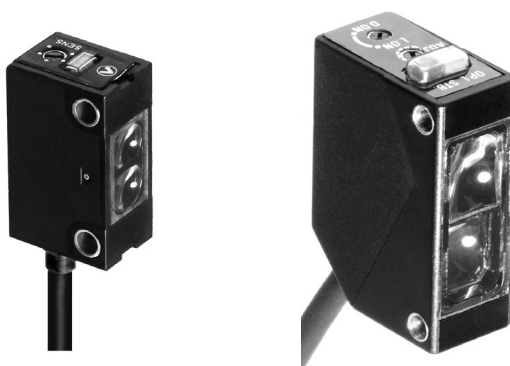




Description

The 42BA photoelectric sensor offers high performance background suppression performance at sensing ranges up to 200mm (8in). This type of sensing capability is desirable in applications where a shiny background is present or where there is no easy access for using a reflector.

The 42BA photoelectric sensor uses a triangulation method to electronically adjust the sensing angle, thereby, ensuring reliable detection of the target while ignoring the background. Using the sensitivity adjustment on the top cover, the desired sensing range—up to 20%—can be dialed in to meet the specific application.

The 42BA is available in four sensing ranges. For applications where an 18mm package and/or where a 1200psi washdown rating is required, the RightSight™ background suppression sensor is recommended. These sensors offer a fixed 50mm (2in) and 100mm (4in) sensing range. Long range background suppression solutions (1m and 2m) may be solved with the 42BT and 42BC photoelectric sensor also.

General Specifications

Unit Protection	Output short circuit, reverse polarity, false pulse, transient noise
Supply Voltage	12–24V DC
Current Consumption	33mA maximum
Output Type	NPN or PNP by model
Output Mode	Light/dark operate selectable
Output Rating	100mA @ 24V DC
Response Time	350µs
Housing Material	Polyarylate (30mm and 50mm models); ABS resin (100mm and 200mm models)
Lens Material	Polyarylate (30mm and 50mm models); Polysulfone (100mm and 200mm models)
LED Indicators	See User Interface on page 1–126
Connection Types	2m 500V cable
Supplied Accessories	#60–2636 mounting bracket
Optional Accessories	Cordsets, mounting brackets (see Section 5)
Operating Environment	NEMA 1, 4, 6P, 12, 13: IP67 (IEC529)
Vibration	10–55Hz, 1mm amplitude, Meets or exceeds IEC 60947–5–2
Shock	30g with 1ms pulse duration, Meets or exceeds IEC 60947–5–2
Operating Temperature	–25° C to +55° C (–13° F to +131° F)
Relative Humidity	5...85%
Approvals	UL listed, CSA certified, and CE marked for all applicable directives

Features

- Short-range background suppression diffuse sensing mode
- Adjustable range settings
- Compact housing style
- Highly visible LED indicators
- NPN or PNP output models
- Diagnostic output
- Short-circuit protected outputs
- 2m cable connection

General Information

Wiring Diagrams page 1–126
Dimensions page 1–126

Sensing Modes

Background Suppression page 1–127

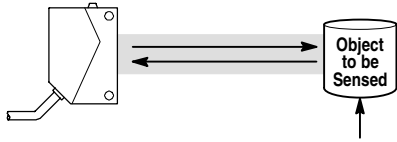
Accessories

Mounting Assemblies page 1–301

PHOTOSWITCH® Photoelectric Sensors

42BA Compact Background Suppression

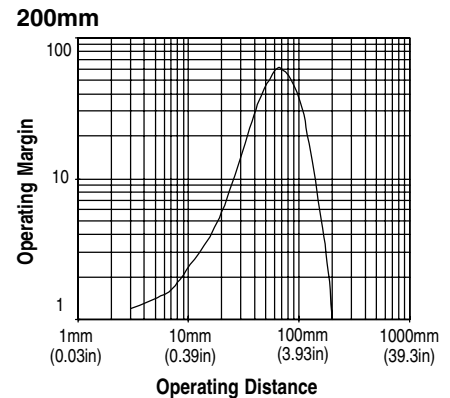
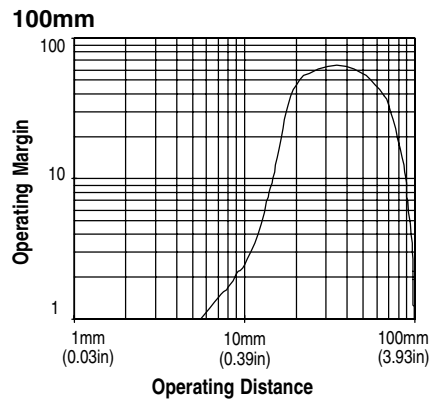
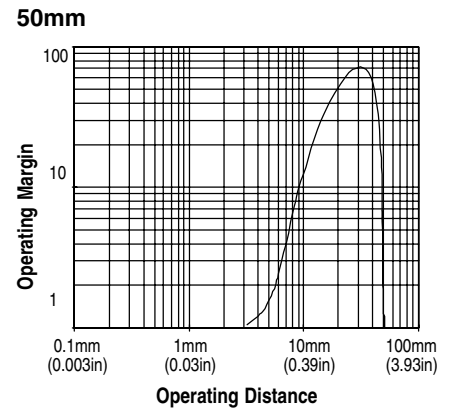
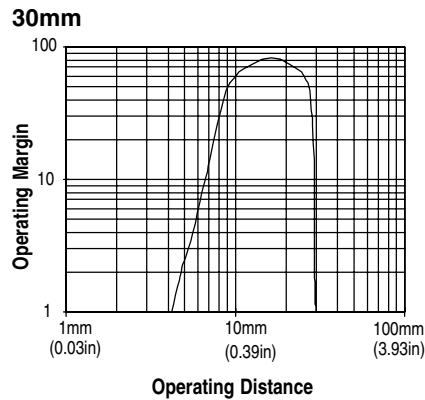
Miniature Rectangular Style



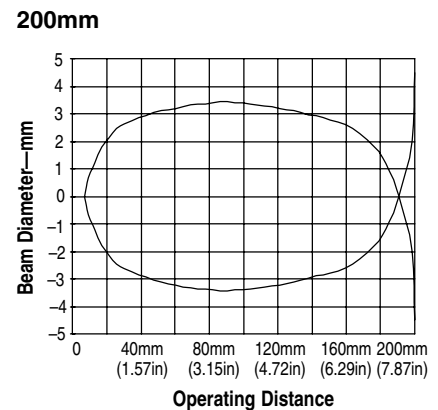
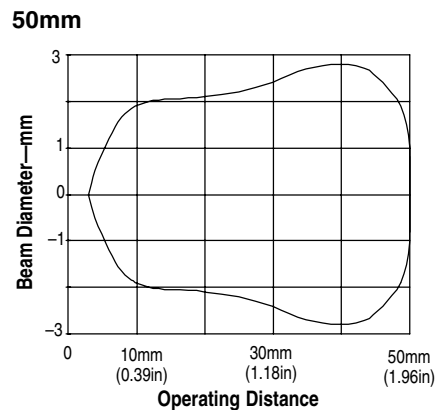
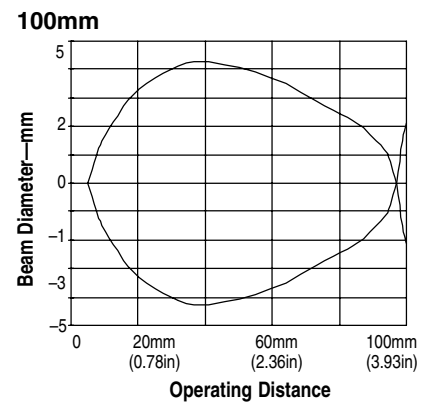
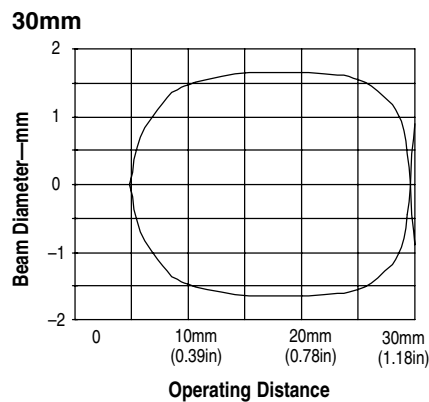
Specifications

Field of View	See Selection Guide
Emitter LED	Infrared 880nm or Visible red 700nm (See Selection Guide)

Typical Response Curves



Beam Patterns



PHOTOSWITCH® Photoelectric Sensors
42BA Compact Background Suppression
Miniature Rectangular Style

Selection Guide

Operating Voltage Supply Current	Sensing Distance	Field of View	Output Energized	LED Source	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
12–24V DC ±10% 27mA	10mm (0.39in) to 30mm (1.2in)	9°	Light/Dark Selectable	Visible red 700nm	NPN Output: 100mA, Stability: 50mA 350µs	0.5mA	2m 500V cable	42BA–S2LNAA–A2
12–24V DC ±10% 30mA					PNP Output: 100mA, 350µs			42BA–S2LPAA–A2
12–24V DC ±10% 27mA	10mm (0.39in) to 50mm (2.0in)				NPN Output: 100mA, Stability: 50mA 350µs			42BA–S2LNAC–A2
12–24V DC ±10% 30mA					PNP Output: 100mA, 350µs			42BA–S2LPAC–A2
	10mm (0.39in) to 100mm (3.9in)				NPN Output: 100mA Stability: 50mA 350µs			42BA–S2LNAE–A2
12–24V DC ±10% 33mA					PNP Output: 100mA 350µs			42BA–S2LPAE–A2
12–24V DC ±10% 30mA	10mm (0.39in) to 200mm (7.9in)	5°		Infrared 880nm	NPN Output: 100mA Stability: 50mA 350µs			42BA–S1LNAG–A2
12–24V DC ±10% 33mA					PNP Output: 100mA 350µs			42BA–S1LPAG–A2

Operating Distance with White Paper

Min Sensitivity	Max Sensitivity	Catalog Number
12mm–25mm (0.47in–0.98in)	2mm–30mm (0.078in–1.18in)	42BA–S2LNAA–A2 42BA–S2LPAA–A2
9.5mm–39mm (0.37in–1.54in)	2.7mm–50mm (0.106in–1.97in)	42BA–S2LNAC–A2 42BA–S2LPAC–A2
17mm–75mm (0.67in–2.95in)	6mm–100mm (0.24in–3.94in)	42BA–S2LNAE–A2 42BA–S2LPAE–A2
25mm–160mm (0.98in–6.29in)	1mm–200mm (0.039in–7.87in)	42BA–S1LNAG–A2 42BA–S1LPAG–A2

Detection Direction

Due to the detection method, the sensor must be positioned such that the target passes in the horizontal direction illustrated.

Motion in the vertical direction cannot be reliably detected.

