

Installation Instructions

Original Instructions



Allen-Bradley

by ROCKWELL AUTOMATION

RightSight Miniature Sensors

Catalog Numbers 42EF-D2JBAK-A2, 42EF-D2JBAK-F4, 42EF-D2KBAK-A2, 42EF-D2KBAK-F4, 42EF-D2MPAK-A2, 42EF-D2MPAK-F4, 42EF-D2MPAK-Y4, 42EF-P2JBB-A2, 42EF-P2JBB-F4, 42EF-P2KBB-A2, 42EF-P2KBB-F4, 42EF-P2MPB-A2, 42EF-P2MPB-F4, 42EF-P2MPB-Y4, 42EF-R2JBB-F4, 42EF-R2JBBT-A2, 42EF-R2JBBT-F4, 42EF-R2KBB-A2, 42EF-R2KBB-F4, 42EF-R2KBB-Z31, 42EF-R2KBBT-A2, 42EF-R2KBBT-F4, 42EF-R2MEB-F4, 42EF-R2MNB-A2, 42EF-R2MNB-F4, 42EF-R2MNB-Y4, 42EF-R2MNB-A2, 42EF-R2MNB-F4, 42EF-R2MPB-A2, 42EF-R2MPB-A5, 42EF-R2MPB-A6, 42EF-R2MPB-F4, 42EF-R2MPB-Y4, 42EF-R2MPBT-A2, 42EF-R2MPBT-A5, 42EF-R2MPBT-F4, 42EF-R2MPBT-Y4, 42EF-S1JBA-A2, 42EF-S1JBA-F4, 42EF-S1KBA-A2, 42EF-S1KBA-F4, 42EF-S1MEA-F4, 42EF-S1MNA-A2, 42EF-S1MNA-F4, 42EF-S1MNA-Y4, 42EF-S1MPA-A2, 42EF-S1MPA-F4, 42EF-S1MPA-Y4

IMPORTANT SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Description

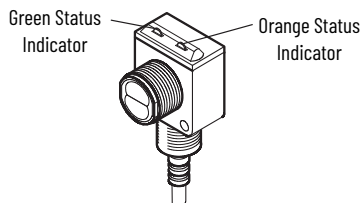
The 42EF RightSight™ family of photoelectric sensors offers high-performance general-purpose sensing in a compact, flexible package. They are designed for applications where simplified installation and maintenance are required. RightSight sensors provide a range of mounting options. The sensors can be through-hole mounted against a surface or can be installed using the threaded 18 mm base or nose mounting options.

Designed to withstand the rigors of food processing and material handling environments, the 42EF RightSight standard models can withstand repeated 1200 psi and IP69K high-pressure washdowns.

Features

- Compact right angle housing with universal 18 mm threaded nose and base mounting options
- Fixed, teachable, and adjustable sensitivity models
- 360° highly visible (status indicators helps operators verify proper operation regardless of sensor installation location)
- Visible status indicator light-source for ease of alignment
- Alignment aid helps achieve excellent reliability operating margin
- Dual (NPN and PNP), NPN or PNP only models
- Linear sensitivity adjustment
- IP67 with 1200 psi; IP69K rated enclosure
- IO-Link 1.1 Communication protocol that is offered in all standard modes

Status Indicator



[Table 1](#) and [Table 2](#) provide indicator status in the RUN mode, during operation. The sensor is always in run mode except when being taught.

Table 1 - Standard I/O (Auto PNP/NPN) Operating Mode Indication

Color	Status	Description
Green	OFF	Power is off
	ON	Power is on
	Flashing (6 Hz)	Unstable light: 0.8 X < margin < 1.5 X
	Flashing (1.4 Hz)	Output short circuit protection active
Orange	OFF	Output de-energized
	ON	Output energized

Table 2 - IO-Link Operation Mode Indication

Color	Status	Description
Green	OFF	Power is off
	Flashing (1 Hz)	Power is on
Orange	OFF	Output de-energized
	ON	Output energized

See www.ab.com for additional details about the operation of the 42EF RightSight in IO-Link mode.

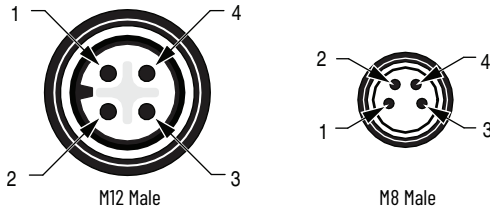
Sensor User Interface

The green status indicator can also serve as a set-up alignment aid that indicates that a margin of 1.5 has been reached. The sensor is receiving at least 1.5 times the signal strength back from the target that is required to trigger an output signal. In general, it is desirable to have a higher margin to help overcome any deteriorating environmental conditions, that is, dust build-up on the sensor lens. When aligning the sensor, the optimum performance can be obtained if this margin indicator is illuminated with the target in place. When aligning diffuse mode sensors, be sure that the sensitivity is set at its maximum setting; use the single-turn adjustment knob on the front panel. Pan the sensor left, right, up, and down to center the beam on the target. Decrease this setting to help prevent the sensor from detecting a background object. If this problem persists, the application requires the use of a background suppression, sharp cutoff diffuse, or retroreflective sensing mode.

Wiring Diagrams

The quick-disconnect connector is shown in the following diagrams. The pin numbers correspond to male connectors on the sensor.

Figure 1 - Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD



Output Wiring

Figure 2 - Light Operate PNP and NPN Models

(42EF-D2JBAK-x, 42EF-P2JBB-x, 42EF-R2JBB-x, 42EF-S1JBB-x) (a)

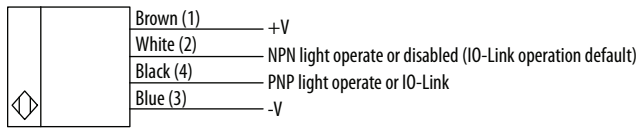


Figure 3 - Dark Operate PNP and NPN Models

(42EF-D2KBAK-x, 42EF-P2KBB-x, 42EF-R2KBB-x, 42EF-S1KBB-x) (a)

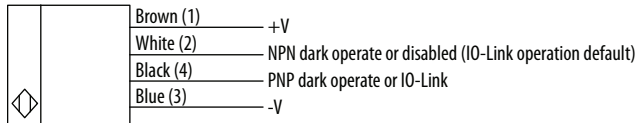


Figure 4 - PNP Complementary Models

(42EF-D2MPAK-x, 42EF-P2MPB-x, 42EF-R2MPB-x, 42EF-S1MPB-x) (a)

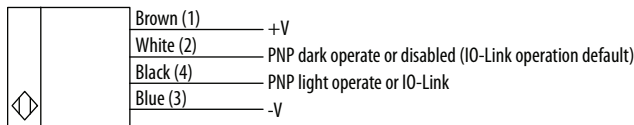
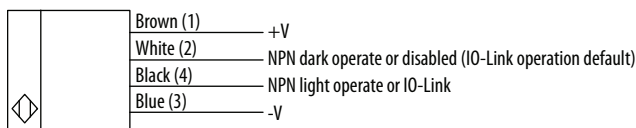


Figure 5 - NPN Complementary Models

(42EF-D2MNAK-x, 42EF-P2MNB-x, 42EF-R2MNB-x, 42EF-S1MNB-x) (a)

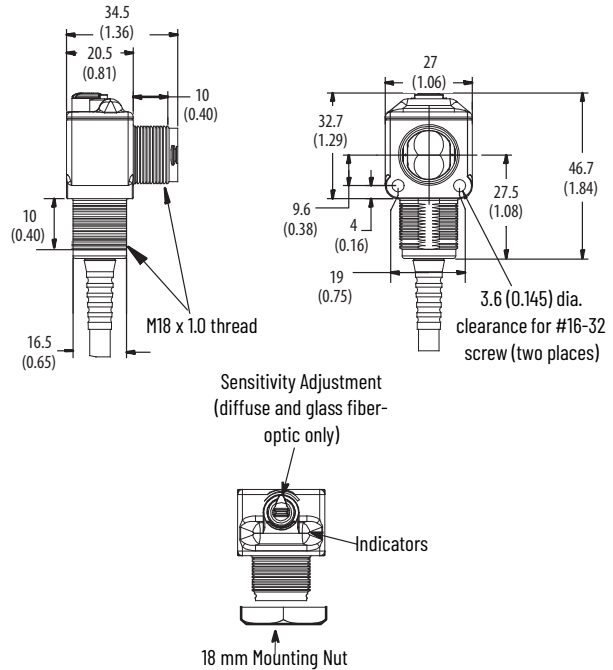


The IO-Link output pin 4 (black) does not support the connection of multiple sensors in series (for example, one sensor powering the next sensor). The connection of multiple sensors in series can be achieved when using pin 2 (white) outputs or by ordering a non-IO-Link catalog number. See the Rockwell Automation® Knowledgebase or contact your local distributor for specific ordering information. For additional information about sensor operation in IO-Link mode, see publication [42EF-UM001](#).

Table 3 - Connection Types

Description	Cat. No. Suffix
2 m (6.6 ft) cable	-A2
4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail	-F4
4-pin DC pico (M8) QD on 150 mm (6 in.) pigtail	-Y4

Approximate Dimensions [mm (in.)]



Typical Response Curves

Figure 6 - Visible Red Polarized Retroreflective—3.0 m Margin Curve

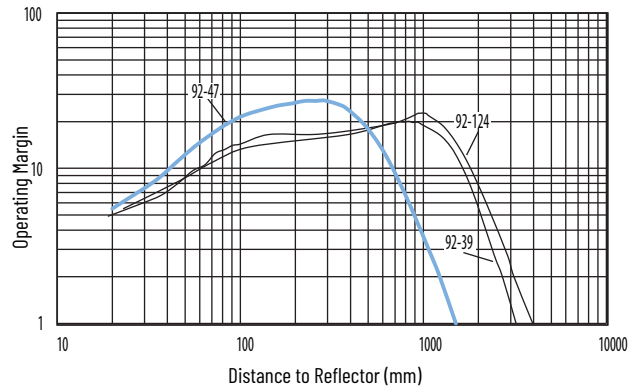
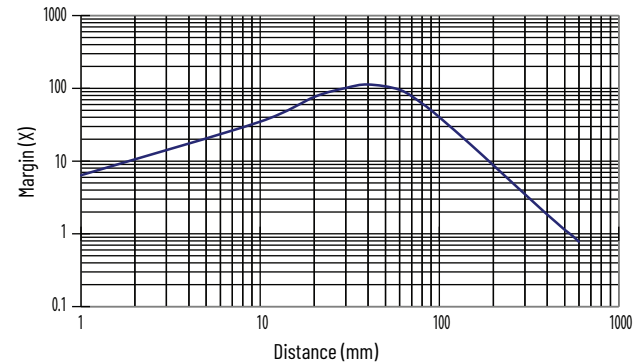
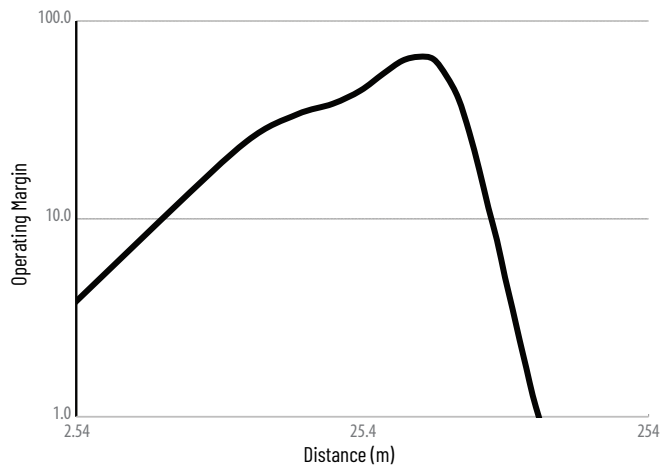
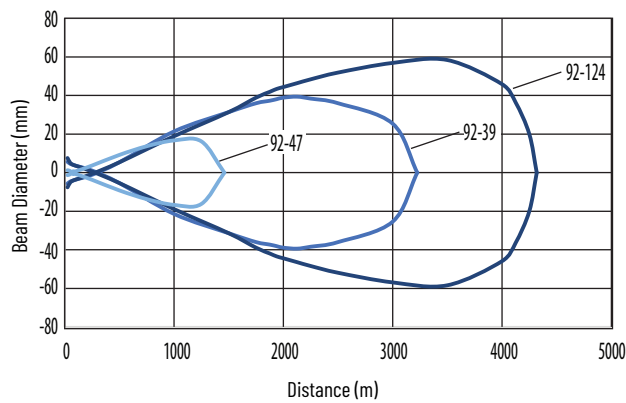
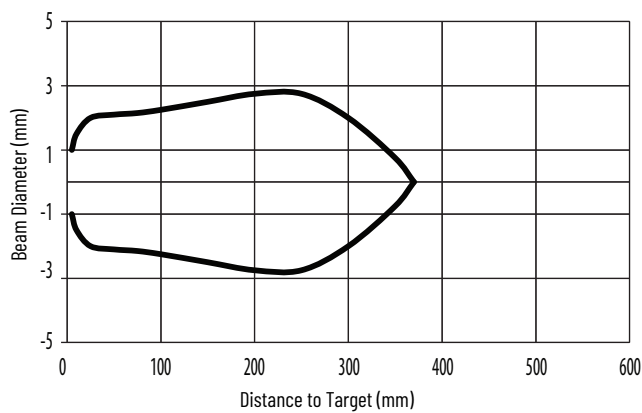
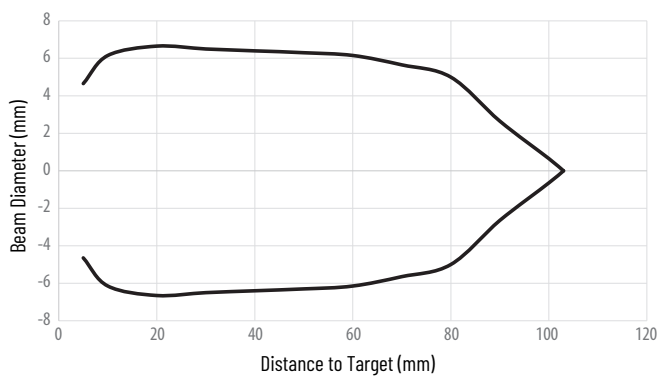
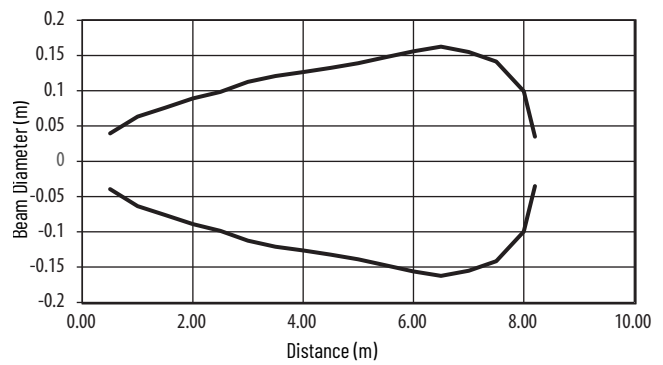
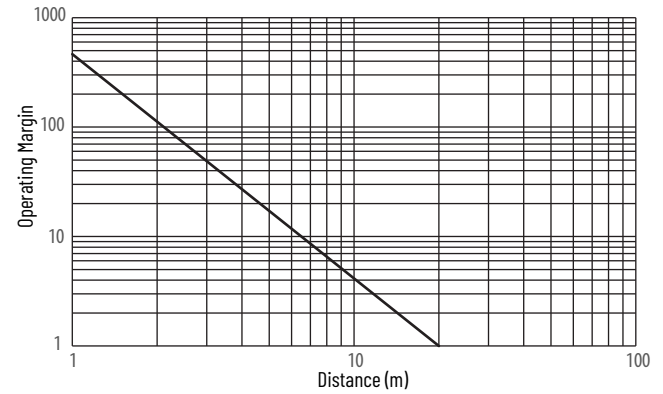
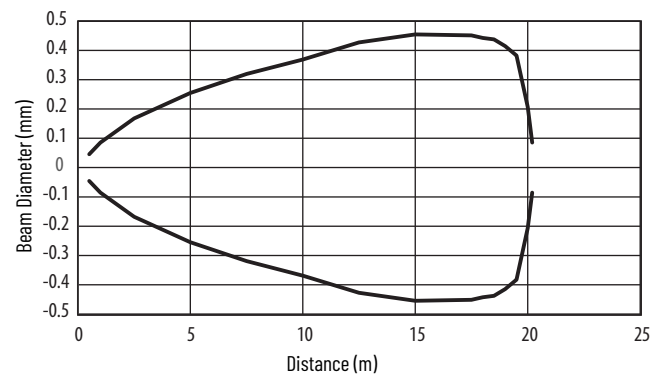


Figure 7 - Visible Red Diffuse—500 mm Margin Curve



(a) Replace the x in the catalog number with a suffix from [Table 3](#).

Figure 8 - Infrared Sharp Cutoff - 130 mm Margin Curve

Figure 9 - Visible Red Polarized Retroreflective—3.0 m Beam Pattern

Figure 10 - Visible Red Diffuse—500 mm Beam Pattern

Figure 11 - Infrared Sharp Cutoff - 130 mm Beam Pattern

Figure 12 - Transmitted Beam Receiver—8 m Beam Pattern

Figure 13 - Transmitted Beam Receiver—Margin Curves

Figure 14 - Transmitted Beam Receiver—20 m Beam Pattern


Accessories

Description	Cat. No.
4-pin DC micro, 2 m (6.5 ft) cordset	889D-F4AC-2
Swivel/tilt bracket (see Figure 16)	60-2649
Straight bracket	60-2656
Right angle bracket (see Figure 15)	60-2657
Mounting kit	60-2716
Clamp style bracket	871A-BP18
Flush mount adaptor	60-2590
4-pin DC micro field-mount terminal chamber	871A-TS4-DM
1.25 in. diameter reflector	92-47
3 in. diameter reflector	92-39

Figure 15 - Right Angle Bracket #60-2657

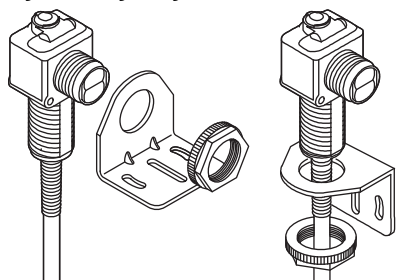
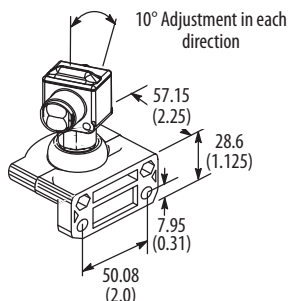


Figure 16 - Swivel/Tilt Bracket #60-2649



Specifications

Attribute	42EF-*J*	42EF-*K*	42EF-*M*
Certifications	c-UL-us Listed and CE Marked for all applicable directives		
Vibration	10...55 Hz, 1 mm (0.04 in.) amplitude, meets or exceeds IEC 60947-5-2		
Shock	30 G with 1 ms pulse duration, meets or exceeds IEC 60947-5-2		
Relative humidity	5...95% (noncondensing)		
Ambient-light immunity	<ul style="list-style-type: none">Incandescent light: 5000 luxSunlight: 20,000 lux		
User Interface			
Status indicators	<ul style="list-style-type: none">Green (power and margin)Orange (output)		
Electrical			
Adjustments	Fixed or adjustment knob by cat. no.		
Voltage	10...30V DC, I-O link: 18...30V DC		
Current consumption	30 mA, max		
Sensor protection	False pulse, reverse polarity, overload, short circuit		
Outputs			
Response time	<ul style="list-style-type: none">1 ms (diffuse, polarized retroreflective)4 ms (transmitted beam)		
Output type	PNP and NPN		PNP OR NPN (based on cat. no.)
Load current	100 mA		
Leakage current, max	<ul style="list-style-type: none">PNP: 0.1 mANPN: 0.3 mA		
Mechanical			
Housing material	Mindel™		
Lens material	Acrylic		
Cover material	Udel™		
Supplied accessories	18 mm mounting nut		
Environmental			
Enclosure type rating	NEMA 4X, 6P, IP67, IP69K; 1200 psi (8270 kPa) washdown		
Operating temperature	-25...+70 °C (-13...+158 °F)		
Connection type	<ul style="list-style-type: none">2 m (6.6 ft) cable4-pin DC micro (M12) QD on 150 mm (5.9 in.) pigtail4-pin DC pico (M8) QD on 150 mm (5.9 in.) pigtail		

Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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