height [mm (in.)]	D: Beam Spacing [mm (in.)]	Cat. No.
12	339 (13.3)	300 (11.8)	25 (0.98)	45MLA-CT0300P25
24	639 (25.2)	600 (24.5)		45MLA-CT0600P25
36	939 (37.0)	900 (35.4)		45MLA-CT0900P25
48	1239 (48.8)	1200 (47.2)		45MLA-CT1200P25
30	339 (13.3)	300 (11.8)	10 (0.39)	45MLA-CT0300P10
60	639 (25.2)	600 (24.5)		45MLA-CT0600P10
90	939 (37.0)	900 (35.4)		45MLA-CT0900P10
120	1239 (48.8)	1200 (47.2)		45MLA-CT1200P10

Figure 6 - Controller



The controller can be mounted either on a DIN rail with the mounting brackets on the back or with four screws through the holes on the tabs that extend from the corners of the housing.



The 45MLA ships as a transmitted beam pair—both the emitter and receiver arrays are in one package. The T in the cat. no. represents the transmitted beam pair. For individual parts, replace the T with an E for emitter or R for receiver, for example, 45MLA-ARO300P10.

Table 10 - Cordsets and Accessories

Description	Cat. No.
Flash mounting kit (two pieces/set)	445L-AF6145
Adjustable 180° bracket kit (two per kit) supplied with each pair ⁽¹⁾	445L-AF6143
180° adjustable flat bracket (two per kit) ⁽¹⁾	445L-AF6149
Cable-light array to controller, 3 m (9.8 ft) patchcord, PVC jacket	445L-AC8RJ3
Cable-light array to controller, 5 m (16.4 ft) patchcord, M12 to RJ45	445L-AC8RJ5
Cable-light array to controller, 8 m (26.2 ft) patchcord, PVC jacket	445L-AC8RJ8
Cascadable array extension patchcord, 1 m (3.3 ft) patchcord (optional)	445L-AC8PC1
Cascadable array extension patchcord, 3 m (9.8 ft) patchcord (optional)	445L-AC8PC3

(1) Two kits required per pair.

45PVA Part Verification Light Array Sensor



Features

Part verification light array sensors include the following features:

- Two-dimensional array scanning technology
- Robust metal enclosure with super slim 13 mm (0.51 in.) profile
- Large highly visible indicator lights
- Optional red fault light indicator to notify operator of incorrect component selection
- DIP switch selectable lighting operation for job lights
- Selectable frequency for crosstalk protection

Specifications

Certifications	c-UL-us Listed and CE Marked for all applicable directives
Shock	500 m/s ² 3 times X, Y, and Z direction
Vibration	10...55 Hz, 1.5 mm amplitude, 2 hours, X, Y, and Z direction
Environmental	
Enclosure Type Rating	NEMA 12, IP62
User Interface	
Indicator LEDs	Green and orange
Electrical	
Operating Voltage	12...24V DC
Current Consumption	155 mA max
Protection Type	Short circuit, reverse polarity
Outputs	
Response Time	94 ms max
Output Type	Selectable NPN or PNP
Output Function	Selectable light or dark operate
Load Current	50 mA max
Mechanical	
Housing Material	Aluminum
Lens Material	Polycarbonate
Connection Type	Recommended 4-pin micro (M12) QD on a 150 mm (6 in.) pigtail

Available Models

Transmitted beam and retroflective/diffuse

Optical and Response Time Characteristics

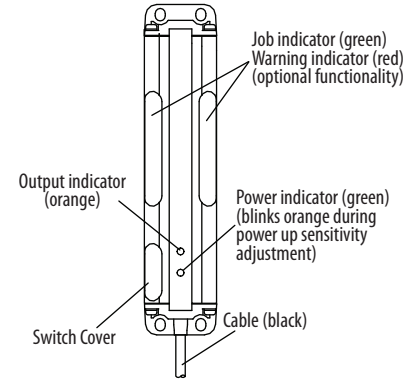
Description	Cat. No.					
	45PVA-1LEB1-F4	45PVA-1LEB2-F4	45PVA-1LEB3-F4	45PVA-1LEB4-F4	45PVA-2LEA1-F4	45PVA-2LEA2-F4
Number of optical axes	5	10	13	16	4	8
Light source	Infrared 880 nm				Visible red 640 nm	
Current consumption	130 mA max	140 mA max	150 mA max	155 mA max	68 mA max	78 mA max
Response time	35 ms (light operate), 25 ms (dark operate)	68 ms (light operate), 42 ms (dark operate)	70 ms (light operate), 42 ms (dark operate)	94 ms (light operate), 58 ms (dark operate)	120 ms	
Response time (crosstalk protection)	45 ms max	84 ms max	88 ms max	116 ms max	—	

Product Selection

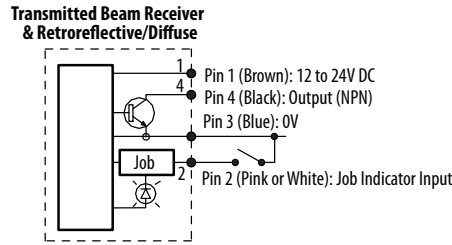
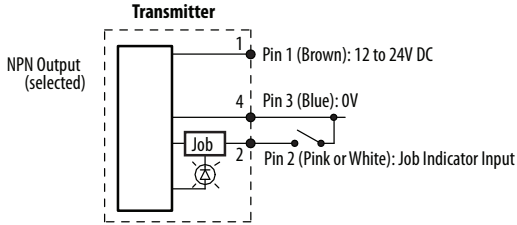
Sensing Mode	Light Source	Operating Temperature	Sensing Distance	Sensing Height [mm (in.)]	Housing Height [mm (in.)]	Output Function	Output Type	Cat. No.
Transmitted beam area array	Infrared 880 nm	-0...+50 °C (32...122 °F)	0.48...2 m (1.6...6.5 ft)	100 (3.9)	140 (5.5)	Selectable light or dark operate	Selectable NPN or PNP	45PVA-1LEB1-F4
				225 (8.9)	265 (10.4)			45PVA-1LEB2-F4
				300 (11.8)	340 (13.4)			45PVA-1LEB3-F4
				375 (14.7)	415 (16.3)			45PVA-1LEB4-F4
Retroflective/ Diffuse (selectable)	Visible red 640 nm	-10...+50 °C (14...122 °F)	400 mm (15.7 in.)	100 (3.9)	140 (5.5)			45PVA-2LEA1-F4
				225 (8.9)	265 (10.4)			45PVA-2LEA2-F4
				Recommended standard 4-pin DC micro (M12) quick-disconnect cordset				889D-F4AC-2

Table 11 - User Interface Panel

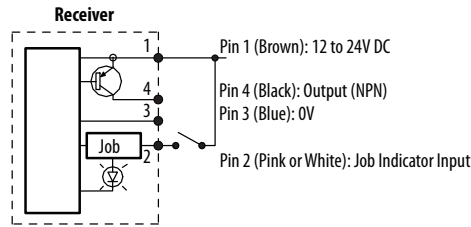
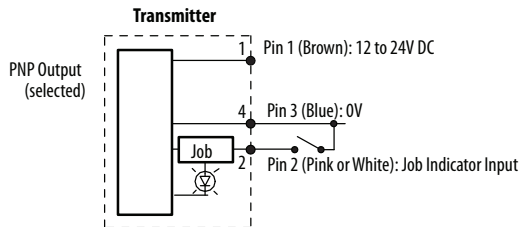
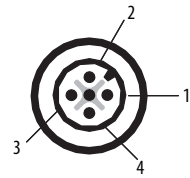
LED Color	State	Status
Green	Flashing	Margin indication (retroreflective/diffuse models only)
	Off	Sensor is off
	On	Sensor is on
Orange	Off	Output is de-energized
	On	Output is energized



Wiring Diagrams



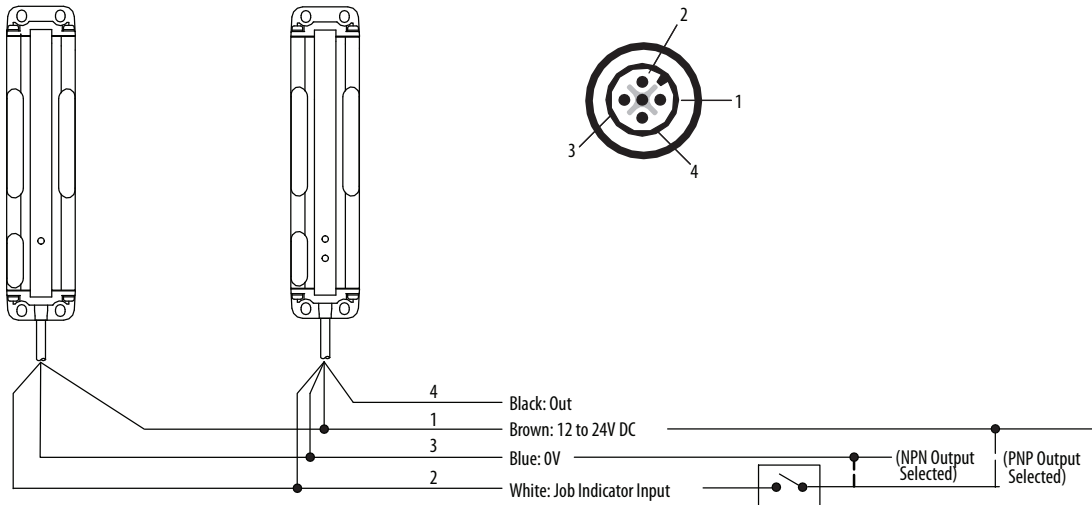
Face View Male Receptacle (Sensor) DC Micro



Transmitter (not required for Retroreflective/Diffuse models)

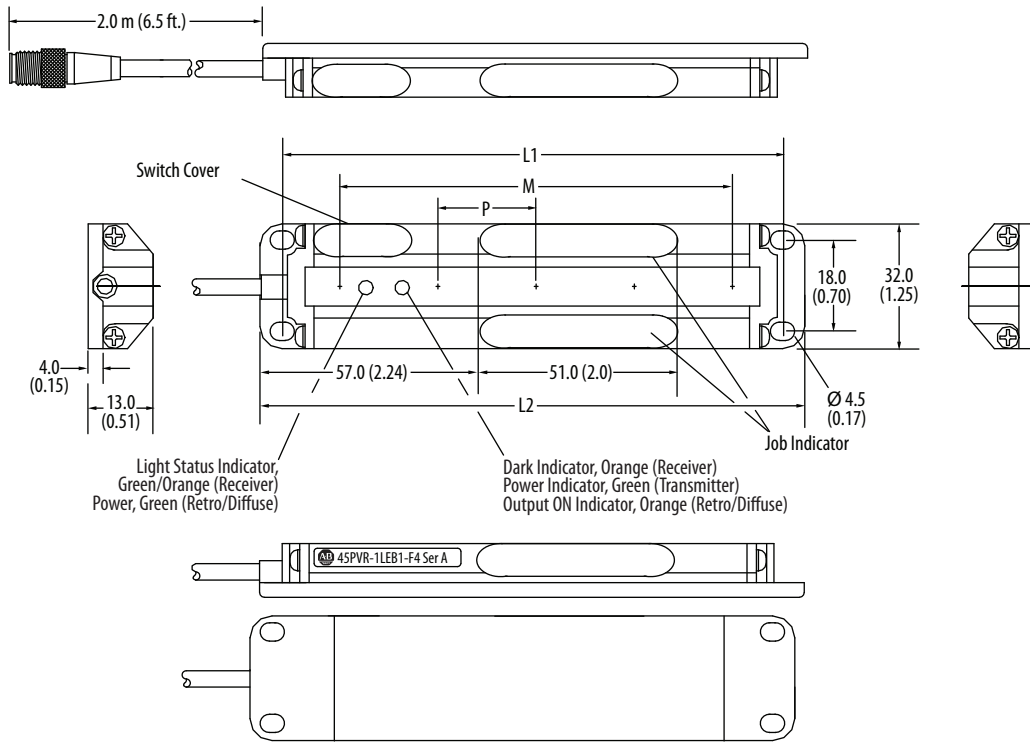
Transmitted Beam Receiver & Retroreflective/Diffuse

Face View Male Receptacle (Sensor) DC Micro



Approximate Dimensions

Figure 7 - 45PVA Sensor [mm (n.)]



Number of Optical Axes	M	L1	L2	P	Cat. No.
5	100 (3.9)	130 (5.1)	140 (5.5)	25 (1.0)	45PVA-1LEB1-F4
10	225 (8.9)	255 (10.0)	265 (10.4)		45PVA-1LEB2-F4
13	300 (11.8)	330 (13.0)	340 (13.4)		45PVA-1LEB3-F4
16	375 (14.8)	405 (16.0)	415 (16.3)		45PVA-1LEB4-F4
4	87 (3.4)	130 (5.1)	140 (5.5)	29 (1.1)	45PVA-2LEA1-F4
8	203 (8.0)	255 (10.0)	265 (10.4)		45PVA-2LEA2-F4

Accessories

Dimensions shown in mm (in.)

Figure 8 - Mounting Bracket – #60-2773 (Two brackets) (a)

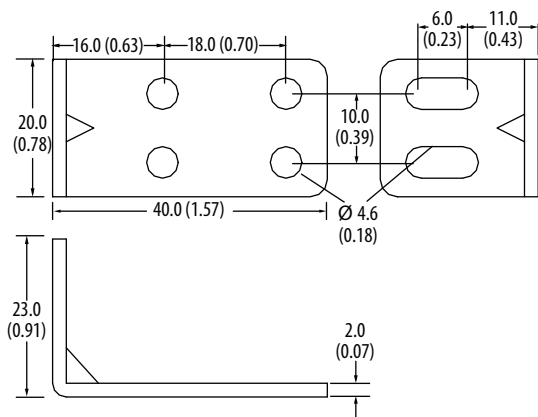
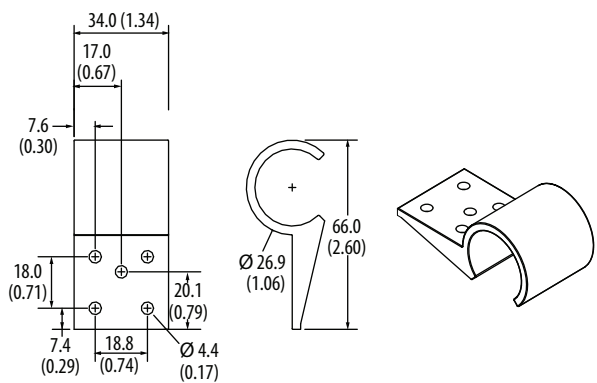


Figure 9 - Optional Plastic Mounting Bracket – #60-2779 (Two brackets) (b)



(a) Included with 45PVA sensor.

(b) Not included with 45PVA sensor.

Figure 10 - Optional Metal Mounting Bracket – #60-2772 (a) (Two brackets)

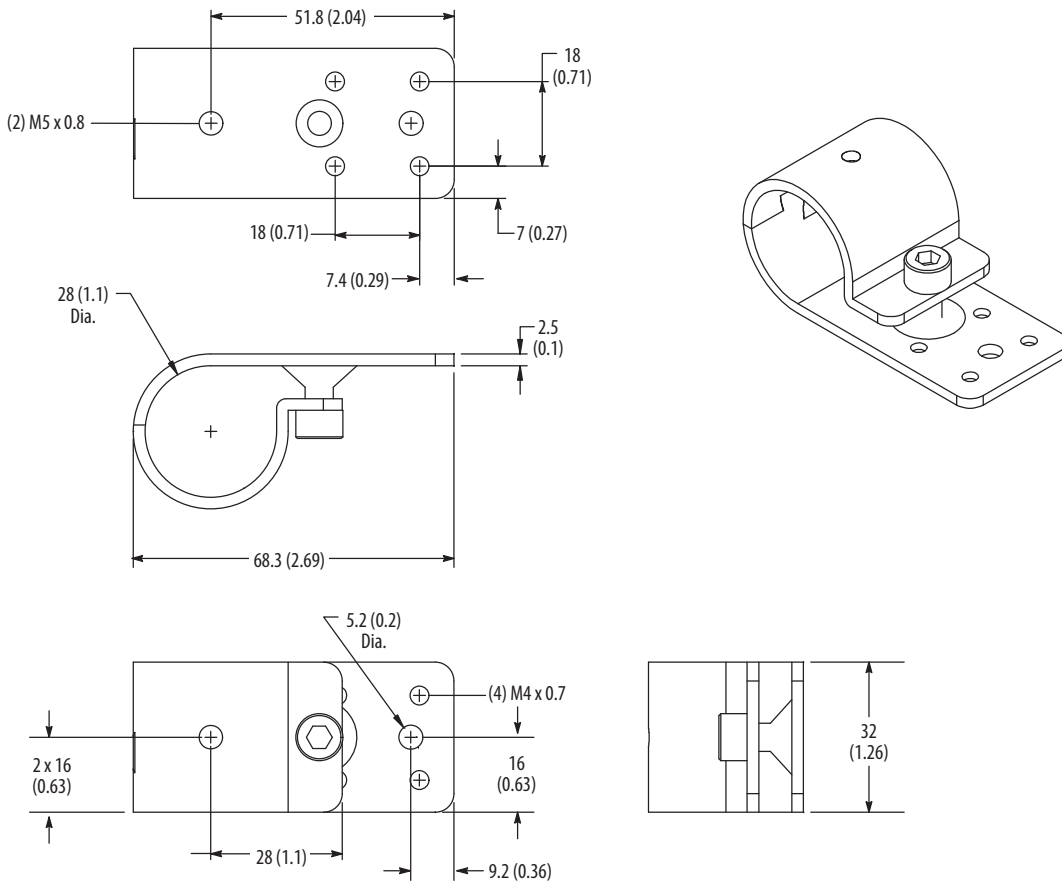
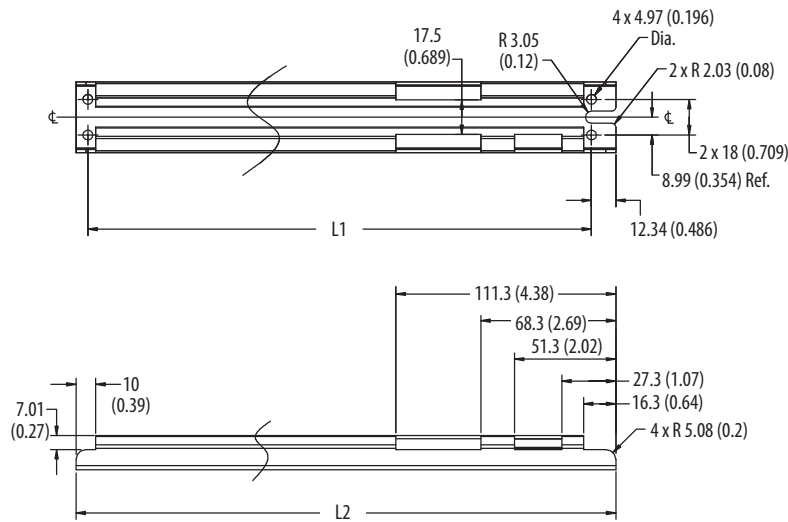


Figure 11 - Optional Protective Metal Bracket – #60-277x-1 (Two Brackets), #60-278x-1 (One Bracket)



L1 [mm (in.)]	L2 [mm (in.)]	Material	Cat. No. (1) (1 bracket)	Cat. No. (2) (2 brackets)
130 (5.11)	148.36 (5.84)	Galvanized Steel	60-2785-1	60-2775-1
254 (10.03)	273.35 (10.76)		60-2786-1	60-2776-1
330 (12.99)	348.36 (13.71)		—	60-2777-1
405 (15.94)	423.34 (16.66)		—	60-2778-1

(1) For retro/diffuse models.
 (2) For transmitted beam models.

(a) Not included with 45PVA sensor.

Table 12 - Reflective Tape

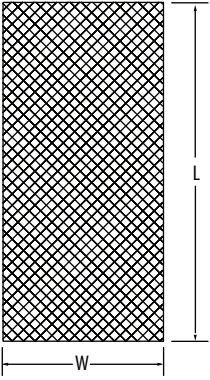
Description	Width [mm (in.)]	Length [mm (in.)]	Reflective Tape Cat. No.	Included with Cat. No.
	50 (2)	120 (4.7)	—	45PVA-2LEA1-F4
	50 (2)	245 (9.6)	—	45PVA-2LEA2-F4
	25 (1)	2540 (100)	92-100	—

Table 13 - Cordsets and Accessories

Description	Cat. No.
DC micro QD cordset, straight, 4-pin, 2 m (6.5 ft)	889D-F4AC-2
DC micro QD cordset, straight, 4-pin, 0.3 m (1 ft)	889D-F4AC-5
L-shaped mounting bracket	60-2773
Plastic bracket	60-2779
Metal bracket	60-2772
Replacement Reflective Tape Roll	92-100
Protective mounting bracket for 45PVA-1LEB1-F4	60-2775-1
Protective mounting bracket for 45PVA-1LEB2-F4	60-2776-1
Protective mounting bracket for 45PVA-1LEB3-F4	60-2777-1
Protective mounting bracket for 45PVA-1LEB4-F4	60-2778-1
Protective mounting bracket for 45PVA-2LEA1-F4	60-2785-1

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
45AST Area Array Installation Instructions, publication 45AST-IN001	Provides information required to install a 45AST sensor.
45DLA Discrete Light Array Installation Instructions, publication 45DLA-IN001	Provides information required to install a 45DLA sensor.
45MLA Measuring Light Array Sensors Installation Instructions, publication 45MLA-IN001	Provides information required to install a 45MLA sensor.
45PVA Part Verification Array Installation Instructions, publication 45PVA-IN001	Provides information required to install a 45PVA sensor.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications .	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at rok.auto/literature.

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Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc





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