Installation Instructions
42JT VisiSight™ Photoelectric Diffuse Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.
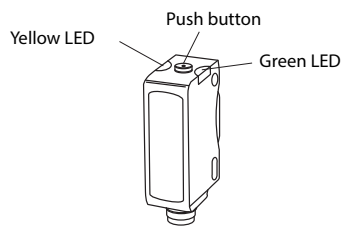
Default Settings:

The factory default settings are configured so that no teaching is required for a vast majority of the applications.

Sensing Range: Maximum Setting
Output Mode: Light Operate (Output ON when target is detected)
Output Type: Auto PNP/NPN or IO-Link. In Auto PNP/NPN mode, the sensor continuously monitors the load connection and automatically configures the output to PNP or NPN.

Sensor User Interface

Yellow LED　　Push button
Green LED

LED Status

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

Auto PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (6 Hz)	Unstable light level (0.5 < margin < 2)
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow	OFF	Output de-energized
	ON	Output energized

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow	OFF	Output de-energized
	ON	Output energized

❶ Connection Types

Cat. No. Suffix	Description
-A2	2 m cable
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

General Specifications

	42JT-D2LAT1-❶	42JT-D8LAT1-❶
Environmental		
Certifications	cULus and CE Marked for all applicable directives	
Operating Environment	IP67, IP69K, ECOLAB❷	
Operating Temperature [C (F)]	-20…+60° (-4…+140°)❸	
Storage Temperature [C (F)]	-20…+80° (-4…+179°)	
Optical		
Light Source	Visible red 660 nm	Class 1 laser 650 nm
Sensing Range	3…800 mm (0.12…31.5 in.)	1…250 mm (0.04…9.8 in.)
Adjustments	Push button	
Electrical		
Voltage	10…30V DC❹	
Current Consumption	30 mA max.	
Sensor Protection	Reverse polarity, short circuit, overload protection	
Outputs		
Response Time	0.5 ms max.	0.33 ms max.
Output Type	Auto NPN or PNP	
Output Function	Selectable light operate or dark operate	
Output Current	100 mA max.	
Output Leakage Current	10 µA max.	
Mechanical		
Housing Material	ABS	
Lens Material	PMMA	
Cover Material	PMMA	

❶ see Connection Types table
❷ ECOLAB on P4 and A2 models only.
❸ UL: -20…+50°C (-4…122°F)
❹ UL: Class 2 source

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application which is subject to excessive vibration or shifting may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see the Accessories section for more details).

Alignment Indication

For short range applications the visible light beam of the sensor suffices as alignment aid.

The alignment feature may be used for longer range applications. Alignment of the sensor is indicated via change in intensity of the green LED in the Alignment Mode, as follows:

1. Press and release the push button twice within three seconds. After three seconds, the green LED turns OFF for 0.5 second indicating the sensor is in the alignment mode.

2. Align sensor to the target to be detected. Intensity of green LED increases with better alignment. Secure it in a position that yields the highest intensity of the green LED. Press and release the button once to return to the RUN mode, or the sensor automatically returns to RUN mode in two minutes.

VisiSight™ Configuration

The 42JT VisiSight is configured using the push button or Remote Teach or IO-Link and the LED indicators on the sensor. Five features may be configured:

- Static Teach: Standard or precision teach for sensitivity/sensing range
- Dynamic Teach (running process)
- Light operate (LO) or dark operate (DO) output
- Auto PNP/NPN, dedicated NPN or dedicated PNP
- Push button lock/unlock

The sensor output is disabled during Teach.
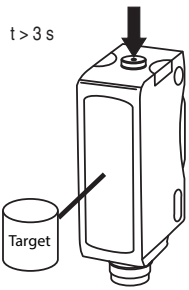
Teach Sensitivity/Sensing Range

The default setting is the maximum sensitivity/range.
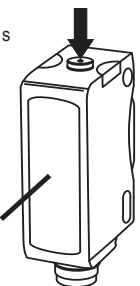
Static Teach:

Teaching the sensitivity/sensing range is a two step process: teach "target" (1st condition) and teach "no target" (2nd condition). Switching threshold for output ON vs. OFF is set in between the two conditions.

Standard Teach:
1. To teach the "target" (first condition):

Place the target at the desired maximum distance. Press and hold the button for three seconds until the yellow LED starts flashing. Release the button. The first condition has now been taught.

2. Teach "no target" (second condition):

Remove the target. Press and release the button. The teach process is complete.

If the push button is not pressed within 30 seconds, the sensor exits teach mode and returns to RUN mode without learning the new setting.

Note: The sensor can also be taught by teaching "no target" as the first condition and "target" as the second condition.

Precision Teach: If there is nothing in the field of view in step two, the sensing range will be set farther than the target to maximize excess gain and improve detection reliability. For a more precise setting with less excess gain, do not remove the target in step two (i.e. the target is present for both step one and step two). Also use precision teach for contrast applications.

Restore to factory default setting of maximum range: Perform steps one and two with "no target" in the sensor's field of view.
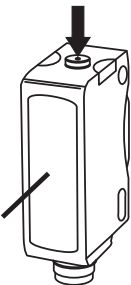
Dynamic Teach (Running Process):
If the targets to be detected are moving with the sensor aimed at the running process, press and hold the button for three seconds until the yellow LED starts flashing. The sensitivity will automatically be taught in the next 30 seconds provided the sensor sees two cycles of "target" and "no target." The switching threshold for output ON vs. OFF is set in between the two conditions**.**

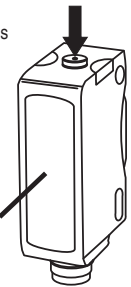### Teach Light Operate (L.O.) or Dark Operate (D.O.)
The default setting of the output is light operate (L.O.)

The L.O. setting means that output turns ON when the target is detected. If the application requires the output to turn OFF when the target is detected, the setting may be changed to dark operate (D.O.).

1. To access the teach output mode setting:

Press and hold button for six seconds until green LED starts flashing. Release the button. The current setting is indicated by the yellow LED:
L.O.: Yellow LED ON
D.O.: Yellow LED OFF

2. To change the sensor output mode setting:

Press and release the button within ten seconds to toggle from L.O. to D.O., the selection indicated by the yellow LED.

The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is depressed.

Output Type Selection:
Auto PNP/NPN, Dedicated NPN, Dedicated PNP

The default setting is Auto PNP/NPN. This means the sensor monitors the load connection and automatically configures for the proper operation, i.e., PNP or NPN. If no load is connected, the sensor defaults to PNP.

The following applications are covered with dedicated PNP or dedicated NPN selection:

   a. Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.

   b. If the load is connected for NPN configuration but to a different power supply than the power to the sensor or via a load enabling contact (e.g., a relay contact in series with the load): select dedicated NPN.

Selection can be made as follows:

1. **To access output type:** Press and hold the push button for 12 seconds (until both LEDs start flashing synchronously). At the release of the button, the current setting of output type is indicated by the slow flashing of the LED (or LEDs) as follows:

   • Auto PNP/NPN: both LEDs flashing
   • Dedicated NPN: green LED flashing
   • Dedicated PNP: yellow LED flashing

2. **To change output type:** Press and release the push button within ten seconds to select desired type. Each press of the button will cycle to the next output setting. The type selected is indicated by the LEDs. The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is pressed.

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.

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.
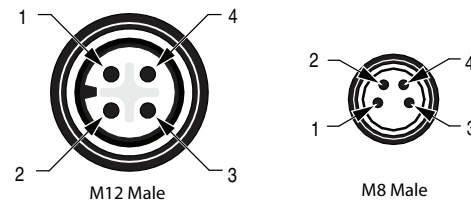
IO-Link

See instructions for IO-Link on www.ab.com. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
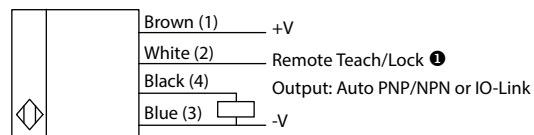
Wiring Diagrams

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

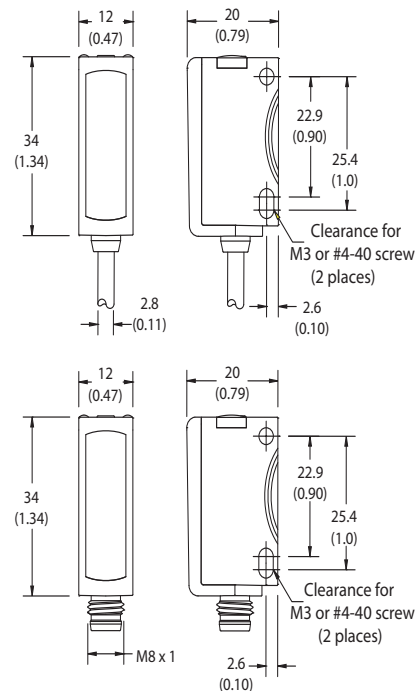### Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD

M12 Male   M8 Male

Output Wiring

Brown (1) — +V
White (2) — Remote Teach/Lock ❶
Black (4) — Output: Auto PNP/NPN or IO-Link
Blue (3) — -V

❶ **Normal operation**: No connection. Disabled in IO-Link operation.
Remote Teach: Refer to the Remote Teach section.
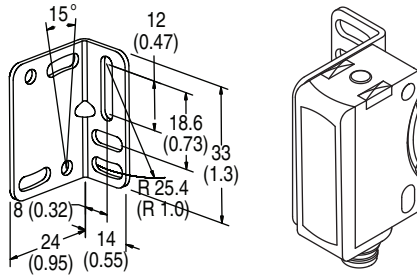**Push Button Lock**: Connect to -V. See the Push button Lock/Unlock section.
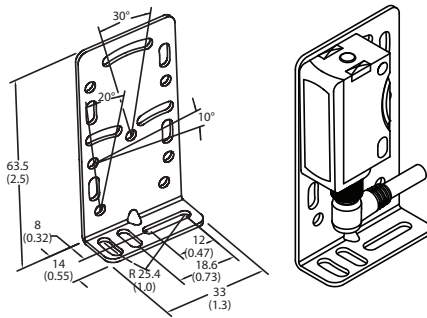
Approximate Dimensions [mm (in.)]

12 (0.47)
20 (0.79)
22.9 (0.90)
25.4 (1.0)
34 (1.34)
Clearance for M3 or #4-40 screw (2 places)
2.8 (0.11)
2.6 (0.10)

12 (0.47)
20 (0.79)
22.9 (0.90)
25.4 (1.0)
34 (1.34)
Clearance for M3 or #4-40 screw (2 places)
M8 x 1
2.6 (0.10)

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Accessories

Stainless Steel Mounting Brackets
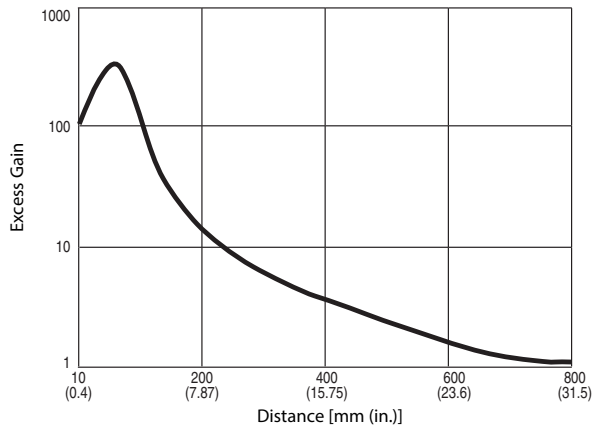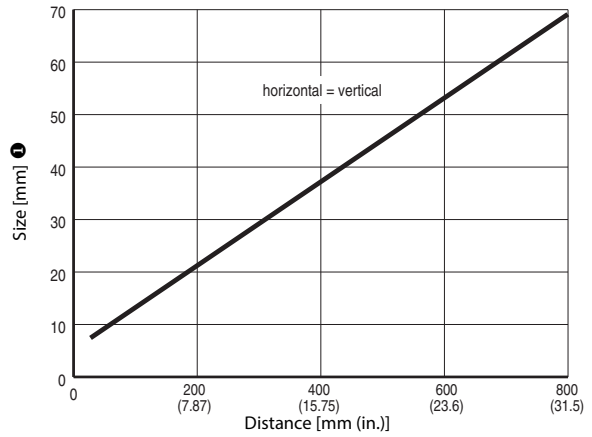
1) 60-BJS-L1

2) 60-BJT-L2

3) 60-2619 VisiSight-compatible swivel/tilt mounting bracket
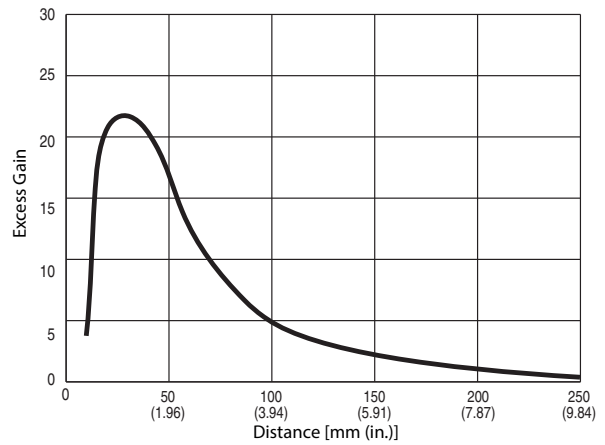
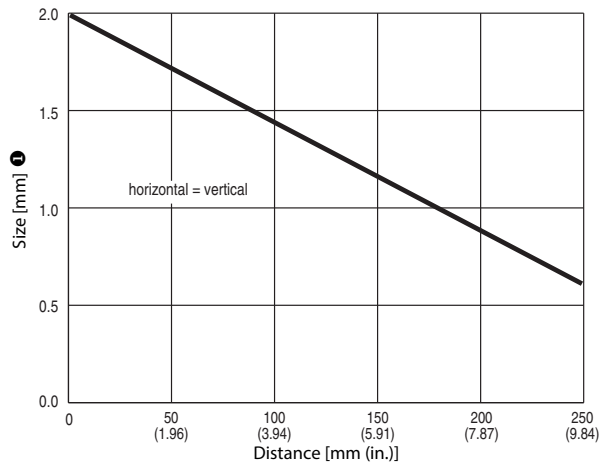## Typical Response Curves

Standard Diffuse (800 mm)

Spot Size (800 mm)

horizontal = vertical

Laser Diffuse (250 mm)

Laser Spot Size (250 mm)

horizontal = vertical

❶ The spot size is square in shape with one side dimension per the graph.

Rockwell Automation maintains current product environmental information on its website at
http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

www.rockwellautomation.com

Installation Instructions—42JT VisiSight™ Photoelectric Polarized Retroreflective Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.
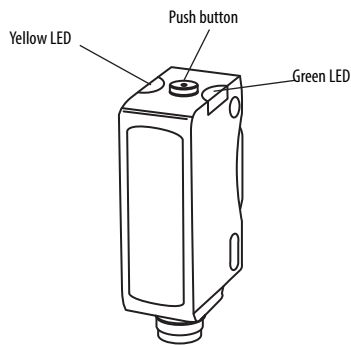
Default Settings:

The factory default settings are configured so that no teaching is required for a vast majority of the applications.

Sensing Range: Maximum Setting
Output Mode: Dark Operate (Output ON when the light between sensor and reflector is blocked)
Output Type: Auto PNP/NPN or IO-Link. In Auto PNP/NPN mode, the sensor continuously monitors the load connection and automatically configures the output to PNP or NPN.

Sensor User Interface

LED Status

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

Auto PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (6 Hz)	Unstable light level (0.5 < margin < 2)
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow	OFF	Output de-energized
	ON	Output energized

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow	OFF	Output de-energized
	ON	Output energized

General Specifications

	42JT-P2LAT1-❶	42JT-P8LAT1-❶
Environmental		
Certifications	cULus and CE Marked for all applicable directives	
Operating Environment	IP67, IP69K, ECOLAB❷	
Operating Temperature [C (F)]	-20…+60° (-4…+140°) ❸	
Storage Temperature [C (F)]	-20…+80° (-4…+179°)	
Optical		
Light Source	Visible red 660 nm	Class 1 laser 650 nm
Sensing Range	0.1…6 m (0.33…19.7 ft)	0.05…13 m (0.16…42.7 ft)
Adjustments	push button	
Electrical		
Voltage	10…30V DC	
Current Consumption	30 mA max.	
Sensor Protection	Reverse polarity, short circuit protection	
Outputs		
Response Time	0.5 ms, max.	0.25 ms, max.
Output Type	Auto PNP/NPN or IO-Link	
Output Function	Selectable light operate or dark operate	
Output Current	100 mA max.	
Output Leakage Current	10 µA max.	
Mechanical		
Housing Material	ABS	
Lens Material	PMMA	
Cover Material	PMMA	
Optional Accessories	Mounting brackets, cordsets	

❶ Replace with A2 for 2 m (6.6 ft) cable, F4 for 4-pin DC micro (M12) QD, or P4 for 4-pin DC pico (M8) QD.
❷ ECOLAB on -P4 and -A2 models only
❸ UL: -20…+50°C (-4…122°F)

❶ Connection Types

Cat. No. Suffix	Description
-A2	2 m cable
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application which is subject to excessive vibration or shifting may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see the Accessories section for more details).

Alignment Indication

For short range applications the visible light beam of the sensor suffices as alignment aid.

The alignment feature may be used for longer range applications. Alignment of the sensor is indicated via change in intensity of the green LED in the Alignment Mode, as follows:

1. Press and release the push button twice within three seconds. After three seconds, the green LED turns OFF for 0.5 second indicating the sensor is in the alignment mode.

2. Align the sensor to the reflector. The intensity of green LED increases with better alignment. Secure it in a position that yields the highest intensity of the green LED. Press and release the button once to return to the RUN mode—or the sensor returns to the RUN mode automatically in two minutes.

VisiSight™ Configuration

The 42JT VisiSight is configured using the push button Remote Teach or via IO-Link and the LED indicators on the sensor. There are five features that can be configured:

*   Static Teach: Standard sensitivity/sensing range adjustment
*   Dynamic Teach (running process)
*   Light operate (L.O.) or dark operate (D.O.) output
*   Auto PNP/NPN, dedicated NPN or dedicated PNP
*   Push button lock/unlock

The sensor output is disabled during Teach.
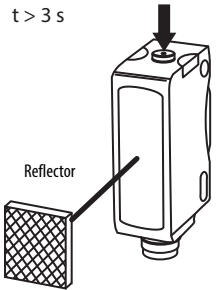
Teach Sensitivity/Sensing Range

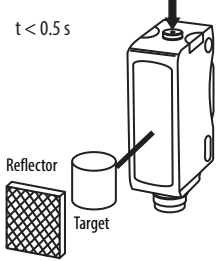The default setting is the maximum sensitivity/range.

Static Teach

Teaching the sensitivity/sensing range is a two step process: teach the reflector (first condition) and teach "target" (second condition).

Standard Teach
1. To teach the reflector (first condition):

t > 3 s

Reflector

Align the sensor to the reflector. Press and hold button for three seconds until the yellow LED starts flashing. Release the button. The first condition has now been taught.

2. Teach "target" (second condition):

t < 0.5 s

Reflector

Target

Insert the target between the sensor and the reflector. Press and release the button. The teach process is complete.

If the push button is not pressed within 30 seconds, the sensor exits teach mode and returns to RUN mode without learning new setting.

Restore to factory default setting of maximum range: Perform steps 1 and 2 with "no target" in the sensor's field of view and no reflector.

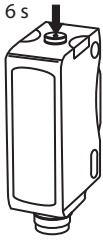## Dynamic Teach (Running Process):

If the targets to be detected are moving with the sensor aimed at the running process, press and hold the button for three seconds until the yellow LED starts flashing. The sensitivity will automatically be taught in the next 30 seconds provided the sensor sees two cycles of "target" and "no target."

Teach Light Operate (L.O.) or Dark Operate (D.O.)

The default setting of the output is dark operate (D.O.)

D.O. setting means that output turns ON when the target is detected. If the application requires the output to turn OFF when the target is detected, the setting may be changed to light operate (L.O.).

1. To access the teach output mode setting:

t > 6 s

Press and hold button for six seconds until green LED starts flashing. Release the button. The current setting is indicated by the yellow LED:
L.O.: Yellow LED ON
D.O.: Yellow LED OFF

2. To change the sensor output mode setting:

t < 0.5 s

Press and release the button within ten seconds to toggle from L.O. to D.O., the selection indicated by the yellow LED.

The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is depressed.

Output Type Selection:
Auto PNP/NPN, Dedicated NPN, Dedicated PNP)

The default setting is Auto PNP/NPN. This means the sensor monitors the load connection and automatically configures for the proper operation, i.e., PNP or NPN. If no load is connected, the sensor defaults to PNP.

The following applications are covered with dedicated PNP or dedicated NPN selection:

    a. Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.

    b. If the load is connected for NPN configuration but to a different power supply than the power to the sensor or via a load enabling contact (e.g., a relay contact in series with the load): select dedicated NPN.

Selection can be made as follows:

1. **To access output type:** Press and hold the push button for 12 seconds (until both LEDs start flashing synchronously). At the release of the button, the current setting of output type is indicated by the slow flashing of the LED (or LEDs) as follows:

    • Auto PNP/NPN: both LEDs flashing
    • Dedicated NPN: green LED flashing
    • Dedicated PNP: yellow LED flashing

2. **To change output type:** Press and release the push button within ten seconds to select desired type. Each press of the button will cycle to the next output setting. The type selected is indicated by the LEDs. The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is pressed.

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.

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.
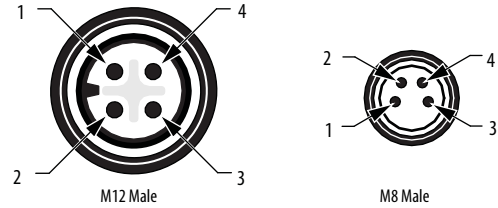
IO-Link

See instructions for IO-Link on www.ab.com. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
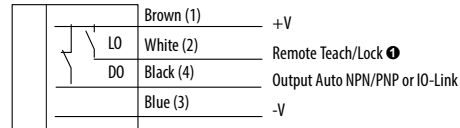
Wiring Diagrams

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

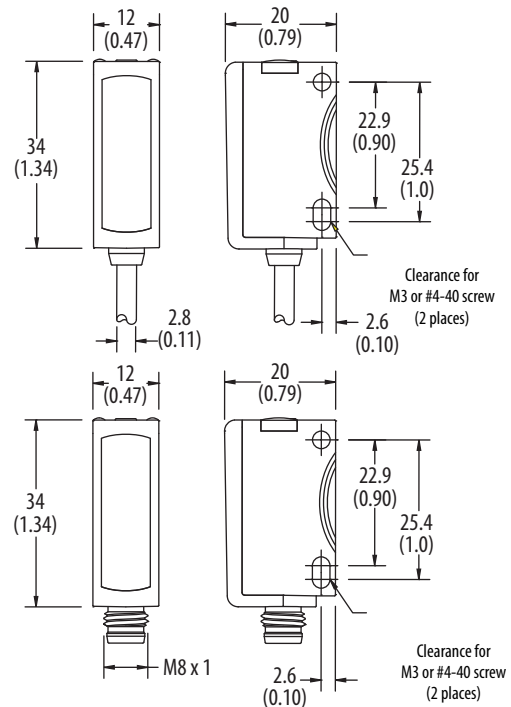**Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD**

M12 Male   M8 Male

Output Wiring

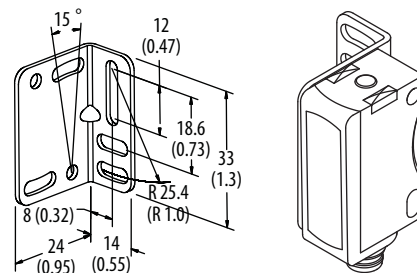|		
LO	Brown (1)	+V
	White (2)	Remote Teach/Lock ❶
DO	Black (4)	Output Auto NPN/PNP or IO-Link
	Blue (3)	-V

❶ **Normal operation**: no connection (disabled in IO-Link operation).
Remote teach: connect to +V. Refer to the Remote Teach section.
push button lock: connect to -V. Refer to the push button Lock/Unlock section.
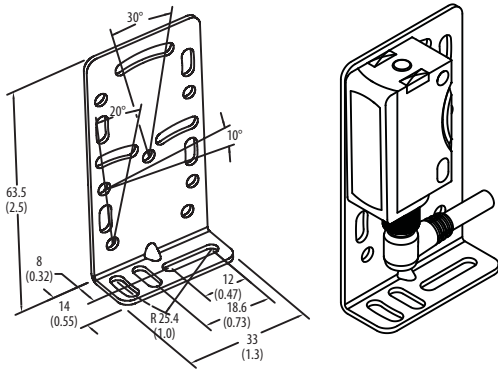
Approximate Dimensions [mm (in.)]
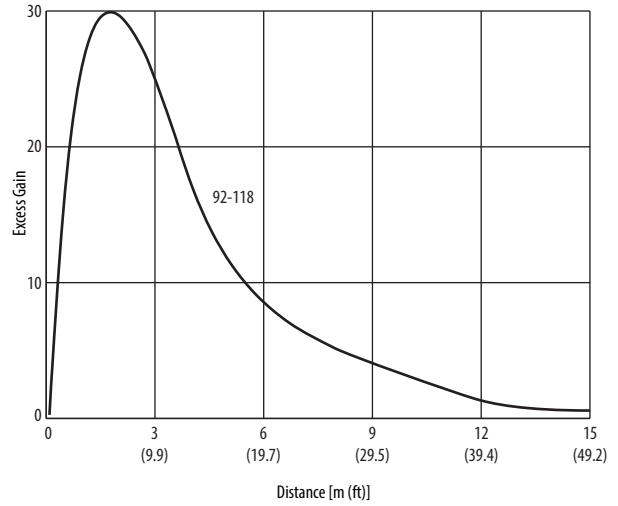

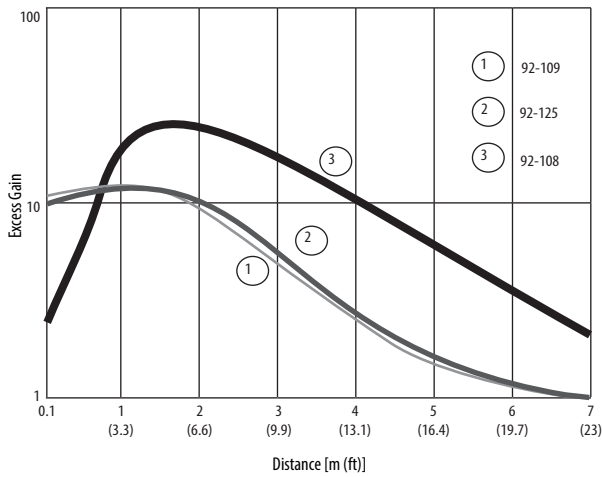## Accessories—Stainless Steel Mounting Brackets

60-BJS-L1

2) 60-BJT-L2

Typical Response Curves

Red Polarized Retroreflective (6 m)

①	92-109
②	92-125
③	92-108

Polarized Retroflective — Spot Size

Laser Polarized Retroreflective — Margin Curve (13 m)

92-118

Laser Polarized Retroreflective — Spot Size

www.rockwellautomation.com

Installation Instructions—42JT VisiSight™ Photoelectric Transmitted Beam Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Default Settings:

The factory default settings are configured so that no teaching is required for a vast majority of the applications.

Sensing Range: Maximum Setting
Output Mode: Dark Operate (Output ON when the light between the emitter and the receiver is blocked)

Output Type: Auto PNP/NPN or IO-Link. In Auto PNP/NPN mode, the sensor continuously monitors the load connection and automatically configures the output to PNP or NPN.

Receiver User Interface
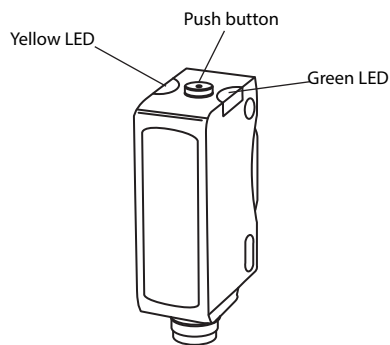
Note: The emitter does not have push button and yellow LED.

LED Status

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

Auto PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (6 Hz)	Unstable light level (0.5 < margin < 2)
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow	OFF	Output de-energized
	ON	Output energized

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow	OFF	Output de-energized
	ON	Output energized

General Specifications

	42JT-E2EZB1- & 42JT-R9LAT1-❶	42JT-E8EZB1- & 42JT-R8LAT1-❶
Environmental		
Certifications	cULus and CE Marked for all applicable directives	
Operating Environment	IP67, IP69K, ECOLAB❷	
Operating Temperature [C (F)]	-20…+60° (-4…+140°)❸	
Storage Temperature [C (F)]	-20…+80° (-4…+179°)	
Optical		
Light Source	Visible red 660 nm	Class 1 laser 650 nm
Sensing Range	0…13 m (0…42.65 ft)	0.05…18 m (0…59.05 ft)
Adjustments	Push button on receiver	
Electrical		
Voltage	10…30V DC	
Current Consumption	30 mA, max.	
Sensor Protection	Reverse polarity, short circuit, overload	
Outputs		
Response Time	0.5 ms, max.	0.25 ms, max.
Output Type	Auto PNP/NPN or IO-Link	
Output Function	Selectable light or dark operate	
Output Current	100 mA max.	
Output Leakage Current	10 µA max.	
Mechanical		
Housing Material	ABS	
Lens Material	PMMA	
Cover Material	PMMA	
Optional Accessories	Mounting brackets, cordsets	

❶ See Connection Types table below.
❷ ECOLAB on -P4 and -A2 models only
❸ UL: -20…+50°C (-4…122°F)

Connection Types

Cat. No. Suffix	Description
-A2	2 m cable
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application which is subject to excessive vibration or shifting

may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see the Accessories section for more details).

Alignment Indication

For short range applications the visible light beam of the sensor suffices as alignment aid.

The alignment feature may be used for longer range applications. Alignment of the sensor is indicated via change in intensity of the green LED in the Alignment Mode, as follows:

1. Press and release the push button twice within three seconds. After three seconds, the green LED turns OFF for 0.5 second indicating the sensor is in the alignment mode.

2. Align the sensor to the emitter. The intensity of green LED increases with better alignment. Secure it in a position that yields the highest intensity of the green LED. Press and release the button once to return to the RUN mode—or the sensor returns to the RUN mode automatically in two minutes.

VisiSight™ Configuration

The 42JT VisiSight is configured using the push button Remote Teach or IO-Link and the LED indicators on the sensor. There are five features that can be configured:

- Static Teach: Standard sensitivity/sensing range adjustment
- Dynamic Teach (running process)
- Light operate (LO) or dark operate (DO) output
- Auto PNP/NPN, dedicated NPN or dedicated PNP
- Push button lock/unlock

The sensor output is disabled during Teach.

Teach Sensitivity/Sensing Range

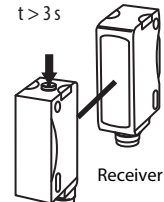The default setting is the maximum sensitivity/range.

Note: No teaching is needed for a vast majority of the applications. Teaching is only necessary for targets that are not fully opaque and the sensor may see through the target (thus not detect the target) if set at maximum sensitivity.
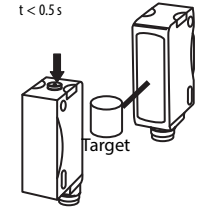
Static Teach:

Teach the receiver facing the emitter (first condition) and teach the "target" (second condition).

Standard Teach:

1. To teach the receiver facing the emitter (first condition):

t > 3 s

Receiver

Align the sensor to the emitter. Press and hold button for three seconds until yellow LED starts flashing. Release the button. The first condition has now been taught.

2. Teach "target" (second condition):

t < 0.5 s

Target

Insert the target between the emitter and the receiver. Press and release the button. The teach process is complete.

If the push button is not pressed within 30 seconds, the sensor exits teach mode and returns to RUN mode without learning the new setting.

Restore to factory default setting of maximum range: Perform steps 1 and 2 with "no target" in the sensor's field of view and no emitter.

Dynamic Teach (Running Process):

If the targets to be detected are moving with the sensor aimed at the running process, press and hold the button for three seconds until the yellow LED starts flashing. The sensitivity will automatically be taught in the next 30 seconds provided the sensor sees two cycles of "target" and "no target."

Teach Light Operate (L.O.) or Dark Operate (D.O.)

The default setting of the output is Dark Operate (D.O.)

D.O. setting means that output turns ON when the light between the emitter and the receiver is blocked. If the application requires the output to turn OFF when the target is blocking the light between the emitter and receiver, the setting may be changed to Light Operate (L.O.).

1. To access the teach output mode setting:

t > 6 s

Press and hold button for six seconds until the green LED starts flashing. Release the button. The current setting is indicated by the yellow LED:
L.O.: Yellow LED ON
D.O.: Yellow LED OFF

2. To change the sensor output mode setting:

t < 0.5 s

Press and release the button within ten seconds to toggle from L.O. to D.O., the selection indicated by the yellow LED.

The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is depressed.

Output Type Selection:
Auto PNP/NPN, Dedicated NPN, Dedicated PNP)

The default setting is Auto PNP/NPN. This means the sensor monitors the load connection and automatically configures for the proper operation, for example, PNP or NPN. If no load is detected the sensor defaults to PNP.

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The following applications are covered with dedicated PNP or dedicated NPN selection:

a. Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.

b. If the load is connected for NPN configuration but to a different power supply than the power to the sensor or via a load enabling contact (e.g., a relay contact in series with the load): select dedicated NPN.

Selection can be made as follows:

1. **To access output type:** Press and hold the push button for 12 seconds (until both LEDs start flashing synchronously). At the release of the button, the current setting of output type is indicated by the slow flashing of the LED (or LEDs) as follows:

   • Auto PNP/NPN: both LEDs flashing
   • Dedicated NPN: green LED flashing
   • Dedicated PNP: yellow LED flashing

2. **To change output type:** Press and release the push button within ten seconds to select desired type. Each press of the button will cycle to the next output setting. The type selected is indicated by the LEDs. The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is pressed.

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.

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.
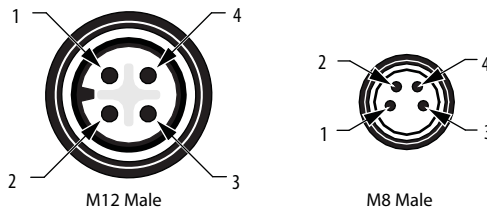
IO-Link

See instructions for IO-Link on www.ab.com. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
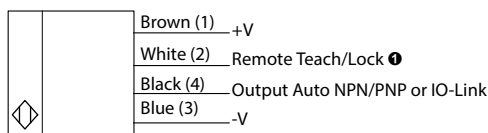
Wiring Diagrams

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

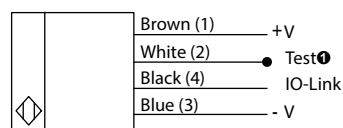**Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD**

M12 Male   M8 Male

Output Wiring

Transmitted Beam Receiver

Brown (1) — +V
White (2) — Remote Teach/Lock ❶
Black (4) — Output Auto NPN/PNP or IO-Link
Blue (3) — -V

Transmitted Beam Emitter

Brown (1) — +V
White (2) — Test❷
Black (4) — IO-Link
Blue (3) — - V

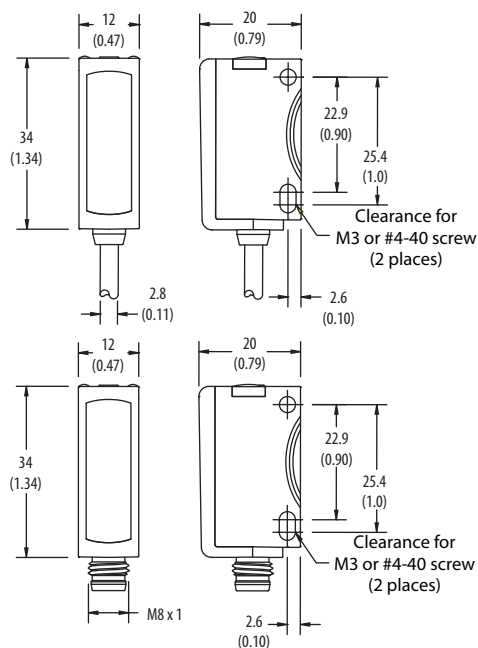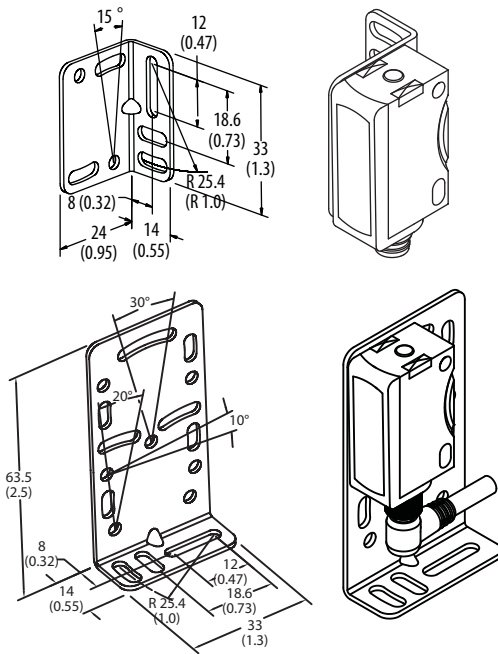❶ **Normal operation**: no connection. (Disabled in IO-Link operation.)
  Remote teach: connect to +V. Refer to the Remote Teach section.
  Push button lock: connect to -V. Refer to the Push Button Lock/Unlock section.
❷ For **Normal operation**, white wire (pin 2) and black wire (pin 4) needs no connection. To disable light source, connect white wire (pin 2) to +V or disable light source via IO-Link.
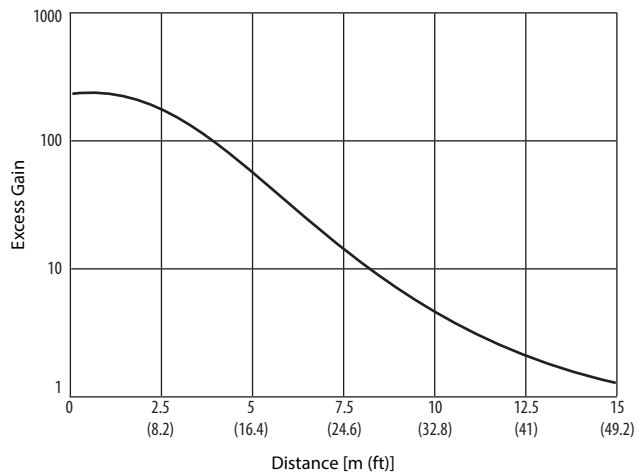
Approximate Dimensions [mm (in.)]

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Accessories

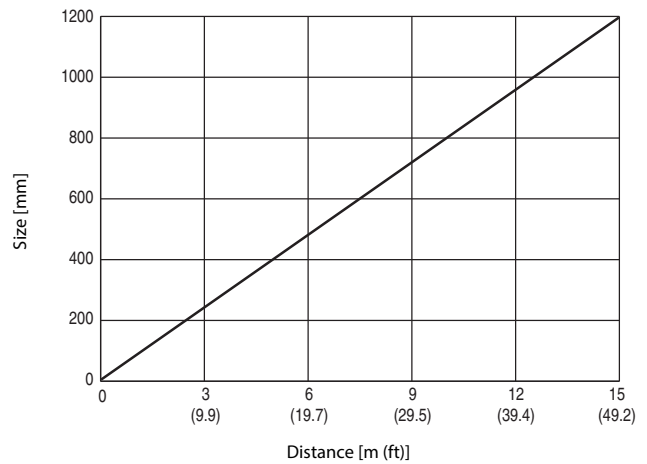### Stainless Steel Mounting Bracket—60-BJS-L1
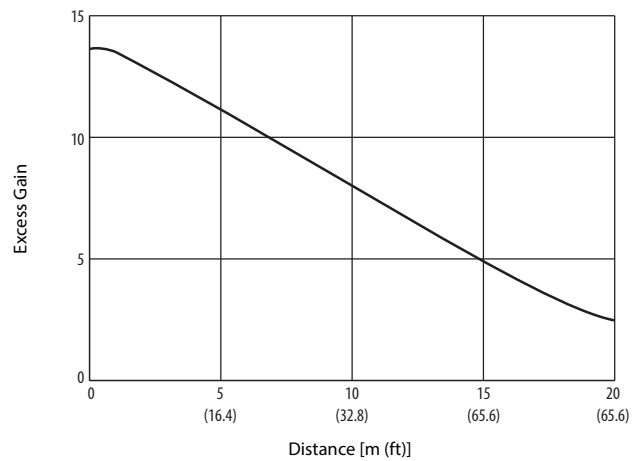

Typical Response Curves

Red Transmitted Beam (13 m)

Red Transmitted Beam—Spot Size

Laser Transmitted Beam (18 m)

Laser Transmitted Beam—Spot Size

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Installation Instructions
42JT VisiSight™ Photoelectric Background Suppression Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.
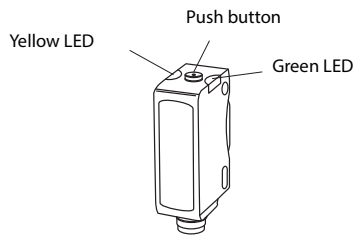
Default Settings:

The factory default settings are as follows:

Sensing Range: Maximum Setting

Output Mode: Light operate (Output ON when target detected)

Output Type: Auto PNP/NPN or IO-Link. In Auto PNP/NPN mode, the sensor continuously monitors the load connection and automatically configures the output to PNP or NPN.

Sensor User Interface

Yellow LED — Push button — Green LED

LED Status

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

Auto PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (6 Hz)	Unstable light level (0.5 < margin < 2)
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow	OFF	Output de-energized
	ON	Output energized

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow	OFF	Output de-energized
	ON	Output energized

❶ Connection Types

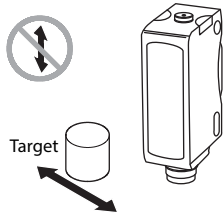| Cat. No. Suffix	Description
-A2	2 m cable
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

General Specifications

	Visible Red 42JT-B2LAT1-❶ 42JT-B2LAT2-❶	Class 1 Laser 42JT-B8LAT1-❶
Environmental		
Certifications	cULus and CE Marked for all applicable directives	
Operating Environment	IP67, IP69K, ECOLAB❷	
Vibration	10… 55 Hz, 1 mm amplitude, meets or exceeds IEC 60947-5-2	
Shock	30 g with 1ms pulse duration, meets or exceeds IEC 60947-5-2	
Operating Temperature [C (F)]	-20…+60° (-4…+140°) ❸	
Storage Temperature [C (F)]	-20…+80° (-4…+176°)	
Optical		
Light Source	Red 660 nm	Class 1 650 nm
Sensing Distance (90% reflectivity white) [mm (in.)]	1…180 (0.04…7.09)❹	4…120 (0.16…4.72))
	3…400 (0.12…15.8)❺	
Sensing Distance Adjustability [mm (in.)]	10…180 (0.4…7.09)	10…120 (0.4…4.72)
	30…400 (1.2…15.8)	
Sensing Distance (18% reflectivity grey) [mm (in.)]	2…160 (0.08…6.3)❹	5…110 (0.2…4.33)
	6…260 (0.24…10.24)❺	
Sensing Distance (6% reflectivity black) [mm (in.)]	4…120 (0.16…4.72)❹	8…100 (0.31…3.9)
	12…200 (0.5…7.9) ❺	
Adjustments	Push button	
Electrical		
Voltage	10…30V DC ❻	
Current Consumption	30 mA max.	
Sensor Protection	Reverse polarity, short circuit overload protection	
Outputs		
Response Time	0.5 ms max.	
Output Type	Auto PNP/NPN or IO-Link	
Output Function	Selectable light or dark operate	
Output Current	100 mA max.	
Output Leakage Current	10 µA max.	
Mechanical		
Housing Material	ABS	
Lens Material	PMMA	
Cover Material	PMMA	
Optional Accessories	Mounting brackets, cordsets	

❶ See Connection Types table
❷ ECOLAB on P4 and A2 models only
❸ UL: -20…+50°C (-4…+122°F)
❹ For 42JT-B2LAT1 (180 mm) models
❺ For 42JT-B2LAT2 (400 mm) models
❻ UL: Class 2 source

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Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application subject to excessive vibration or shifting may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see Accessories section for more detail).

Target

Note: Due to the detection method, targets travelling horizontally to the sensor's optics are detected. Targets travelling vertically may not be accurately detected. For reliable background suppression, a minimum separation distance is recommended between the target and the background; however this can vary depending on the application. Refer to the Typical Response Curves section.

VisiSight™ Configuration

The 42JT VisiSight is configured using the push button or Remote Teach or via IO-Link, and the LED indicators on the sensor. Four features can be configured:

- Standard or precision teach for sensitivity/sensing range
- Light operate (LO) or dark operate (DO) output
- Auto PNP/NPN, dedicated NPN or dedicated PNP
- Push button lock/unlock

The sensor output is disabled during Teach.

Teach Sensitivity/Sensing Range

The default setting is the maximum sensitivity/range.

Teaching the sensitivity/sensing range is a two-step process: teach the background (first condition) and teach "target" (second condition). Switching threshold for output ON vs. OFF is set in between the two conditions.

Standard Teach:
1. To teach the background (first condition):

 t > 3 s Background	Align the sensor to the background. Press and hold button for three seconds until yellow LED starts flashing. Release the button. The first condition has now been taught.

2. Teach "target" (second condition):

IMPORTANT	In the case of multiple reflectivity targets, choose the darkest/least reflective target placed in its farthest position for set up.

 t < 0.5 s Target Background	Insert the target between the sensor and the background. Press and release the button. The teach process is complete. If the push button is not pressed within 30 seconds, the sensor exits teach mode and returns to RUN mode without learning the new setting.

If there's no background surface in the field of view in Step 1, the switching threshold will be set between the distance to the target and the maximum sensing range. **The sensor can also be taught by teaching the target as the first condition and background as the second condition.**

Precision Teach: For a more precise setting with a smaller hysteresis, teach the sensor to the target in step 1 and keep the target present in step 2).

Restore to factory default setting of maximum range: Perform steps 1 and 2 with "no target" in the sensor's field of view and nothing in the background.

Teach Light Operate (L.O.) or Dark Operate (D.O.)
The default setting of the output is Light Operate (L.O.)

L.O. setting means that output turns ON when the target is detected. If the application requires the output to turn OFF when the target is detected, the setting may be changed to Dark Operate (D.O.).

1. To access the teach output mode setting:

 t > 6 s	Press and hold button for six seconds until the green LED starts flashing. Release the button. The current setting is indicated by the yellow LED: L.O.: Yellow LED ON D.O.: Yellow LED OFF

2. To change the sensor output mode setting:

 t < 0.5 s	Press and release the button within ten seconds to toggle from L.O. to D.O., the selection indicated by the yellow LED. The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is depressed.

Output Type Selection: Auto PNP/NPN, Dedicated NPN, Dedicated PNP
The default setting is Auto PNP/NPN. The sensor monitors the load connection and automatically configures for proper operation, i.e. PNP or NPN. If no load is connected, the sensor defaults to PNP. The following applications are covered with dedicated PNP or dedicated NPN selection:

a. Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.

b. If the load is connected for NPN configuration but to a power supply other than that to the sensor or via a load enabling contact (e.g. a relay contact in series with the load), select dedicated NPN.

Selection can be made as follows:

1. **To access output type:** Press and hold the push button for 12 seconds (until both LEDs start flashing synchronously). Upon button release, the current setting of output type is indicated by the slow flashing of the LED(s) as follows:

   - Auto PNP/NPN: both LEDs flashing
   - Dedicated NPN: green LED flashing
   - Dedicated PNP: yellow LED flashing

2. **To change output type:** Press and release the push button within 10 seconds to select desired type. Each button activation cycles to the next output setting. The type selected is indicated by the LEDs. The sensor retains the setting per the last button depression and returns to the RUN mode 10 seconds after the last button is pressed.

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.

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.
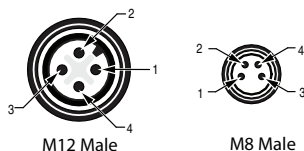
IO-Link

See instructions for IO-Link on www.ab.com. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
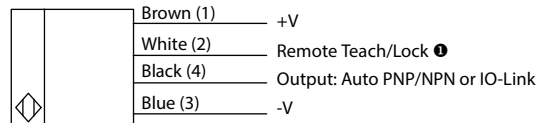
Wiring Diagrams

The quick-disconnect connector is shown below. The pin numbers correspond to male connectors on the sensor.
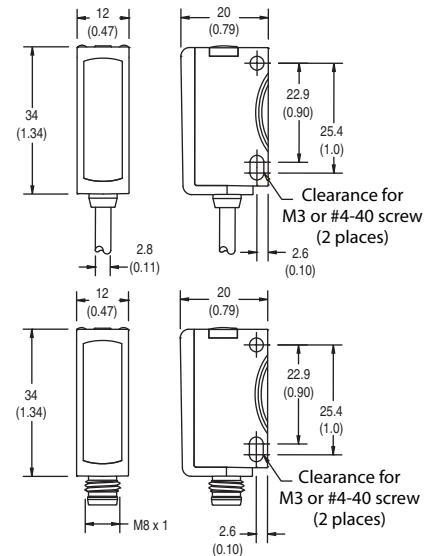
Micro (M12) Male QD Pigtail/Integral Pico (M8) Male QD

M12 Male   M8 Male

Output Wiring

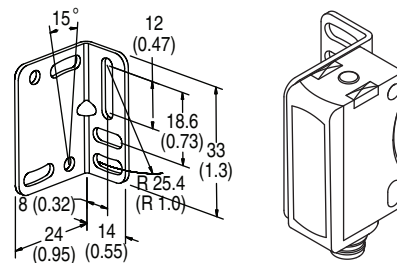| Brown (1) | +V |
White (2)	Remote Teach/Lock ❶
Black (4)	Output: Auto PNP/NPN or IO-Link
Blue (3)	-V

❶ Normal operation: no connection. (Disabled in IO-Link operation.)
  Remote Teach: refer to the Remote Teach section.
  Push Button Lock: connect to -V. Refer to the Push Button Lock/Unlock section.
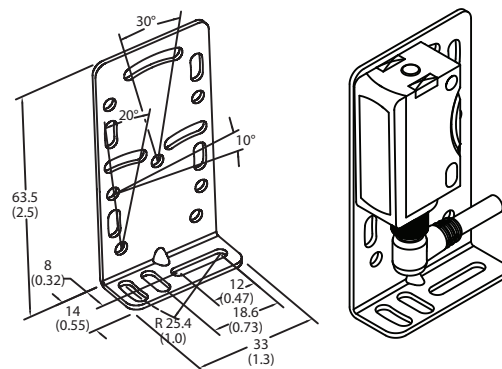
Approximate Dimensions [mm (in.)]
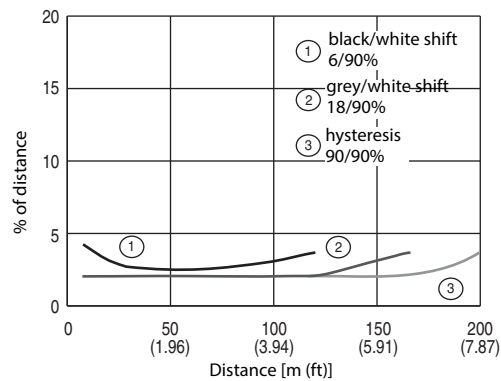

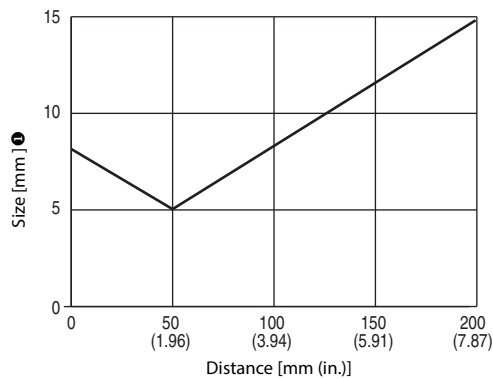## Accessories: Stainless Steel Mounting Brackets

1) 60-BJS-L1

2) 60-BJT-L2

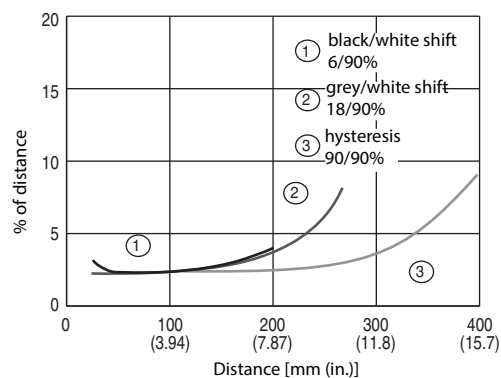### 3) 60-2619 VisiSight-compatible swivel/tilt mounting bracket

3

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Typical Response Curves

Background Suppression (180 mm)

- ① black/white shift 6/90%
- ② grey/white shift 18/90%
- ③ hysteresis 90/90%

Background Suppression (180 mm) — Spot Size

Background Suppression (400 mm)

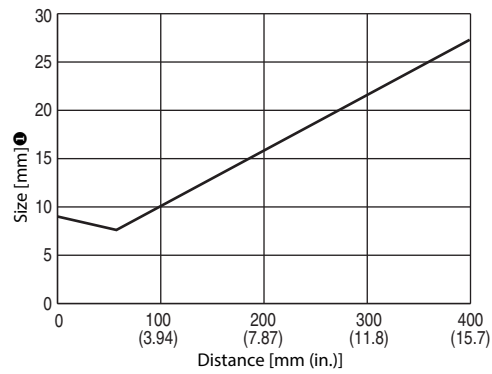- ① black/white shift 6/90%
- ② grey/white shift 18/90%
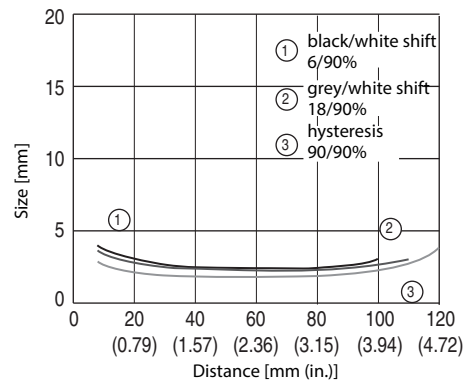- ③ hysteresis 90/90%

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

Background Suppression (400 mm) — Spot Size

Laser Background Suppression (120 mm)

- ① black/white shift 6/90%
- ② grey/white shift 18/90%
- ③ hysteresis 90/90%

Laser Background Suppression — Spot Size
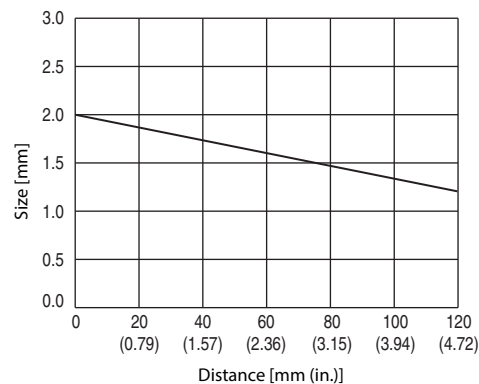
The minimum distance required between the target and the background depends upon the taught sensing range, the reflectivity of the target, and the reflectivity of the background. The curves can be used as a guide in a given application. Example (for 400 mm model): at around 230 mm taught sensing range, an 18% reflectivity grey target needs to be at least 5%, i.e., 12 mm away from a 90% reflective white background.

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Installation Instructions
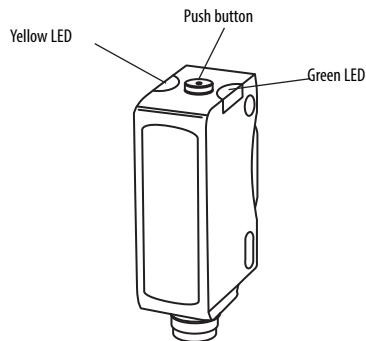# 42JT VisiSight™ Photoelectric Color Mark Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Default Settings:

Output Mode: Light Operate (Output ON when the color mark is detected after being taught)
Output Type: PNP or NPN (Push-Pull) or IO-Link

Sensor User Interface

LED Status

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.

Push-Pull PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow*	OFF	Output de-energized
	ON	Output energized

*LED status shown when the load is connected as PNP. The LED status reverses when the load is connected as NPN (e.g. LED is ON when the output is de-energized and OFF when is energized).

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow*	OFF	Output de-energized
	ON	Output energized

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application which is subject to excessive vibration or shifting may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see the Accessories section for more details).

General Specifications

	42JT-F5LET1-[1]
Environmental	
Certifications	cULus and CE Marked for all applicable directives
Operating Environment	IP67, IP69K, ECOLAB [2]
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
Operating Temperature [C (F)]	-20…+60° (-4…+140°) [3]
Storage Temperature [C (F)]	-20…+80° (-4…+179°)
Optical	
Light Source	Visible white LED
Sensing Range [mm (in.)]	12 (0.47)
Tolerance [mm (in.)]	+/- 2.5 (+/- 0.1)
Spot Size [mm (in.)]	1 x 4 (0.4 x 0.15)
Adjustments	Push button
Electrical	
Voltage	10…30V DC [4]
Current Consumption	25 mA max.
Sensor Protection	Reverse polarity, short circuit protection
Outputs	
Response Time	50 µs
Output Type	PNP or NPN (Push-Pull)
Output Function	Selectable light operate or dark operate
Output Current	100 mA max.
Output Leakage Current	10 µA max.
Mechanical	
Housing Material	ABS
Lens Material	PMMA
Cover Material	PMMA
Optional Accessories	Mounting brackets, cordsets

[1] See Connection Types table.

[2] ECOLAB on -P4 and -A2 models only.

[3] UL: -20…+50°C (-4…122°F)

[4] UL: Class 2 source

Connection Types

Cat. No. Suffix	Description
-A2	2 m cable
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

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Sensor Alignment

Position the 42JT VisiSight contrast sensor so that the distance from the object to the sensor is 12 mm. High reflectivity surfaces can impact the reliability of the color mark detection. We recommend that you angle the sensor 10° to help improve the color mark detection as shown below.
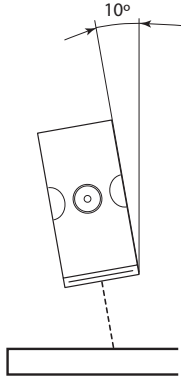
VisiSight™ Configuration

The 42JT VisiSight is configured using the push button or Remote Teach or via IO-Link and the LED indicators on the sensor. There are four features that can be configured:

- Static Teach
- Dynamic Teach (running process)
- Light operate (LO) or dark operate (DO) output
- Push button lock/unlock

The sensor output is disabled during Teach.

Teach

Teaching the color mark is a two step process:

1. Teach the color mark (first condition).

t > 3 s	Place the sensor 12 mm (0.47 in.) from the color mark and aim it at the mark. Press and hold the button for three seconds, until the yellow LED starts flashing. Release the button. Although the sensor will operate within a tolerance of +/-2.5 mm (0.1 in.) from the focal distance, the sensor should be installed at 12 mm (0.47 in.) for optimal performance.

2. Teach the background (second condition).

t < 0.5 s	Present the background to the sensor. Press and release the button. The teach process is complete. If the push button is not pressed within 30 seconds, the sensor exits teach mode and returns to RUN mode without learning the new setting. However, if the contrast of the color mark vs. the background is not sufficient (e.g., a yellow mark on a white background) the sensor is unable to detect the color mark. If that is the case, the white LED (light spot) flashes 10 times. A flashing white LED (light spot) indicates the following: Flashes (10 times): insufficient contrast level Flashes (3 times): small contrast level No flashing: good contrast level If the white LED flashes, angle the sensor 10° (see "Sensor Alignment," at left), and repeat the teach process. If the sensor is still unable to detect the color mark and indicates "insufficient contrast level," a higher end sensor may be necessary, such as the 45CRM color mark sensor.

Dynamic Teach (Running Process)

If the targets to be detected are moving with the sensor aimed at the running process, press and hold the button for three seconds, until the yellow LED starts flashing. The color mark will automatically be taught in the next 30 seconds provided the sensor sees two cycles of mark and background.

Teach Light Operate (L.O.) or Dark Operate (D.O.)

The default setting of the output is Light Operate (L.O.: output ON when the color mark is detected after being taught.)
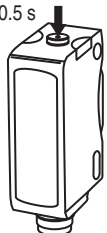
If the application requires the output to turn OFF when the color mark is detected, the setting may be changed to Dark Operate (D.O.)

1. To access the teach output mode setting:

t > 6 s	Press and hold button for six seconds, until green LED starts flashing. Release the button. The current setting is indicated by the yellow LED: L.O.: Yellow LED ON D.O.: Yellow LED OFF

2. To change the sensor output mode setting:

t < 0.5 s	Press and release the button within ten seconds to toggle from L.O. to D.O., the selection indicated by the yellow LED.
	The sensor retains the setting per the last button depression and returns to the RUN mode ten seconds after the last button is depressed.

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.

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. For example, connect to the +V for more than three seconds to align and install the reflector, disconnect from the +V; while the reflector is in the sensor's field of view and there is no target, connect to the +V for less than one second to complete the teach process. All push button functions can also be carried out via RT.
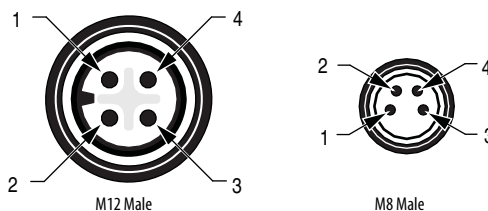
IO-Link

See instructions for IO-Link on www.ab.com. Remote Teach (pin 2) is disabled on IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
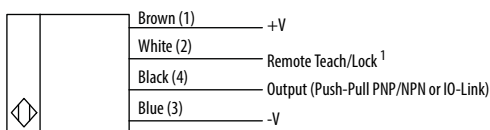
Wiring Diagrams

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

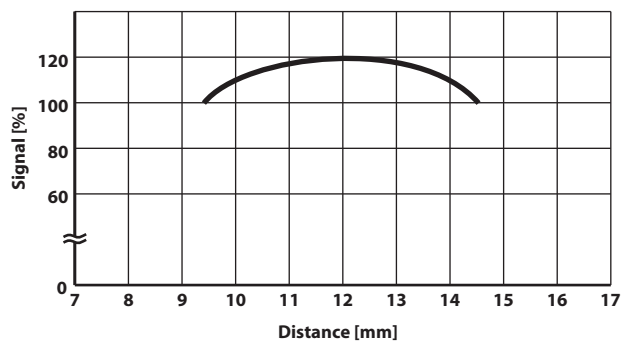### Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD

M12 Male   M8 Male

Output Wiring

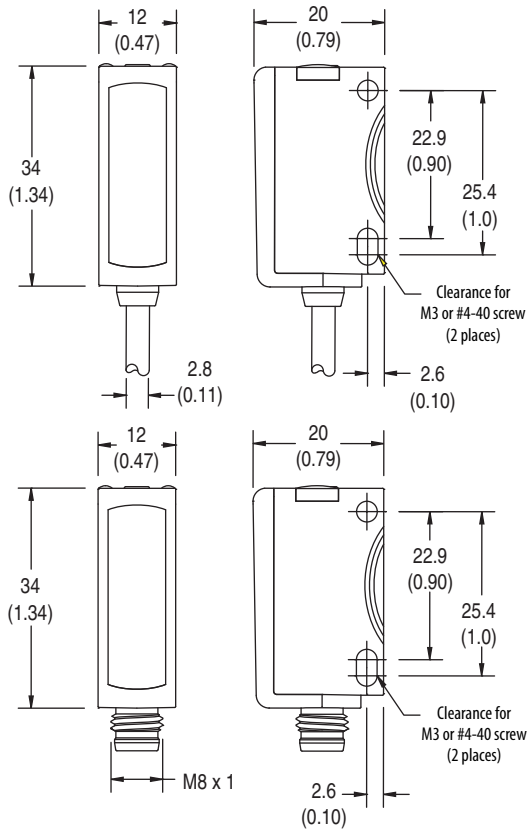|	
Brown (1)	+V
White (2)	Remote Teach/Lock [1]
Black (4)	Output (Push-Pull PNP/NPN or IO-Link)
Blue (3)	-V

[1] **Normal operation**: no connection (disabled in IO-Link operation).
Remote Teach: connect to +V. Refer to the Remote Teach section.
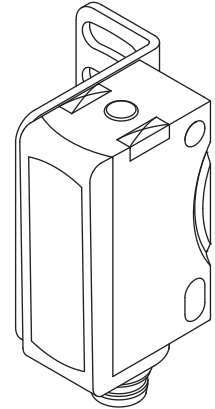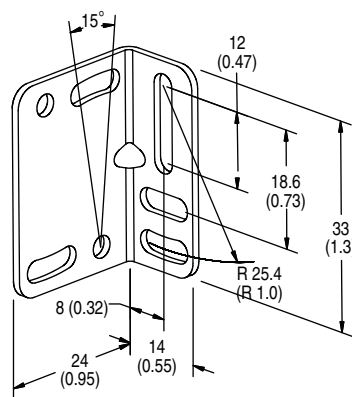**Push button lock**: connect to -V. Refer to the Push Button Lock/Unlock section.

Margin Curve
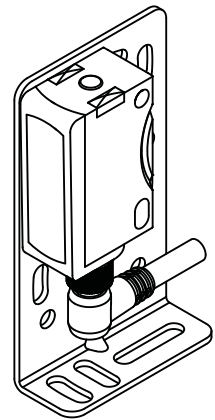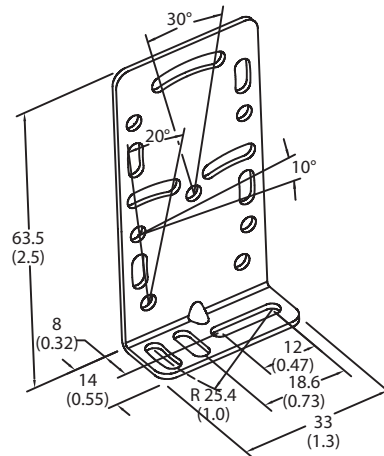

3

Approximate Dimensions [mm (in.)]

12 (0.47)
34 (1.34)
20 (0.79)
22.9 (0.90)
25.4 (1.0)
Clearance for M3 or #4-40 screw (2 places)
2.8 (0.11)
2.6 (0.10)

12 (0.47)
34 (1.34)
20 (0.79)
22.9 (0.90)
25.4 (1.0)
Clearance for M3 or #4-40 screw (2 places)
M8 x 1
2.6 (0.10)

Accessories

Stainless Steel Mounting Brackets

1) 60-BJS-L1

15°
12 (0.47)
18.6 (0.73)
33 (1.3)
R 25.4 (R 1.0)
8 (0.32)
24 (0.95)
14 (0.55)

2) 60-BJT-L2

30°
20°
10°
63.5 (2.5)
8 (0.32)
14 (0.55)
R 25.4 (1.0)
12 (0.47)
18.6 (0.73)
33 (1.3)

3) 60-2619 VisiSight compatible swivel/tilt mounting bracket

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Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Installation Instructions
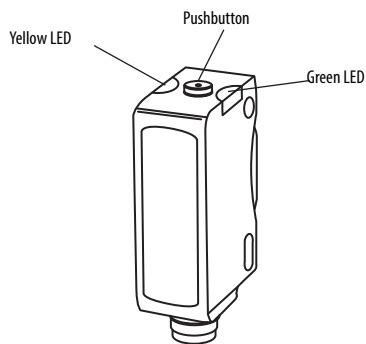# 42JT VisiSight™ Photoelectric Clear Object Sensors with IO-Link

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Default Settings:

Output Mode: Dark Operate (Output ON when the light between sensor and reflector is blocked)

Output Type: Auto PNP/NPN or IO-Link. In Auto PNP/NPN mode, the sensor continuously monitors the load connection and automatically configures the output to PNP or NPN.

Sensor User Interface

LED Status

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

Auto PNP/NPN Operation

Green	OFF	Power is OFF
	ON	Power is ON
	Flashing (6 Hz)	Unstable light level (0.5 < margin < 2)
	Flashing (1.5 Hz)	Output short circuit protection active
Yellow	OFF	Output de-energized
	ON	Output energized

IO-Link Operation

Green	OFF	Power is OFF
	Flashing (1 Hz)	Power is ON
Yellow	OFF	Output de-energized
	ON	Output energized

General Specifications

	42JT-C2LAT1-❶
Environmental	
Certifications	cULus and CE Marked for all applicable directives
Operating Environment	IP67, IP69K, ECOLAB ❷
Operating Temperature [C (F)]	-20…+60° (-4…+140°) ❸
Storage Temperature [C (F)]	-20…+80° (-4…+179°)
Optical	
Light Source	Visible red 660 nm
Sensing Range	0…2 m (0…6.6 ft)
Adjustments	Push button
Electrical	
Voltage	10…30V DC ❹
Current Consumption	30 mA max.
Sensor Protection	Reverse polarity, short circuit protection
Outputs	
Response Time	0.5 ms
Output Type	Auto NPN or PNP
Output Function	Selectable light operate or dark operate
Output Current	100 mA max.
Output Leakage Current	10 µA max.
Mechanical	
Housing Material	ABS
Lens Material	PMMA
Cover Material	PMMA
Optional Accessories	Mounting brackets, cordsets

❶ See Connection Types table.
❷ ECOLAB on P4 and A2 models only
❸ UL: -20…+50°C (-4…122°F)
❹ UL: Class 2 source

Connection Types

Cat. No. Suffix	Description
-A2	2 m cable (PUR)
-P4	Integral 4-pin pico (M8) QD
-F4	4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail
-Y4	4-pin pico (M8) QD on 150 mm (6 in.) pigtail

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. An application which is subject to excessive vibration or shifting may cause intermittent operation. For installation convenience, Rockwell Automation offers a wide range of mounting brackets (see the Accessories section for more details).

Alignment Indication

For short range applications the visible light beam of the sensor suffices as alignment aid.

The alignment feature may be used for longer range applications. Alignment of the sensor is indicated by a change in intensity of the green LED in the Alignment Mode, as follows:

1. Press and release the push button twice within three seconds. After three seconds, the green LED turns OFF for 0.5 second, indicating that the sensor is in the alignment mode.

2. Align the sensor to the reflector. The intensity of green LED increases with better alignment. Secure it in the position that yields the highest intensity of the green LED. Press and release the button once to return to the RUN mode—or the sensor returns to the RUN mode automatically in two minutes.

VisiSight™ Configuration

The 42JT VisiSight is configured using the push button, Remote Teach, or via IO-Link and the LED indicators on the sensor. The five following features can be configured:

- Static Teach: Standard or Precision Teach for sensitivity/sensing range
- Dynamic Teach (running process)
- Light operate (LO) or dark operate (DO) output
- Auto PNP/NPN, dedicated NPN or dedicated PNP
- Push button lock/unlock

The sensor output is disabled during Teach.
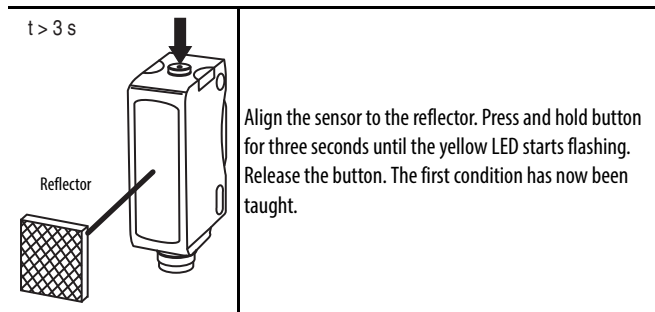
Teach Sensitivity/Sensing Range

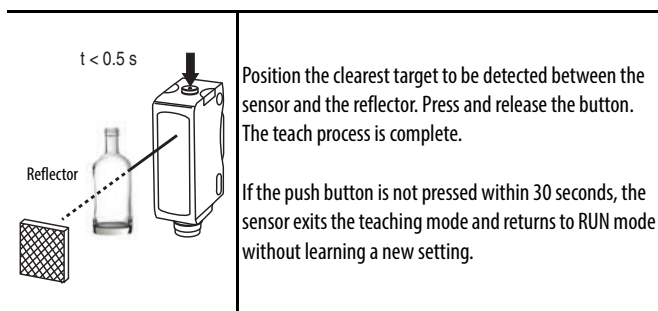The default setting is the maximum range.

Static Teach:

Teaching the sensitivity/sensing range is a two step process: teach the reflector (first condition) and teach "target" (second condition).

Standard Teach:

1. Teach the reflector (first condition)

t > 3 s	Align the sensor to the reflector. Press and hold button for three seconds until the yellow LED starts flashing. Release the button. The first condition has now been taught.

2. Teach target (second condition):

t < 0.5 s	Position the clearest target to be detected between the sensor and the reflector. Press and release the button. The teach process is complete. If the push button is not pressed within 30 seconds, the sensor exits the teaching mode and returns to RUN mode without learning a new setting.

The sensor can also be taught by teaching the target as the first condition and the reflector as the second condition.

Precision Teach:

A precision teach can be performed by teaching the reflector as both the first and second condition, i.e. clear target is not taught. This sets the sensor to its highest sensitivity to detect very clear targets. Under this setting, a small change in signal received will switch the output.

Restore to factory default setting of maximum range:
Perform steps 1 and 2 with no reflector and no target in the sensor field of view.
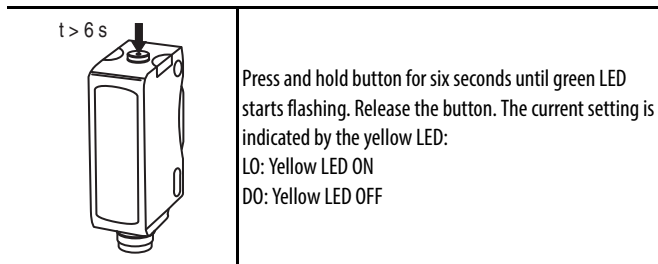
Dynamic Teach (Running Process):

If the targets to be detected are moving with the sensor aimed at the running process, press and hold the button for three seconds until the yellow LED starts flashing. The sensitivity will automatically be taught in the next 30 seconds, provided the sensor sees two cycles of "target" and "no target."

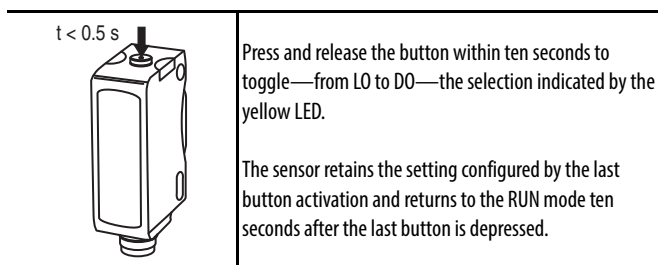## Teach Light Operate (LO) or Dark Operate (DO)

The default setting of the output is Dark Operate (DO).

DO setting means that the output turns ON when the target is detected. If the application requires the output to turn OFF when the target is detected, the setting may be changed to Light Operate (LO).

1. To access the teach output mode setting:

t > 6 s	Press and hold button for six seconds until green LED starts flashing. Release the button. The current setting is indicated by the yellow LED: LO: Yellow LED ON DO: Yellow LED OFF

2. To change the sensor output mode setting:

t < 0.5 s	Press and release the button within ten seconds to toggle—from LO to DO—the selection indicated by the yellow LED. The sensor retains the setting configured by the last button activation and returns to the RUN mode ten seconds after the last button is depressed.

Output Type Selection:
Auto PNP/NPN, Dedicated NPN, Dedicated PNP)

The default setting is Auto PNP/NPN. This means the sensor monitors the load connection and automatically configures for the proper operation, namely PNP or NPN. If no load is connected, the sensor defaults to PNP.

The following applications are covered with dedicated PNP or dedicated NPN selection:

a. Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.

b. If the load is connected for NPN configuration but to a different power supply than the power to the sensor or via a load enabling contact (e.g., a relay contact in series with the load): select dedicated NPN.

Perform a selection as follows:

1. **To access output type:** Press and hold the push button for 12 seconds (until both LEDs start flashing synchronously). Upon button release, the current setting of output type is indicated by the slow flashing of the LED (or LEDs) as follows:

   • Auto PNP/NPN: both LEDs flashing
   • Dedicated NPN: green LED flashing
   • Dedicated PNP: yellow LED flashing

2. **To change output type:** Press and release the push button within ten seconds to select desired type. Each activation of the button will cycle to the next output setting. The type selected is indicated by the LEDs. The sensor retains the setting configured by the last button activation and returns to the RUN mode ten seconds after the last button is pressed.

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.

Remote Teach (RT)

The sensor can be taught remotely via the white wire (pin 2). Connection to +V produces the same result as a button activation, while no connection is equivalent to not pressing the button. The sensor can be taught by following the same teach/timing sequence as used in the push button teach. For example, connect to the +V for more than three seconds to align and install the reflector, disconnect from the +V; while the reflector is in the sensor field of view and there is no target, connect to the +V for less than one second to complete the teach process. All push button functions can also be carried out via RT.
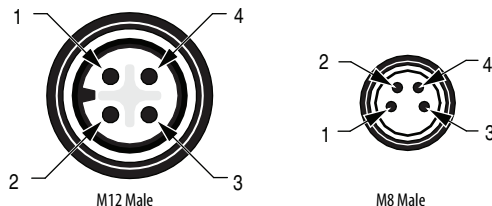
IO-Link

See instructions for IO-Link on *www.ab.com/literature*. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.
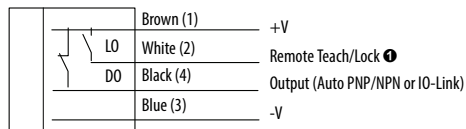
Wiring Diagrams

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

### Micro (M12) Male QD on Pigtail and Integral Pico (M8) Male QD

M12 Male   M8 Male

Output Wiring

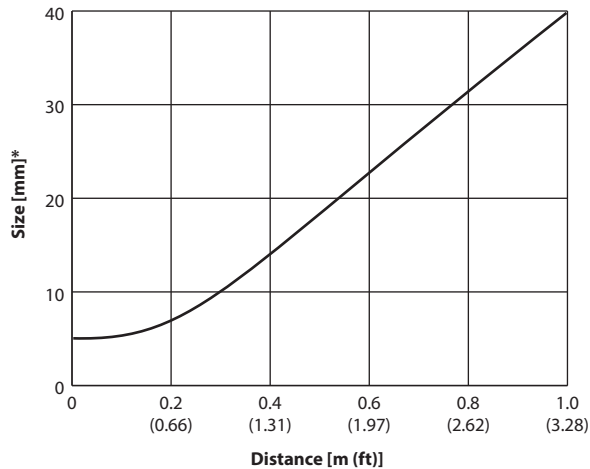|	
Brown (1)	+V
White (2)	Remote Teach/Lock ❶
Black (4)	Output (Auto PNP/NPN or IO-Link)
Blue (3)	-V

❶ **Normal operation**: no connection (disabled in IO-Link operation).
Remote Teach: connect to +V. Refer to the Remote Teach section.
Push Button Lock: connect to -V. Refer to the Push Button Lock/Unlock section.

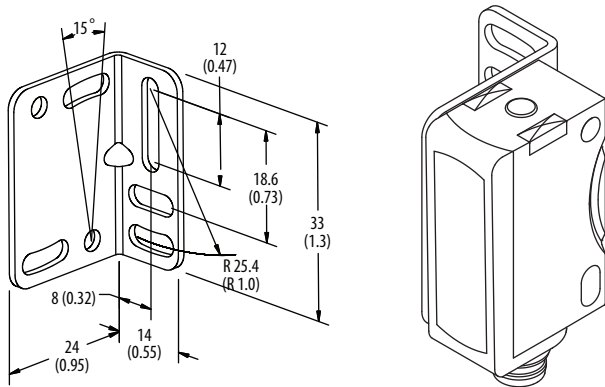## Approximate Dimensions [mm (in.)]
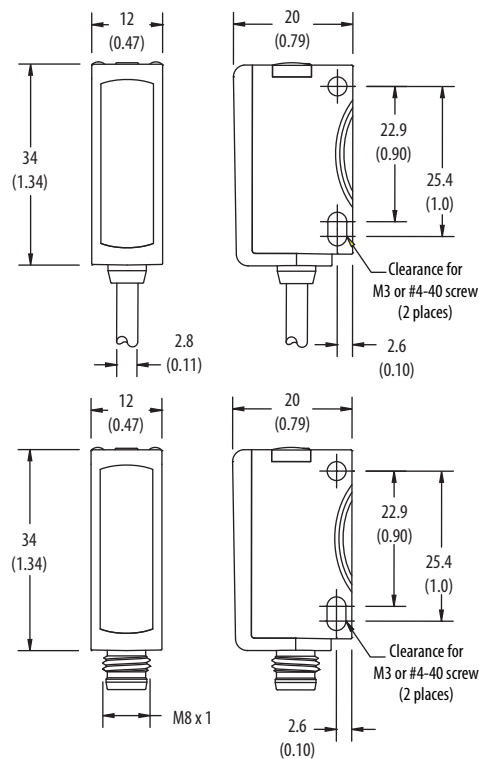
Spot Size

* The spot size is square in shape with one side dimension per the graph. Linear increase in spot size to 2 meters.
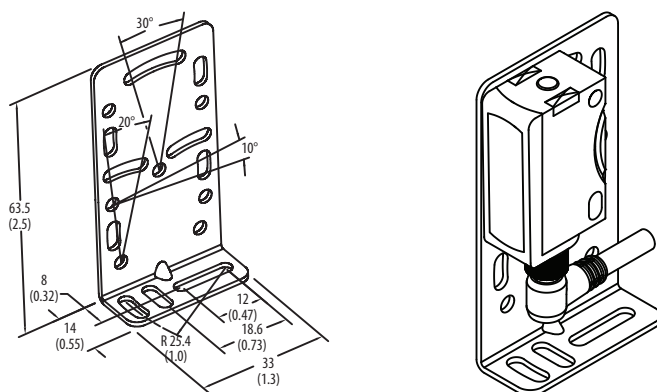
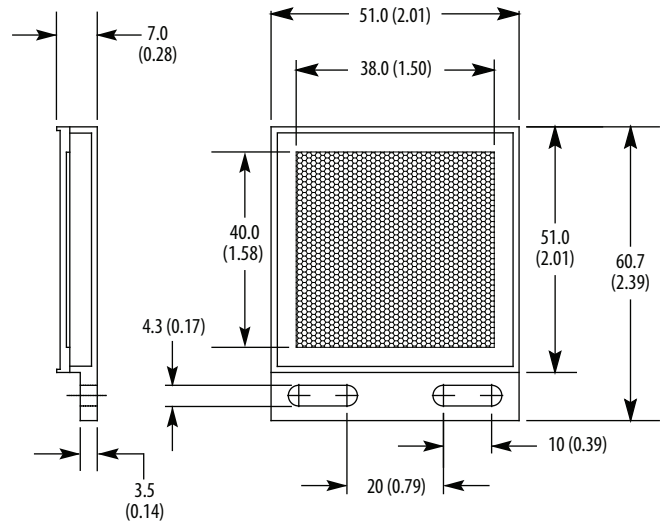## Accessories

Stainless Steel Mounting Brackets

60-BJS-L1

60-BJT-L2

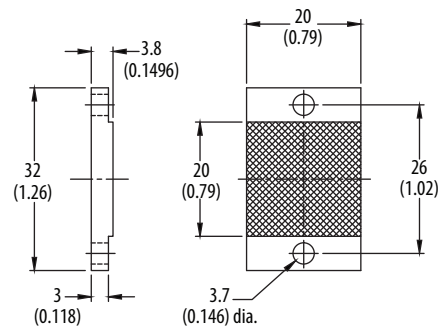**60-2619 VisiSight-compatible swivel/tilt mounting bracket**

Reflectors

92-118 Micro cube reflector

92-134 Micro cube reflector

This reflector can be used if a smaller size reflector is preferred and the reflector is mounted within 1 m (3.28 ft) of the sensor.

Rockwell Automation maintains current product environmental information on its website at
http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page .

www.rockwellautomation.com