



Description

The 42BC photoelectric sensor offers high performance background suppression performance at sensing ranges up to 2m (6.6ft). This type of sensing capability is desirable in applications where standard transmitted beam or retroreflective sensing is not practical due to no easy access to both sides of the target or when economics is a major factor.

The 42BC photoelectric sensor uses a triangulation method to mechanically 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 can be dialed in to meet the specific application.

The 42BC is available in either a 1m (3.3ft) or 2m (6.6ft) sensing range. For applications where the sensing distances are much shorter use of the RightSight background suppression sensor is recommended. These sensors offer a fixed 50mm (2in) and 100mm (4in) sensing range. Similar long range sensing distances may be solved with the 42BT photoelectric sensor also. This sensor provides a smaller package style for space critical installations.

General Specifications

Unit Protection	Output short circuit (SS version only), reverse polarity, false pulse, transient noise
Supply voltage	12–24V DC
Current Consumption	30mA maximum
Output Type	NPN and PNP (DC version) SPST N.O. relay (AC version)
Output Mode	Light/dark operate selectable
Output Rating	100mA@24V DC 3A@240V AC
Response Time	20ms maximum (DC version) 30ms maximum (AC version)
Housing Material	Polycarbonate
Lens Material	Acrylic
LED Indicators	See User Interface on page 1–130
Connection Types	Screw terminal, 16 AWG (1.3mm ²)
Supplied Accessories	Right angle mounting bracket
Optional Accessories	Cordsets, mounting brackets—see Section 5
Operating Environment	NEMA 1, 12, 13 IP65 (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

- Long range background suppression diffuse sensing mode
- Adjustable range settings
- Slim housing style
- Highly visible LED Indicators
- Screw terminal connections
- Both NPN and PNP outputs (DC)
- SPST relay output (AC)
- Short-circuit protected outputs

General Information

- Wiring Diagrams page 1–130
- Dimensions page 1–130

Sensing Modes

- Background Suppression page 1–131

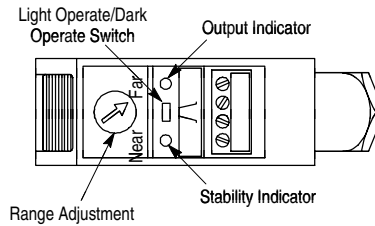
Accessories

- Quick-Disconnect Cables page 5–1
- Mounting Assemblies page 1–301
- Replacement Cover page 1–305

PHOTOSWITCH® Photoelectric Sensors
42BC Long Range Background Suppression

User Interface Panel

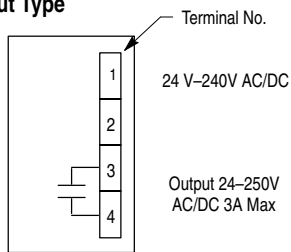
Label	Color	State	Status
Margin	Green	OFF	0.8>margin>1.2
		ON	0.8<margin<1.2
Output	Red	OFF	Output not activated
		ON	Output activated



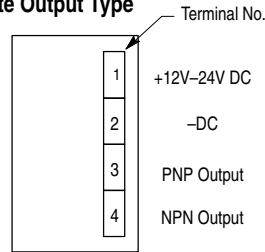
Wiring Diagrams

Terminal Version

Relay Output Type

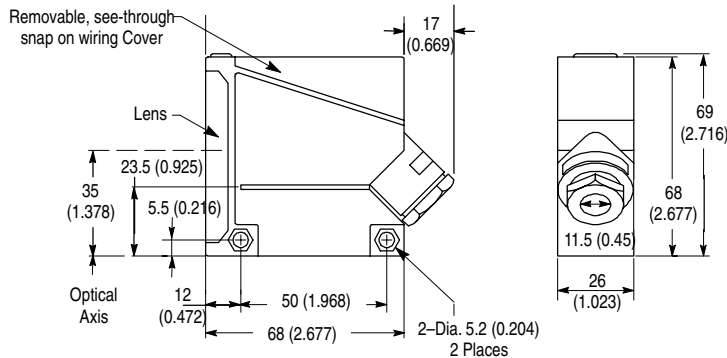


Solid State Output Type



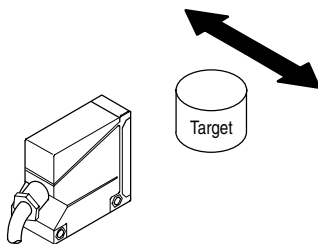
Note: Details regarding connection of Allen-Bradley Bulletin 42BC photoelectric sensors to Allen-Bradley Programmable Controllers can be found in publication 42-2.0.

Dimensions—mm (inches)



Detection Direction

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



Motion in up/down direction cannot be detected.

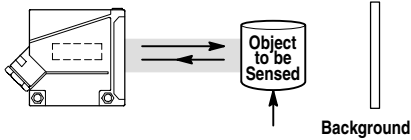
Minimum Sensing Distances

Near Setting

2.5% black 8cm (3.15in) at 2X margin
 100% white 3cm (1.18in) at 2X margin

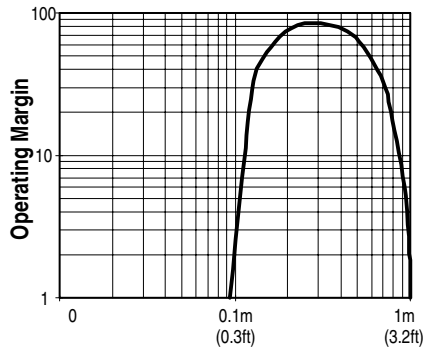
Far Setting

2.5% black 20cm (7.9in) at 2X margin
 100% white 4cm (1.57in) at 2X margin



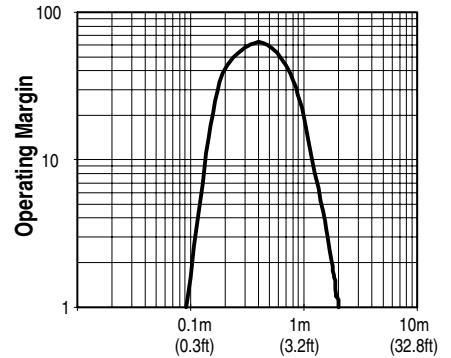
Typical Response Curves

1m Background Suppression



Operating Distance

2m Background Suppression



Operating Distance

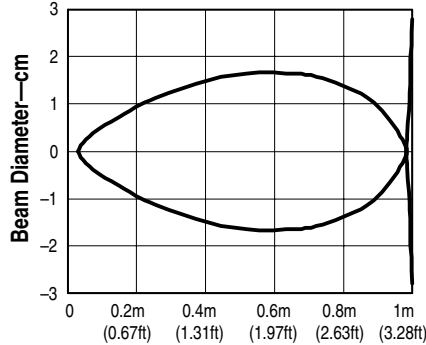
Specifications

Field of View	3.5°
Minimum Sensing Distance	30mm (1.2in)
Emitter LED	Infrared 880nm

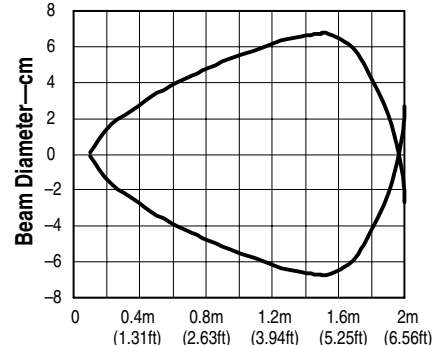
QD Cordsets and Accessories

DC Micro QD Cordset, Straight, 4-pin, 2m	889D-F4AC-2
AC Micro QD Cordset, Straight, 4-pin, 2m	889R-F4AEA-2
Pico QD Cordset, Straight, 4-pin, 2m	889P-F4AB-2
Other Cordsets Available	5-1, 5-44, 5-52
Mounting Assemblies	1-301

Beam Patterns



Operating Distance



Operating Distance

Selection Guide

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
12-24V DC ±10% 30mA	1m (3.3ft)	Light/Dark Selectable	NPN/PNP Selectable 100mA 20ms	0.5mA	Screw terminals accepts up to (2) 16AWG (1.3mm sq.) conductors	42BC-B1LBAL-T4
	2m (6.6ft)					42BC-B1LBAN-T4
24-240V AC/DC ±10% 30mA (DC) 15mA (AC)	1m (3.3ft)		S.P.S.T. N.O. Relay 3A (250V AC, 750VA) 3A (30V DC, 90W) 30ms	—		42BC-B1CRAL-T4
	2m (6.6ft)		42BC-B1CRAN-T4			