PVL Parts Verification Array

Features

Retroreflective Array Sensor Error Proofing and Light-Guided Assembly



- Rugged metal frame with 225 mm (8.9 in) or 500 mm (19.7 in) sensing length; 1.5 m (4.9 ft) sensing range using included retroreflective tape (up to 6 m (20 ft) range when used with multiple BRT-84X84A retroreflectors)
- Highly visible green pick arrow
- Red mis-pick arrow
- Flexible mounting options; rugged steel mounting brackets
- Fast response time—excellent for part detection applications

WARNING:

- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

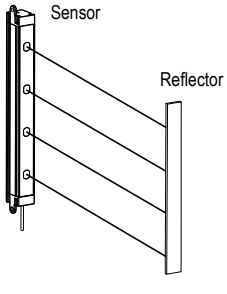
Models

Model Number	Description	Cable	Output
PVL225P	225 mm (8.9 in) length, with up to 1.5 m (4.9 ft) separation between sensor and retroreflective tape (included)	2 m (6.5 ft) unterminated 4-wire PVC-jacketed cable	PNP, Normally Open
PVL225N			NPN, Normally Open
PVL225PQ		2 m (6.5 ft) PVC-jacketed cable with a 5-pin M12 male quick-disconnect connector	PNP, Normally Open
PVL225NQ			NPN, Normally Open
PVL500P	500 mm (19.7 in) length with up to 1.5 m (4.9 ft) separation between sensor and retroreflective tape (included)	2 m (6.5 ft) unterminated 4-wire PVC-jacketed cable	PNP, Normally Open
PVL500N			NPN, Normally Open
PVL500PQ		2 m (6.5 ft) PVC-jacketed cable with a 5-pin M12 male quick-disconnect connector	PNP, Normally Open
PVL500NQ			NPN, Normally Open

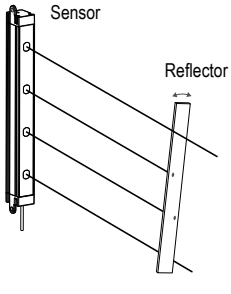
Installation

Multiple sensors located farther than the sensor's maximum range from one another are unlikely to cause crosstalk problems. However, when multiple sensors are mounted in a confined area, take care to avoid crosstalk between them. Verify the sensor's beams fall in the center of the reflector.

Correct Alignment



Incorrect Alignment



Original Instructions
25-Sep-25

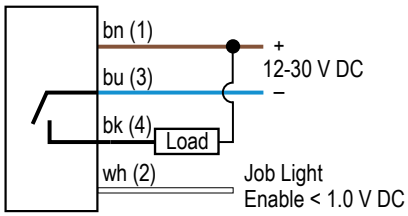
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165037
p/n: 165037 Rev. H

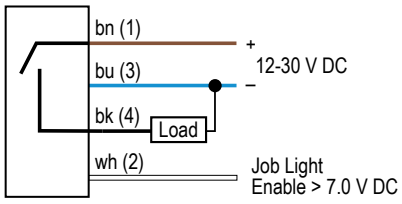
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Wiring

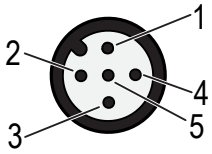
NPN wiring



PNP wiring

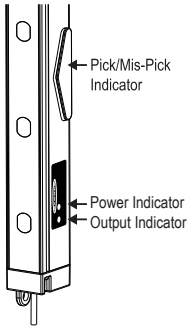


5-pin male M12 quick disconnect connector



Pin 5 (center) is not used.

Status Indicators/Troubleshooting



Target*	Job Enable (white wire)	Pick/Mis-pick Indicator	Power Indicator	Output Indicator	Output
Not sensed	inactive	off	green	off	inactive
Sensed	inactive	flashing red	green	amber	active
Not sensed	active	green	green	off	inactive
Sensed	active	green	green	amber	active

*Target not sensed = All beams are unbroken.

Target sensed = One or more beams are broken.

Specifications

Supply Voltage

12 V DC to 30 V DC

Supply Current

PVL225:

< 140 mA max current at 12 V DC (exclusive of load)

< 70 mA max current at 30 V DC (exclusive of load)

PVL500:

< 220 mA max current at 12 V DC (exclusive of load)

< 100 mA max current at 30 V DC (exclusive of load)

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Output Rating

Maximum Load: 150 mA

ON-state saturation voltage:

PNP: < 2 V DC at 10 mA; < 2.5 V DC at 150 mA

NPN: < 1.5 V DC at 10 mA; < 2.0 V DC at 150 mA

OFF-state leakage current: <10 µA at 30 V DC

Indicators

Job (pick) indicator: green

Mispick indicator: flashing red

Green LED: Power ON/OFF

Amber LED: Output ON/OFF

Output Response Time

Less than 2 milliseconds ON and OFF

Beam Spacing

70 mm

PVL225: 4 beams

PVL500: 8 beams

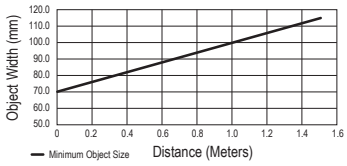
Sensing Range

1.5 m (4.9 ft) with retroreflective tape

Connections

2 m (6.5 ft) unterminated 4-wire PVC-jacketed cable, or 2 m (6.5 ft) PVC-jacketed cable with a 5-pin M12 male quick-disconnect connector

Minimum Object Detection Size



Environmental Rating

IP50

Operating Conditions

0 °C to +50 °C (+32 °F to +122 °F)

90% at 50 °C maximum relative humidity (non-condensing)

Storage: –40 °C to +70 °C (–40 °F to +158 °F)

Construction

Aluminum anodized housing; polycarbonate translucent dome

Vibration and Mechanical Shock

All models meet Mil. Std. 202F requirements method 201A (vibration: 10 Hz to 60 Hz max., double amplitude 0.06 in. maximum acceleration 10G). Also meets IEC 947-5-2; 30G 11 ms duration, half sine wave.

Certifications

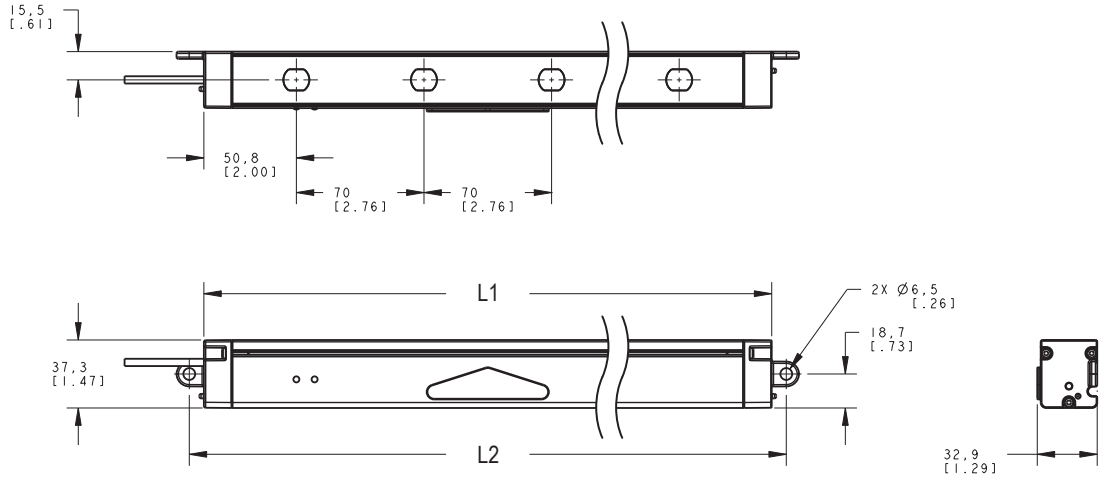
CE

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Dimensions

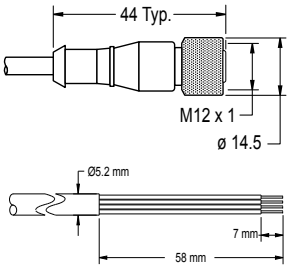
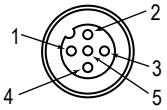
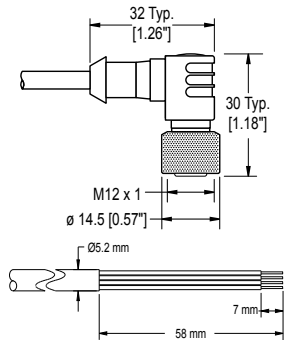
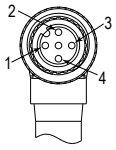
All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.



Model	L1	L2
PVL225	311.5 mm (12.26 in)	327.5 mm (12.89 in)
PVL500	592 mm (23.31 in)	608 mm (23.94 in)

Accessories

Cordsets

4-Pin Single-Ended M12 Female Cordsets					
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**	
MQDC-406	2 m (6.56 ft)	Straight			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Not used
MQDC-415	5 m (16.4 ft)				
MQDC-430	9 m (29.5 ft)				
MQDC-450	15 m (49.2 ft)				
MQDC-406RA	2 m (6.56 ft)	Right-Angle			
MQDC-415RA	5 m (16.4 ft)				
MQDC-430RA	9 m (29.5 ft)				
MQDC-450RA	15 m (49.2 ft)				

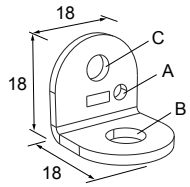
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Mounting Brackets

SMBPVL1

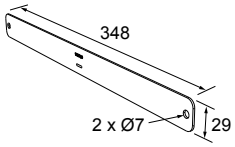
- Right-angle bracket for mounting the pick-to-light array
- 7 mm mounting hole
- 14 gauge cold rolled steel

A = ø 3, B = ø 7, C = ø 4.8



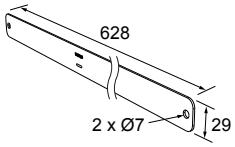
SMBPVL2-225

- Flat bracket for mounting reflector inside bin
- 7 mm mounting hole
- 14 gauge cold rolled steel
- Includes retroreflective tape



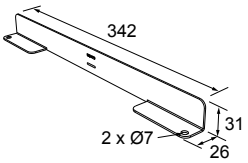
SMBPVL2-500

- Flat bracket for mounting reflector inside bin
- 7 mm mounting hole
- 14 gauge cold rolled steel
- Includes retroreflective tape



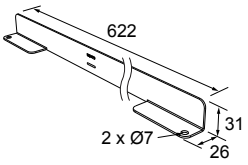
SMBPVL3-225

- Right-angle bracket for mounting reflector outside bin
- 7 mm mounting hole
- 14 gauge cold rolled steel
- Includes retroreflective tape



SMBPVL3-500

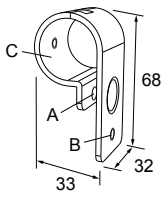
- Right-angle bracket for mounting reflector outside bin
- 7 mm mounting hole
- 14 gauge cold rolled steel
- Includes retroreflective tape



SMBPVL4

- 28 mm tubular mount bracket for mounting outside bin
- Clearance for M6 (1/4 in) hardware
- Painted cold rolled steel

A = ø M6 × 1, B = ø M6 × 1, C = ø 28

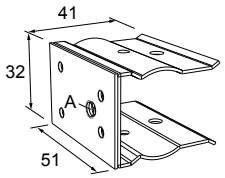


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SMBPVL5

- 28 mm tubular mount bracket for mounting inside bin
- Clearance for M6 (1/4 in) hardware
- Painted cold rolled steel

A = ø M6 × 1 ISO 6H



Retroreflectors

Model	Reflectivity Factor	Range	Size
Replacement Tape BRT-THG-1-100	0.7	1.5 m (4.9 ft)	25 mm (1 in) wide 2.5 m (8.2 ft) long
Long Range Reflectors BRT-84X84A	2	6 m (19.7 ft)	84 x 84 mm

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