



Description

The 42JS VisiSight™ family of photoelectric sensors features a full range of sensing modes in a miniature rectangular enclosure. The small housing combined with minimal adjustments; makes the 42JS VisiSight ideal for material handling applications where simplified installation and maintenance are required. A strong and visible light source is offered in all models for ease of alignment and a fast installation. The sensors can be mounted using the industry standard 25.4 mm hole spacing or using 18 mm hole mount when using the 60-AJS-18 snap-on adaptor.

The 42JT VisiSight models add flexibility by offering a tactile pushbutton that simplifies sensitivity and parameter setup. This makes the 42JT VisiSight a great solution for packaging and assembly applications that require some configuration in order to operate at optimal conditions. The 42JT offers unique "Auto PNP/NPN" output that continuously monitors how the load is connected and automatically configures the output for proper operation and output LED to indicate correct output status.

Features

42JS VisiSight

- Visible red LED for ease of alignment
- Complementary light and dark operate outputs
- Linear sensitivity adjustment knob or no adjustment models
- Optional snap-on adaptor enables 18 mm mount and makes sensor replacement a snap
- IP67 rated enclosure

42JT VisiSight

- Class 1 "Eye Safe" red laser beam (for small object and contrast detection) and visible LED models
- Unique "Auto PNP/NPN" output reduces stocking cost and simplifies selection, installation, and maintenance
- Teach pushbutton for sensitivity and L.O./D.O. selection
- IP69K enclosure rating and ECOLAB certified to withstand food industry cleaning chemicals
- Laser etched markings for durability

Available Models

42JS VisiSight

Polarized Retroreflective
 Standard Diffuse
 Fixed Background Suppression
 Transmitted Beam

42JT VisiSight

Polarized Retroreflective
 Standard Diffuse
 Adjustable Background Suppression
 Transmitted Beam
 Clear Object
 Color Mark

General Specifications

Certifications	cULus Listed and CE Marked for all applicable directives
Environmental	
Vibration	10...55 Hz, 1 mm 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	Incandescent light 5000 lux
User Interface	
Indicator LEDs	Green LED, Yellow LED
Electrical	
Operating Voltage	10...30V DC
Protection Type	False pulse, reverse polarity, overload, short circuit
Outputs	
Load Current	100 mA max.
Mechanical	
Housing Material	ABS
Lens Material	PMMA

Specifications for 42JS VisiSight

Environmental	
Enclosure Type Rating	IP67
Operating Temperature [C (F)]	-20...+60° (-4...+140°)
User Interface	
Sensitivity Adjustment	Potentiometer or fixed by cat. no.
Electrical	
Current Consumption	25mA max.
Outputs	
Output Type	PNP or NPN by cat. no.
Output Function	Complementary light and dark operate
Mechanical	
Connection Type	2 m cable, 4-pin DC micro (M12) QD, 4-pin pico (M8) QD

Specifications for 42JT VisiSight

Environmental	
Enclosure Type Rating	IP67 and IP69K
Operating Temperature [C (F)]	-20...+60° (-4...+140°)
User Interface	
Sensitivity Adjustment	Potentiometer or fixed by cat. no.
Electrical	
Current Consumption	30 mA max.
Outputs	
Output Type	PNP or NPN by cat. no.
Output Function	Teachable light or dark operate
Mechanical	
Connection Type	2 m cable, 4-pin DC micro (M12) QD on pigtail, 4-pin pico (M8) integral QD



PHOTOSWITCH® Photoelectric Sensors
42JS & 42JT VisiSight™
 20 mm Rectangular

Product Selection

Sensing Mode	Light Source	Sensing Distance	Sensitivity Adjustment	Output Function	Output Type	Cat. No.‡	
Polarized Retroreflective							
42JS		Visible red	No adjustment	Complementary light or dark operate	NPN	42JS-P2MNB1-F4	
					PNP	42JS-P2MPB1-F4	
			Adjustment knob		NPN	42JS-P2MNA2-F4	
					PNP	42JS-P2MPA2-F4	
42JT		0.1...6 m (0.33...19.7 ft)*	Teach button	Teachable light or dark operate	Auto PNP or NPN	42JT-P2LAT1-P4	
		Class 1 laser 0.05...13 m (0.16...42.7 ft)Δ				42JT-P8LAT1-P4	
Clear Object Detection							
42JT		Visible red	2 m (6.6 ft)Δ	Teach button	Teachable light or dark operate	Auto PNP or NPN	42JT-C2LAT1-P4
Diffuse							
42JS		Visible red	Adjustment knob	Complementary light or dark operate	NPN	42JS-D2MNA2-F4	
					PNP	42JS-D2MPA2-F4	
			3...800 mm (0.12...31.5 in.)		NPN	42JS-D2MNA1-F4	
					PNP	42JS-D2MPA1-F4	
42JT		Class 1 laser	Teach button	Teachable light or dark operate	Auto PNP or NPN	42JT-D2LAT1-P4	
						5...250 mm (0.20...9.84 in.)	42JT-D8LAT1-P4
Background Suppression							
42JS		Visible red	No adjustment	Complementary light and dark operate	NPN	42JS-B2MNB1-F4	
					PNP	42JS-B2MPB1-F4	
			2...130 mm (0.07...5.12 in.)		NPN	42JS-B2MNB2-F4	
					PNP	42JS-B2MPB2-F4	
42JT		Class 1 laser	Teach button	Teachable light or dark operate	Auto PNP or NPN	42JT-B2LAT1-P4	
						3...400 mm (0.12...15.75 in.)	42JT-B2LAT2-P4
			4...120 mm (0.16...4.72 in.)				42JT-B8LAT1-P4
						42JT	
Transmitted Beam (emitter and receiver sold separately)							
42JS		Visible red	No adjustment	NA (emitter)	NA	42JS-E2EZB1-F4	
			Adjustment knob	Complementary light or dark operate	NPN	42JS-R9MNA1-F4	
		Infrared	No adjustment	NA (emitter)	NA	42JS-E1EZB1-F4	
			Adjustment knob	Complementary light or dark operate	NPN	42JS-R9MNA2-F4	
42JT		Visible red	No adjustment	NA (emitter)	NA	42JT-E2EZB1-P4	
			Teach Button	Teachable light or dark operate	Auto PNP or NPN	42JT-R9LAT1-P4	
		Class 1 laser	No adjustment	NA (emitter)	NA	42JT-E8EZB1-P4	
			Teach button	Teachable light or dark operate	Auto PNP or NPN	42JT-R8LAT1-P4	
Recommended DC micro (M12) quick-disconnect cordset, straight, 4-pin, 2 m						889D-F4AC-2	
Recommended DC pico (M8) quick-disconnect cordset, straight, 4-pin, 2 m						889P-F4AB-2	

§ Sensing distance with 92-124 reflector.

* Sensing distance with 92-125 reflector.

Δ Sensing distance with 92-118 reflector.

‡ **42JS connection options:** The -F4 suffix describes a 4-pin DC micro (M12) QD connector on a 150 mm (6 in.) pigtail. For additional connection options, replace the -F4 suffix with:

-A2 for a 2 m cable without QD connection (for example, 42JS-P2MPB1-A2).

-Y4 for a 4-pin DC pico (M8) QD connection on a 150 mm (6 in.) pigtail (for example, 42JS-P2MPB1-Y4).

42JT connection options: The -P4 suffix describes a 4-pin DC pico (M8) integral QD connector. For additional connection options, replace the -P4 suffix with:

-A2 for a 2 m cable without QD connection (for example, 42JT-P2LAT1-A2).

-F4 for a 4-pin DC micro (M12) QD connection on a 150 mm (6 in.) pigtail (for example, 42JT-P2LAT1-F4).



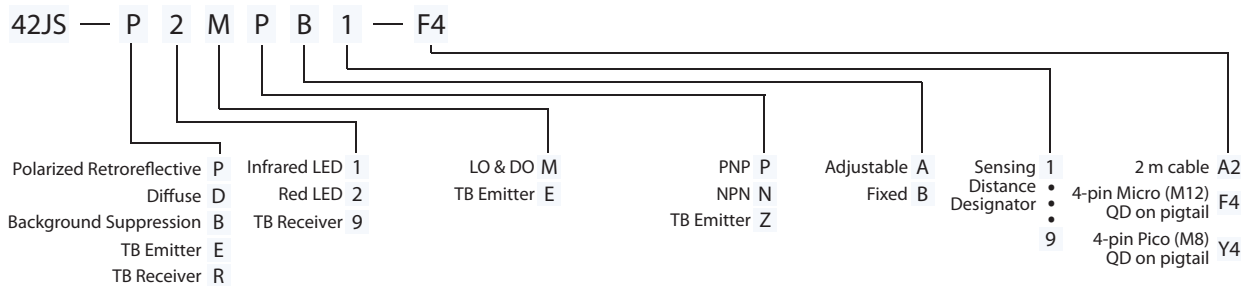
Optical and Response Time Characteristics

Sensing Mode	Polarized Retroreflective	Clear Object Detection	Diffuse	Background Suppression	Color Mark	Transmitted Beam
42JS VisiSight—Visible red 645 nm						
Field of View	2.8°	—	5.5° for 250 mm, 4° for 800 mm	14° for 55 mm, 17° for 130 mm	—	4°
Spot Size	175 mm @ 3.5 m	—	40 mm @ 250 mm, 60 mm @ 800 mm	7.6 mm @ 55 mm, 11.5 mm @ 130 mm	—	700 mm @ 10 m
Light Source	Visible red	—	Visible red	Visible red	—	Visible red and infrared
Response Time	1 ms	—	1 ms	1 ms	—	1 ms
42JT VisiSight—Visible red 660 nm (except for color mark models)						
Spot Size	500 mm @ 6 m	40 mm @ 1 m	70 mm @ 800 mm	15 mm @ 180 mm, 27 mm @ 400 mm	1 x 4 mm @ 12 mm (white LED)	1.1 m @ 13 m
Response Time	0.5 ms	0.5 ms	0.5 ms	0.5 ms	50 μs	0.5 ms
42JT VisiSight—Class 1 laser 650 nm						
Spot Size	14 mm @ 13 m	—	0.6 mm @ 250 mm	1.3 mm @ 120 mm	—	13 mm @ 18 m
Response Time	0.25 ms	—	0.333 ms	0.5 ms	—	0.25 ms

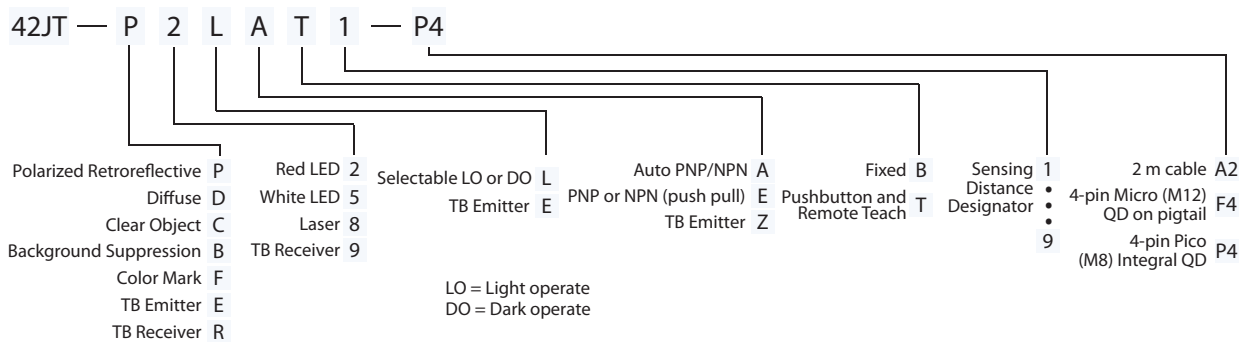
Note: For more information on spot size, refer to the typical response curves.

Cat. No. Structure

Product Family



Product Family

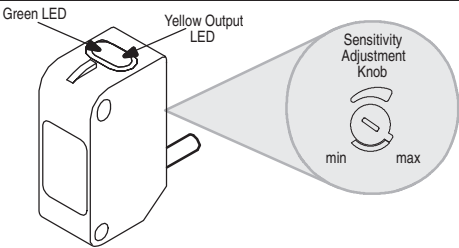


The cat. no. structure is for reference only. Please do not use this to create a cat. no. as the result may be unavailable.



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42JS & 42JT VisiSight™
 20 mm Rectangular

42JS User Interface

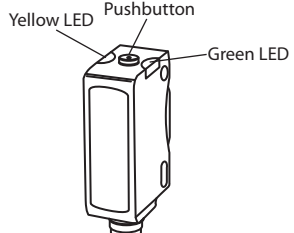


LED Color	State	Status
Green	OFF	Power is Off
	ON	Power is On
	Flashing (6 Hz)	Unstable ($0.5 < \text{Margin} < 2$)
	Flashing (1.5 Hz)	Output short-circuit protection active
Yellow	OFF	Output de-energized‡
	ON	Output energized‡

‡ Black wire or pin 4 of connector.

42JT User Interface

The table below provides LED status in the RUN mode, i.e., during operation the sensor is always in RUN mode, except when being taught.



LED Color	State	Status
Green	OFF	Power is Off
	ON	Power is On
	Flashing (6 Hz)	Unstable ($0.5 < \text{Margin} < 2$)
	Flashing (1.5 Hz)	Output short-circuit protection active
Yellow§	OFF	Output de-energized
	ON	Output energized

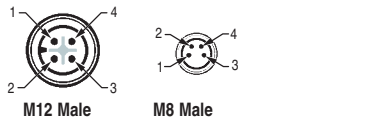
§ Except for color mark sensors: color mark sensors have PNP or NPN (push-pull) output. The above table shows LED status when output is connected as PNP. If connected as NPN, the yellow LED is ON when the output is de-energized and OFF when it is energized.

2-Photoelectric Sensors

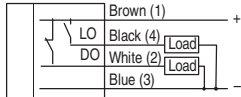
Wiring Diagrams

Cable connections are shown in the following diagrams. Pin numbers correspond to an M12 or M8 male connector on the sensor.

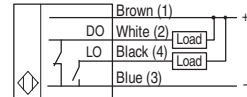
42JS VisiSight



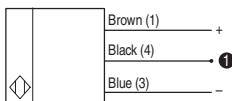
PNP models with complementary outputs



NPN models with complementary outputs

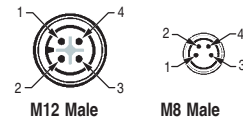


Transmitted beam emitter

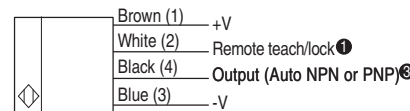


❶ For normal operation, black wire (pin 4) needs no connection. To disable light source, connect black wire (pin 4) to +V.

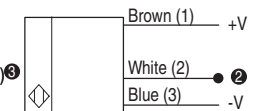
42JT VisiSight



Output wiring



Transmitted beam emitter



- ❶ **Normal operation:** no connection.
Remote teach: Refer to the Teach section.
Push button lock: connect to a -V. Refer to the Push Button Lock/Unlock section.
- ❷ For **Normal operation**, white wire (pin 2) needs no connection. To disable light source, connect white wire (pin 2) to +V.
- ❸ Output is PNP or NPN (push-pull) for color mark sensors.

42JT Push Button Lock/Unlock

The push button or remote teach (RT) can be used to prevent unauthorized users from changing teach settings.

To lock the push button: press and release the button three times within three seconds. Both LEDs flash synchronously for three seconds indicating that the push button is now locked.

To unlock the push button: press and release the button three times within three seconds. Both LEDs flash asynchronously for three seconds indicating that the push button is now unlocked.

Permanent lock: The push button may be permanently locked by connecting the white wire (pin 2) to -V.

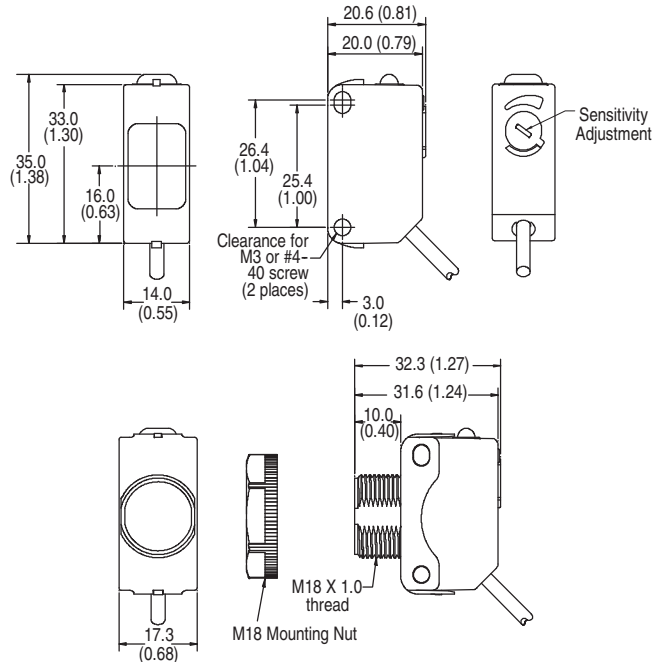
42JT Remote Teach (RT)

The sensor can be taught remotely via the white wire (pin 2). Connection to +V acts the same as the button being pressed and no connection is the same as the button not being pressed. The sensor can be taught by following the same teach/timing sequence as used in the push button teach (e.g., connect to the +V for more than three seconds to teach the "target," disconnect from the +V; remove the target and connect to the +V for less than one second to teach the "no target" condition. All push button functions can also be carried out via RT.

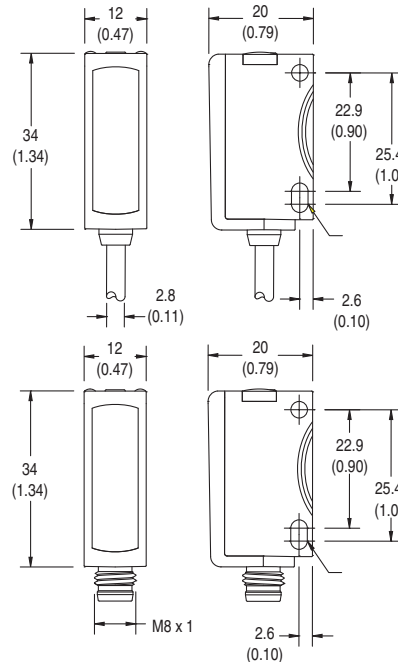


Approximate Dimensions [mm (in.)]

42JS VisiSight



42JT VisiSight



The 42JT mounting holes are located toward the rear end of the sensor while the 42JS mounting holes are located towards the front. Both sensors are compatible with the industry standard 25.4 mm mounting. The 42JT flexible mounting hole spacing ranges of 22.9...25.4 mm (0.9...1 in.), makes it compatible with the 24.1 mm (0.95 in.) hole spacing sensors.

Refer to www.ab.com/e-tools for 2D and 3D CAD drawings.

Cordsets and Accessories

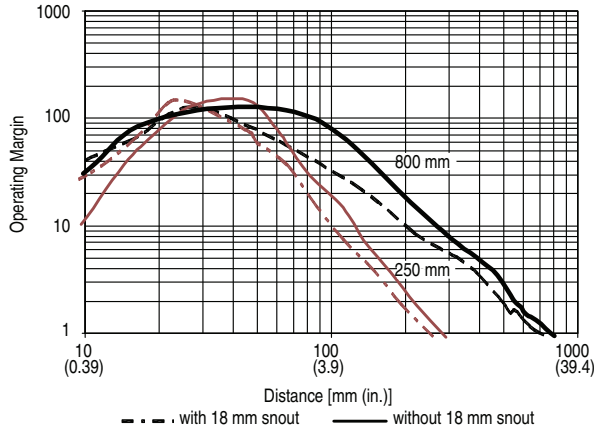
Description	Cat. No.	Description	Cat. No.
DC Micro (M12) QD Cordset, Straight, 4-pin, 2 m	889D-F4AC-2	Reflector, Corner Cube, 76 mm (3 in.) diameter	92-124
DC Pico (M8) QD Cordset, Straight, 4-pin, 2 m	889D-F4AB-2	Reflector, Corner Cube, 84 mm (3.3 in.) diameter	92-125
DC Pico (M8) QD Cordset, Right Angle, 4-pin, 2 m	889P-R4AB-2	Reflector, Corner Cube, 32 mm (1.5 in.) diameter	92-47
Mounting Bracket, Stainless Steel, L-Shaped for 42JT and 42JS	60-BJS-L1	Reflector, Corner Cube, 100 x 100 mm (4 x 4 in.)	92-108
Mounting Bracket, Stainless Steel, L-Shaped for 42JS VisiSight	60-BJS-L2	Reflector, Corner Cube, 51 x 61 mm (2 x 2.5 in.)	92-109
Mounting Bracket, Stainless Steel	60-BKTL-SS	Reflector, Micro Cube, 51 x 61 mm (2 x 2.5 in.) for laser and clear object models	92-118
Mounting Bracket, Stainless Steel, L-Shaped for 42JT and 42JS VisiSight	60-BJT-L2	Mounting Bracket, Plastic, swivel/tilt for 42JS VisiSight.	60-2619
Replacement Mounting Bracket, Stainless Steel, for replacing larger (50 x 50 mm) sensors.	60-BJT-RCS	Protective Mounting Bracket, Stainless Steel, U-Shaped for 42JT and 42JS	60-BJT-U1
Replacement Mounting Bracket, Stainless Steel, for compatible sensors using holes towards the front with 42JT VisiSight.	60-BJT-P2	Protective Mounting Bracket, Stainless Steel, Horizontal and Vertical for 42JT and 42JS VisiSight	60-BJT-H1

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 20 mm Rectangular

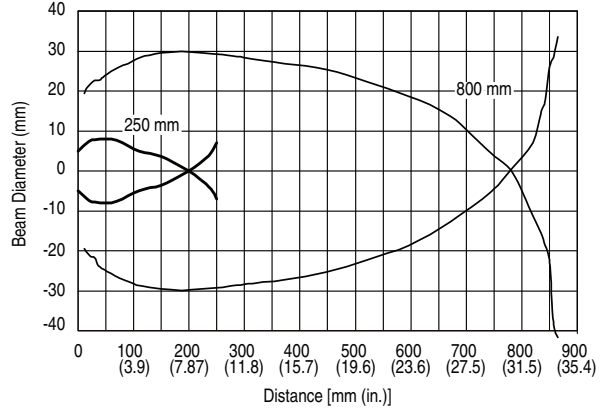
Typical Response Curves

42JS VisiSight

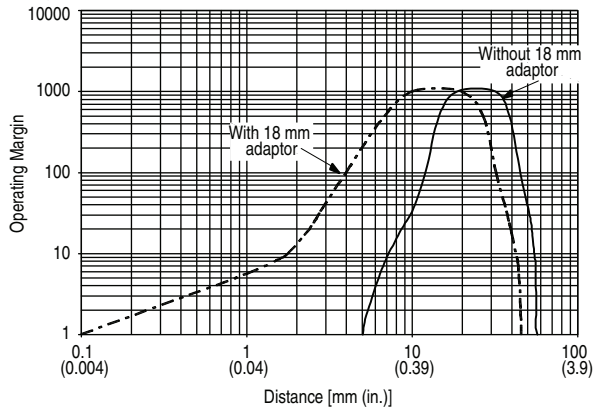
Standard Diffuse



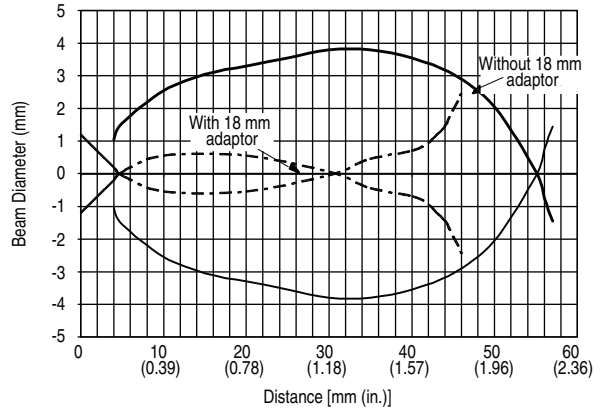
Standard Diffuse—Beam Pattern



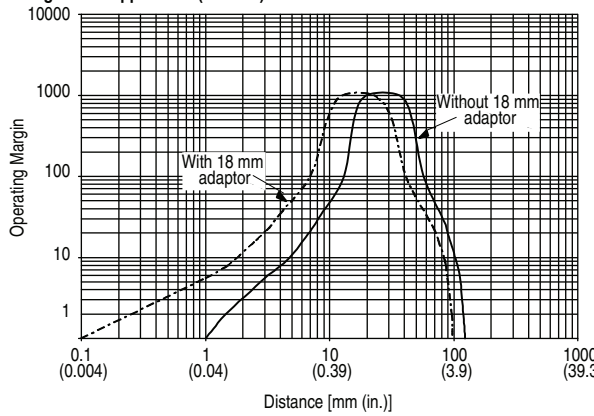
Background Suppression (55 mm)



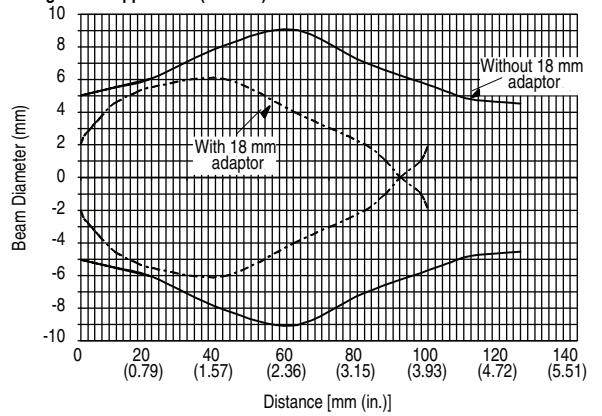
Background Suppression (55 mm)—Beam Pattern



Background Suppression (130 mm)



Background Suppression (130 mm)—Beam Pattern

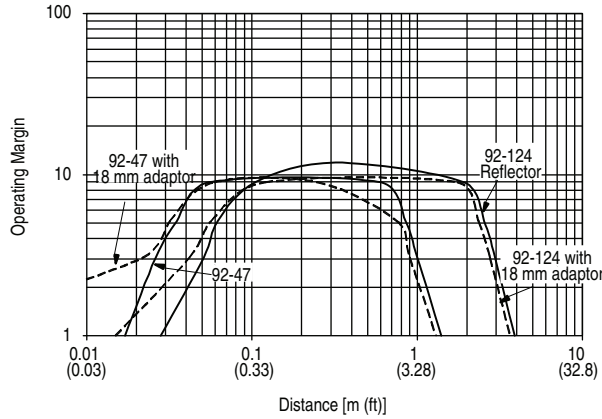


2-Photoelectric
Sensors

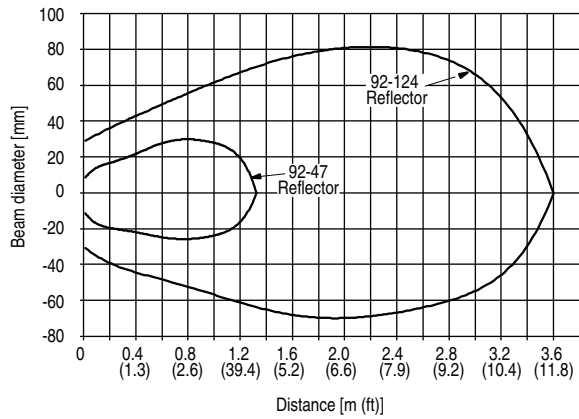


42JS VisiSight

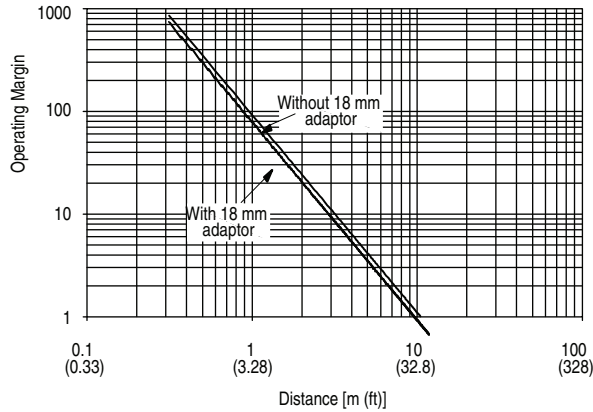
Polarized Retroreflective



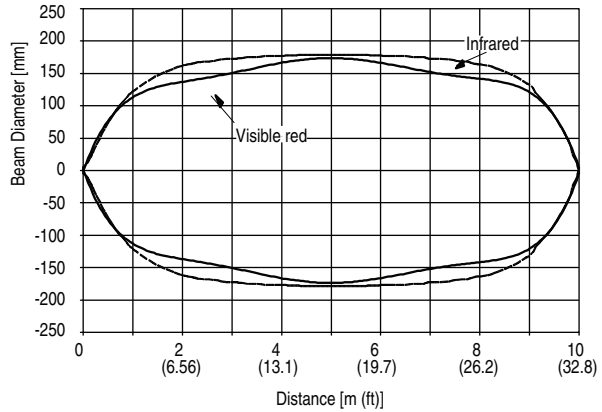
Polarized Retroreflective—Beam Pattern



Transmitted Beam—Visible Red and Infrared



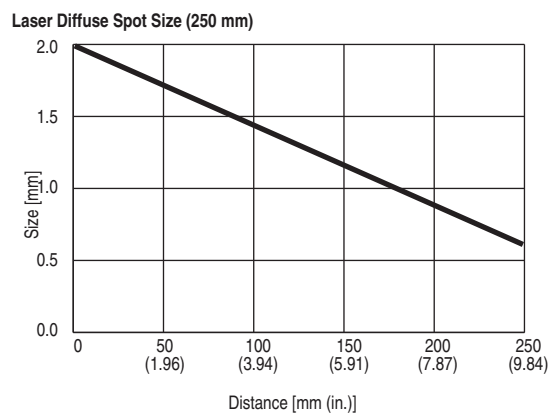
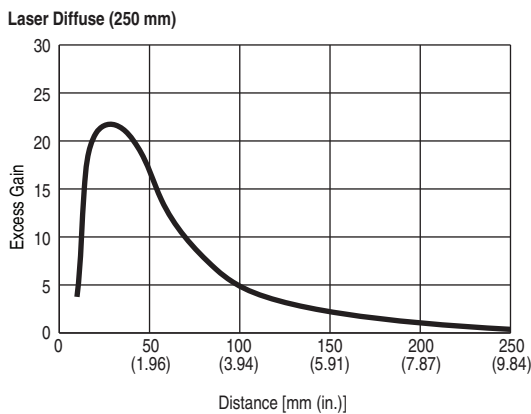
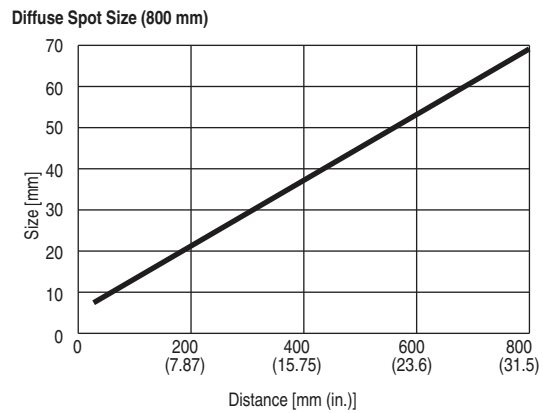
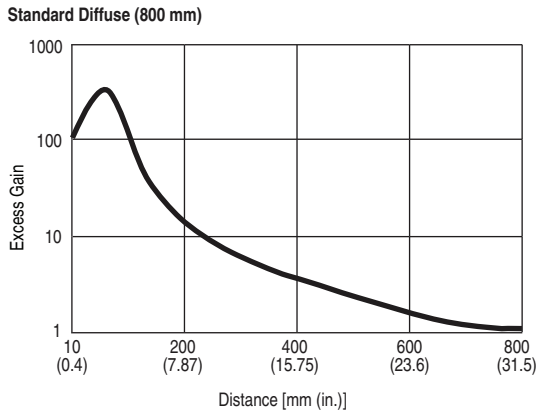
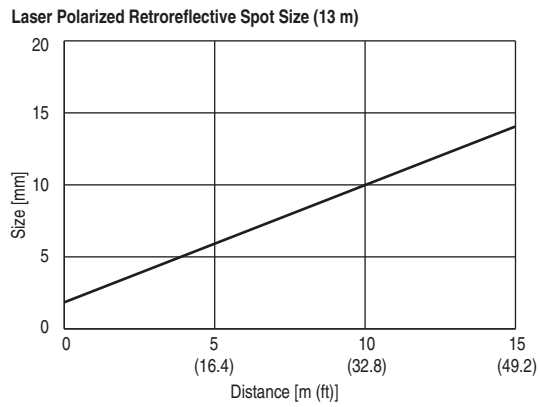
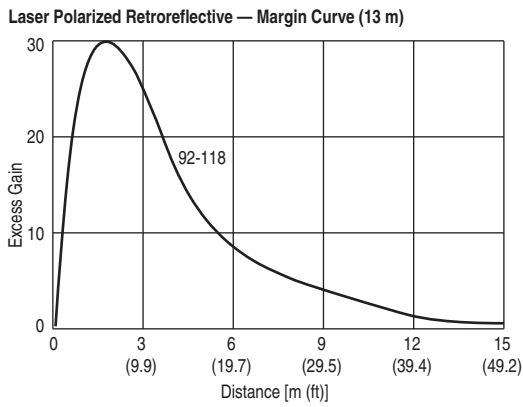
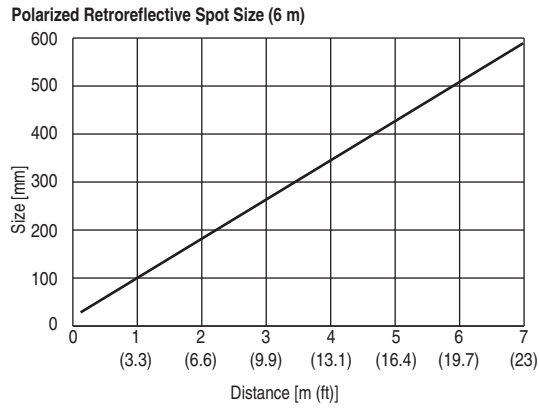
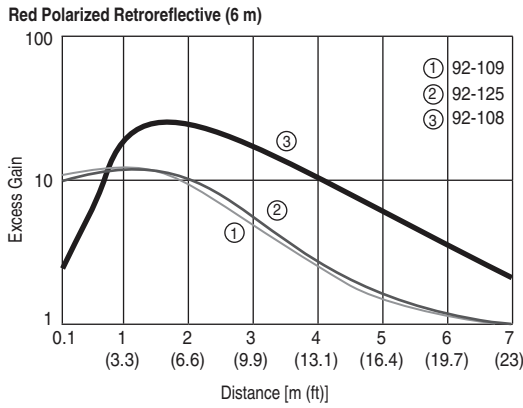
Transmitted Beam—Beam Pattern



2-Photoelectric Sensors

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 20 mm Rectangular

42JT VisiSight

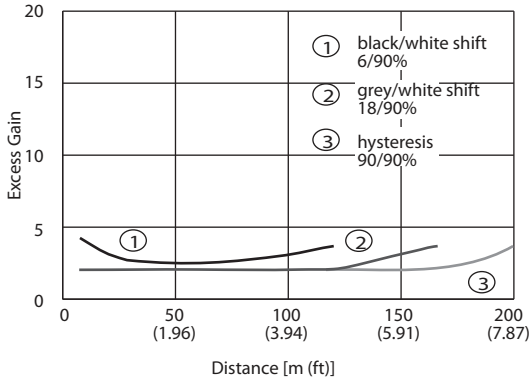


2-Photoelectric Sensors

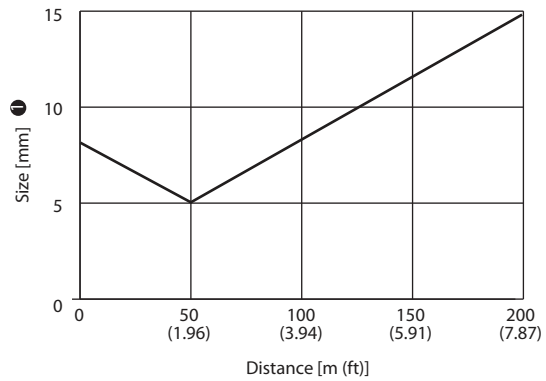


42JT VisiSight

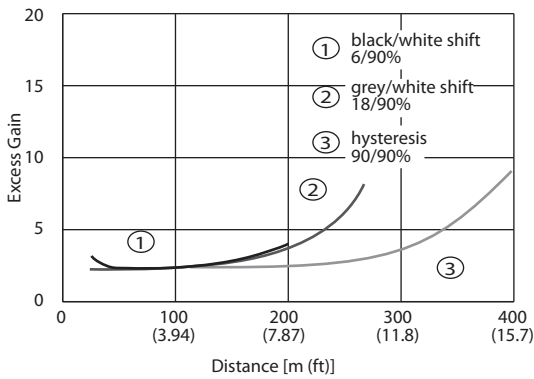
Background Suppression (180 mm)



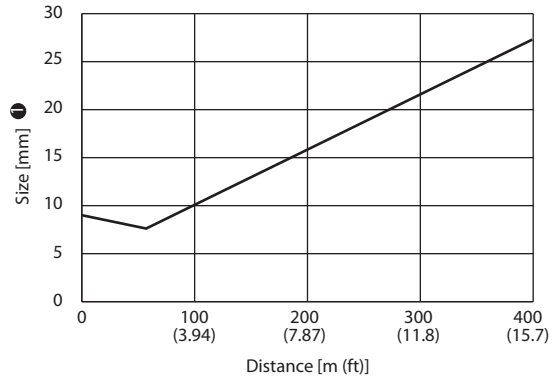
Background Suppression (180 mm) — Spot Size



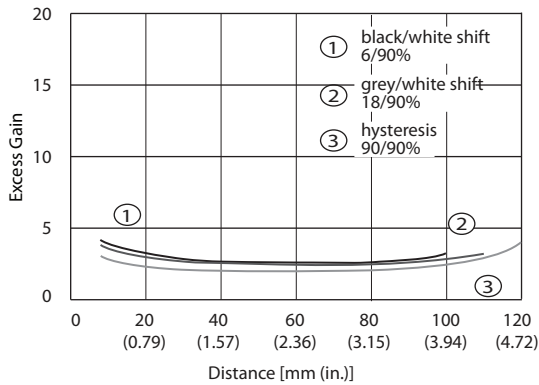
Background Suppression (400 mm)



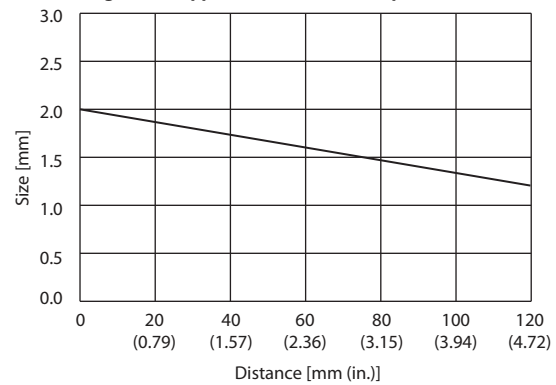
Background Suppression (400 mm) — Spot Size



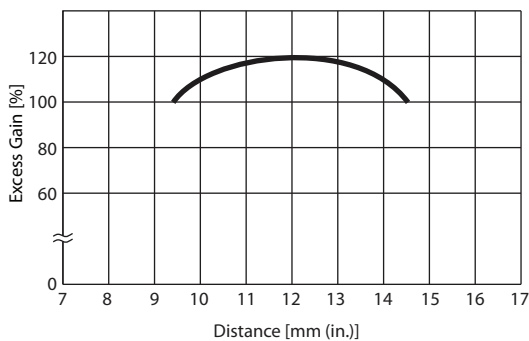
Laser Background Suppression (120 mm)



Laser Background Suppression (120 mm) — Spot Size



Color Mark

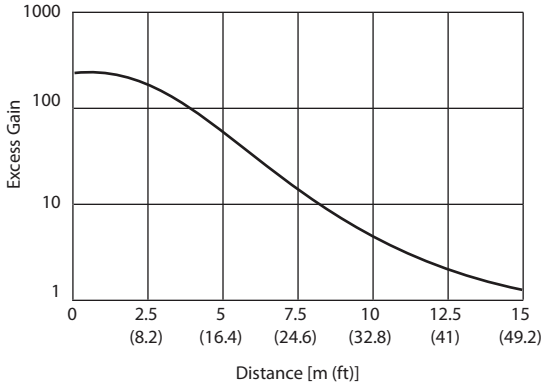


① The spot is square in shape with one side dimension per graph.

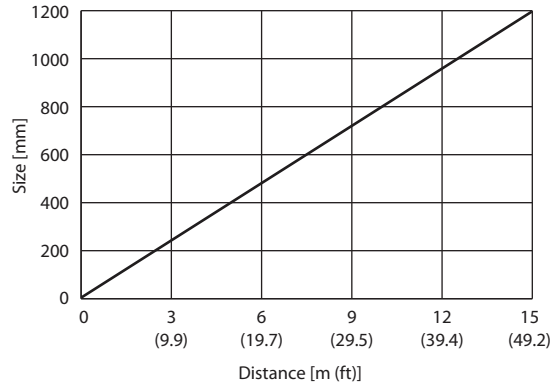
PHOTOSWITCH® Photoelectric Sensors
42JS & 42JT VisiSight™
 20 mm Rectangular

42JT VisiSight

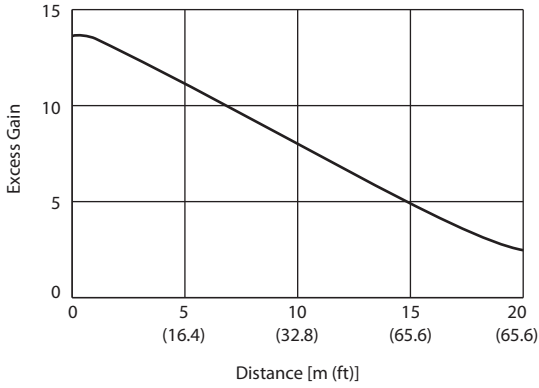
Red Transmitted Beam (13 m)



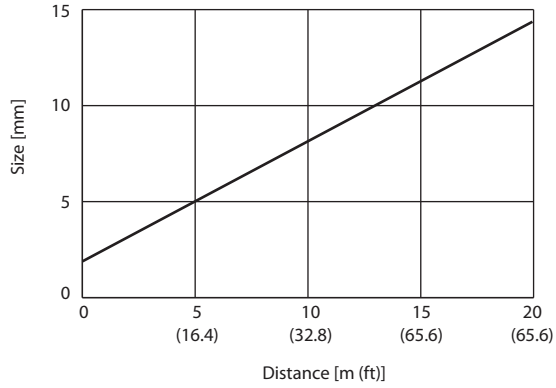
Red Transmitted Beam (13 m) — Spot Size



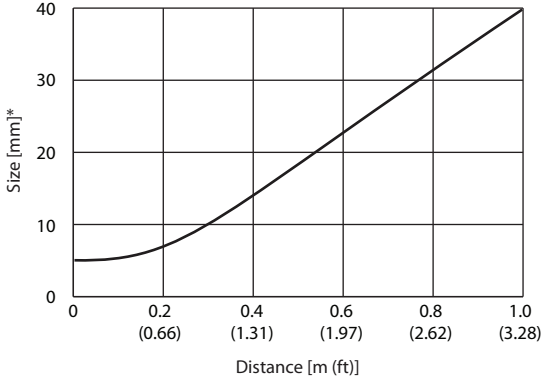
Laser Transmitted Beam (18 m)



Laser Transmitted Beam (18 m) — Spot Size



Clear Object Spot Size



2-Photoelectric
Sensors

