



PD45 Series PicoDot®

Polarized Retroreflective and Convergent Laser Sensors



CE NOTE: CE certification applies to all models except PD45V..C300 Series

Features

- Compact and lightweight; ideal for use on robotic end effectors
- Class 2 laser diode light source.
- Convergent beam models have precise, high-energy sensing spot at focus, available in four focal lengths: 50 mm (2"), 100 mm (4"), 200 mm (8"), and 300 mm (12").
- Retroreflective models have precise, narrow beam; excellent for sensing the presence of tiny parts at close range, small parts at medium ranges and for accurate sensing over long distances.
- Fast, 0.2 millisecond sensing response for high-speed sensing or counting.
- 10 to 30V dc operation; choice of NPN (sinking) or PNP (sourcing) complementary solid state output.
- Choose models with 2 m (6.5') or 9 m (30') unterminated cable, or with 150 mm (6") Euro-style pigtail quick-disconnect (QD) connector

Excellent for applications where high sensing power and small beam size are important. Operates over sensing ranges typically accomplished only by conventional opposed-mode photoelectrics; uses a special filter to polarize the emitted light, filtering out unwanted reflections from shiny objects.



Visible Red; Class 2 laser; 650 nm

Retroreflective-Mode Models

Models	Range**	Cable*	Supply Voltage	Output Type	Excess Gain
					Performance based on BRT-36X40BM retro target
PD45VN6LLP	0.2 to 10.6 m (8" to 35')	2 m (6.5') cable	10-30V dc	NPN	
PD45VN6LLPQ		5-pin QD 150 mm (6") pigtail			
PD45VP6LLP		2 m (6.5') cable		PNP	
PD45VP6LLPQ		5-pin QD 150 mm (6") pigtail			

*9 m (30') cables are available by adding the suffix "W/30" to the model number of any cabled sensor (e.g., PD45VN6LLP W/30). Models with QD connectors require an optional mating cable; see page 6.

**Tested using a BRT-36x40BM retro target (included with each sensor). Actual range depends on the efficiency and size of the retroreflective target used. Some targets have produced ranges up to 39.6 m (130'); see page 8.

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Excels at sensing small parts and profiles and uses fixed-field technology to ignore objects beyond the maximum sensing distance.



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Convergent-Mode Models

Models	Focus	Cable*	Supply Voltage	Output Type	Excess Gain	Beam Width
					Performance based on 90% white test card	
PD45VN6C50	50 mm (2.0")	2 m (6.5') cable	10-30V dc	NPN		
PD45VN6C50Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VP6C50		2 m (6.5') cable		PNP		
PD45VP6C50Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VN6C100	102 mm (4.0")	2 m (6.5') cable	10-30V dc	NPN		
PD45VN6C100Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VP6C100		2 m (6.5') cable		PNP		
PD45VP6C100Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VN6C200	203 mm (8.0")	2 m (6.5') cable	10-30V dc	NPN		
PD45VN6C200Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VP6C200		2 m (6.5') cable		PNP		
PD45VP6C200Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VN6C300	305 mm (12.0")	2 m (6.5') cable	10-30V dc	NPN		
PD45VN6C300Q		5-pin Euro-style QD 150 mm (6") pigtail				
PD45VP6C300		2 m (6.5') cable		PNP		
PD45VP6C300Q		5-pin Euro-style QD 150 mm (6") pigtail				

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Specifications

Sensing Beam	Visible red Class 2 laser, 650 nm
Supply Voltage	10 to 30V dc (10% max ripple) at less than 20 mA, exclusive of load
Beam Size at Aperture	3.75 mm x 1.85 mm (0.15" x 0.07") (Retroreflective Models)
Beam Divergence	Approximately 1 milliradian (Retroreflective Models)
Supply Voltage	10 to 30V dc (10% maximum ripple) at less than 20 milliamps, exclusive of load
Laser Classification	Class 2 safety (CDRH (FDA) 1040.10 and IEC 60875-1)
Supply Protection Circuitry	Protected against reverse polarity, over voltage, and transient voltages
Delay at Power Up	< 1 second
Output Configuration	SPDT (complementary) solid-state switch; choose NPN (current sinking) or PNP (current sourcing) models Light operate: Normally-open output conducts when the sensor sees its own modulated light Dark operate: Normally-closed output conducts when the sensor sees dark
Output Rating	150 mA maximum (each output) OFF-state leakage current: < 1 microamp at 30V dc ON-state saturation voltage: < 0.3V at 10 mA dc; < 0.8V at 150 mA dc
Output Protection	Protected against continuous overload or short-circuit of outputs; Overload trip point \geq 220 milliamps
Output Response Time	0.2 milliseconds (200 microseconds) ON and OFF
Repeatability	50 microseconds
Adjustments	12-turn slotted brass Gain (sensitivity) adjustment potentiometer (clutched at both ends of travel)
Extinguishing Wire	Gray wire held "low" for laser operation; "high" to turn laser OFF; Low \leq 1.0V dc; High \geq V_{supply} -4.0V dc (< 30V dc) or disconnect wire; 100 ms delay upon enable
Indicators	Two LEDs: Green and Yellow Green glowing steadily: power to sensor is ON Yellow glowing steadily: light is sensed; normally open output is conducting Green blinking: output overloaded Yellow blinking: marginal excess gain
Construction	Housings are heat-resistant ABS alloy, UL94-VO rated; acrylic lens cover
Environmental Rating	NEMA 3; IEC IP54
Connections	2 m (6.5') or 9 m (30') attached cable, or 5-pin Euro-style 150 mm (6") pigtail quick-disconnect fitting; mating cables for QD models are ordered separately (see page 6).
Operating Conditions	Temperature: -10° to +45°C (+14° to +113°F) Maximum relative humidity: 90% at 50°C (non-condensing)
Weight	Sensor only: 22g (0.8 oz) Sensor plus 2 m cable: 62g (2.2 oz)
Application Notes	False pulse may occur < 1 second after power-up
Certifications (all models except PD45V..C300 Series)	

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Dimensions

