Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

42JT VisiSight Transmitted Beam Photoelectric Sensor with IO-Link

Catalog Numbers 42JT-E2EZB1-*x*, 42JT-E8EZB1-*x*, 42JT-R8LAT1-*x*, 42JT-R9LAT1-*x*

IMPORTANT Save these instructions for future use.

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

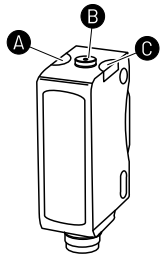
Topic	Page
Updated instructions link in IO-Link section	3
Added Description of Laser Class section	5
Added Declaration of Conformity section	5

Default Settings

The factory default settings are configured so that no teaching is required for many applications.

Attribute	Setting
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



Item	Description
A	Yellow status indicator (1)
B	Push button (1)
C	Green status indicator

(1) The emitter does not have push button and yellow status indicator.

Status Indicators

The following tables provide the state of the status indicators on the receiver in RUN mode during operation. The sensor is always in RUN mode, except when being taught.

Table 1 - Auto PNP/NPN Operation

Color	Status	Description
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

Table 2 - IO-Link Operation

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

Rockwell Automation

IO-Link

Mount the Sensor

Securely mount the sensor on a firm, stable surface or support. An application that is subject to excessive vibration or shifting can cause intermittent operation. For installation convenience, we offer mounting brackets (see Accessories on page 3).

Alignment Indication

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

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

1. Press and release the push button twice within 3 seconds. After 3 seconds, the green status indicator turns OFF for 0.5 second indicating the sensor is in the alignment mode.
2. Align sensor to the reflector. The intensity of green status indicator increases with better alignment. Secure it in a position that yields the highest intensity of the green status indicator. Press and release the push button once to return to the RUN mode, or the sensor returns to RUN mode in 2 minutes automatically.

VisiSight Configuration

The 42JT VisiSight™ sensor is configured using the push button, Remote Teach, or IO-Link and the status indicators on the sensor. The following features 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

IMPORTANT	The sensor output is disabled during Teach.

Teach Sensitivity/Sensing Range

The default setting is the maximum sensitivity/range.

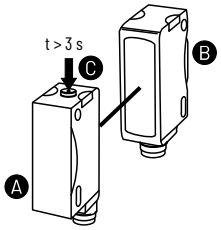
IMPORTANT	No teaching is needed for many applications. Teaching is only necessary for targets that are not fully opaque and the sensor may see through the target (thus not detect the target) if set at maximum sensitivity.

Static Teach

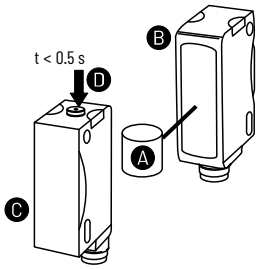
Teaching the sensitivity/sensing range is a two-step process: teach the receiver facing the emitter (first condition) and teach the Target (second condition).

Standard Teach

1. Teach the receiver facing the emitter (first condition):
   a. Align the receiver (A) to the emitter (B).
   b. Press and hold the push button (C) for three seconds until yellow status indicator on the receiver starts flashing.
   c. Release the push button.
   The first condition has now been taught.



2. Teach the Target (second condition):
   a. Insert the target (A) between the emitter (B) and the receiver (C).
   b. Press and release the push button (D).
   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 step 1 and step 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 that is aimed at the running process, press and hold the push button for 3 seconds until the yellow status indicator on the receiver starts flashing. The sensitivity is automatically 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).

The DO 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 (LO).

1. To access the teach output mode setting:
   a. Press and hold the push button (A) for 6 seconds until green status indicator starts flashing.
   b. Release the push button.
   The yellow status indicator on the receiver indicates the current setting: LO — Yellow status indicator ON; DO — Yellow status indicator OFF



2. To change the sensor output mode setting:
   a. Press and release the push button (A) within 10 seconds to toggle from LO to DO. The selection indicated by the yellow status indicator.
   The sensor retains the setting per the last push button press and returns to the RUN mode ten seconds after the last push button is pressed.



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

The default setting is Auto PNP/NPN. This setting means the sensor monitors the load connection and automatically configures for the proper operation (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:

- Parallel wiring of multiple sensor outputs: select dedicated PNP or dedicated NPN setting, as needed.
- 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 (for example, a relay contact in series with the load): select dedicated NPN.

Selection can be made as follows:

- Access output type: Press and hold the push button for 12 seconds (until both status indicators start flashing synchronously). At the release of the push button, the slow flashing of the status indicators indicates the current setting of output type as follows:
  - Auto PNP/NPN: both status indicators flashing
  - Dedicated NPN: green status indicator flashing
  - Dedicated PNP: yellow status indicator flashing
- Change output type: Press and release the push button within 10 seconds to select desired type. Each press of the push button cycles to the next output setting. The status indicators indicate the type that is selected. The sensor retains the setting per the last push button press and returns to the RUN mode 10 seconds after the last push 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.

- Lock the push button: Press and release the push button three times within 3 seconds. Both status indicators flash synchronously for 3 seconds, which indicates that the push button is now locked.
- Unlock the push button: Press and release the push button three times within 3 seconds. Both status indicators flash asynchronously for 3 seconds, which indicates that the push button is now unlocked.
- Permanent lock: The push button can 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 push button being pressed and no connection is the same as the push 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 3 seconds to teach the Target, disconnect from the +V; remove the target and connect to the +V for less than 1 second to teach the No Target condition. Remote teach can conduct all push button functions.

IO-Link

For IO-Link instructions, see the VisiSight Photoelectric Sensors with IO-Link Interface User Manual, publication 42JT-UM001. Remote Teach (pin 2) is disabled in IO-Link operation. If output is selected as dedicated NPN, IO-Link communication is unavailable.

Accessories

Table 3 - Mounting Brackets

Description	Dimensions	Cat. No.
Stainless-steel bracket	Figure 10 on page 4	60-BJS-L1
Stainless-steel bracket	Figure 11 on page 4	60-BJT-L2

Wiring Diagrams

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

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

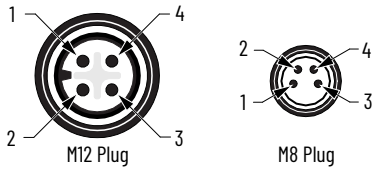
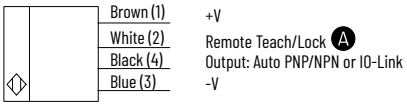


Figure 2 - Output Wiring — Transmitted Beam Receiver



Item	Description
A	• Normal operation: No connection. Disabled in IO-Link operation. • Remote Teach: See Remote Teach (RT). • Push Button Lock: Connect to -V. See Push Button Lock/Unlock.

Figure 3 - Output Wiring — Transmitted Beam Emitter



Item	Description
A	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.

Typical Response Curves

Figure 4 - Red Transmitted Beam (13 m)

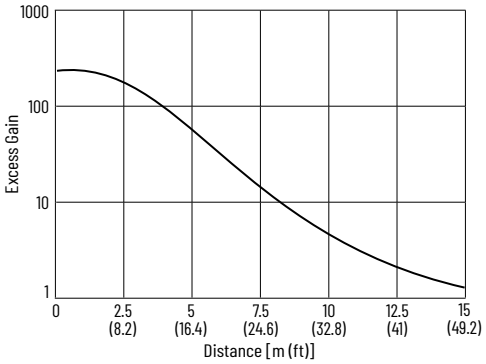


Figure 5 - Red Transmitted Beam—Spot Size

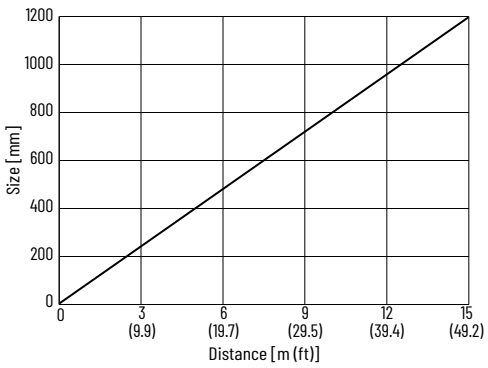


Figure 6 - Laser Transmitted Beam (18 m)

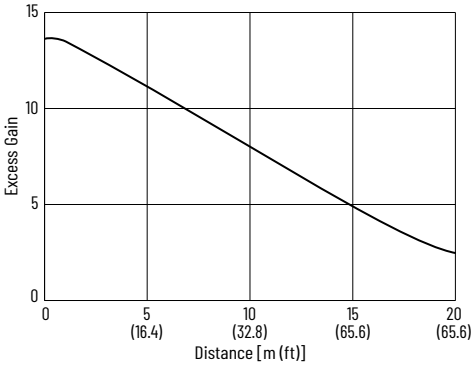
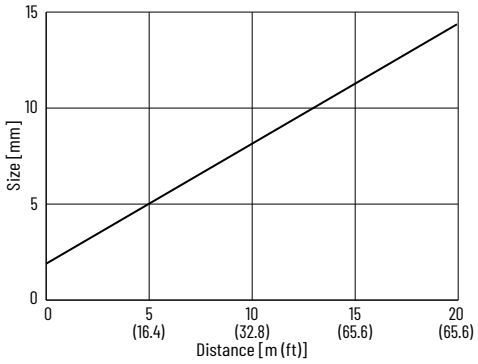


Figure 7 - Laser Transmitted Beam—Spot Size



Approximate Dimensions

Figure 8 - Integrated Cable Model [mm (in.)]

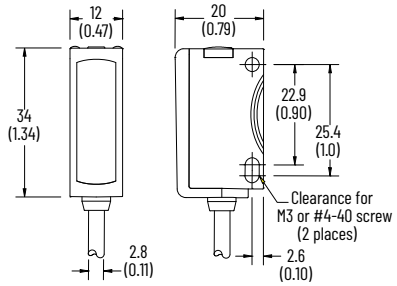


Figure 9 - QD Model [mm (in.)]

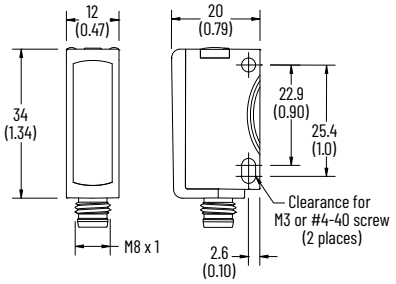


Figure 10 - Cat. No. 60-BJS-L1 — Stainless-steel Mounting Bracket

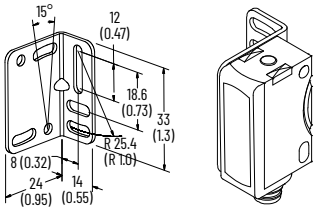
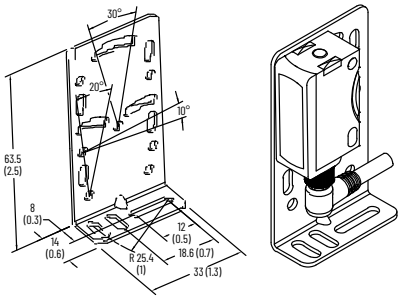


Figure 11 - Cat. No. 60-BJT-L2 — Stainless-steel Mounting Bracket



Specifications

Attribute	42JT-E2EZB1-x [1] 42JT-R9LAT1-x [1]	42JT-E8EZB1-x [1] 42JT-R8LAT1-x [1]
Environmental		
Certifications	cULus Listed, CE Marked for all applicable directives, and UKCA Marked for all applicable regulations	
Operating Environment	IP67, IP69K, ECOLAB [2]	
Operating Temperature	-20…+60 °C (-4…+140 °F) [3]	
Storage Temperature	-20…+80 °C (-4…+179 °F)	
Optical		
Light Source	Visible red 660 nm	Class 1 laser 650 nm
Sensing Range	0…13 m (0…42.7 ft)	0.05…18 m (0.16…59.1 ft)
Adjustments	Push button on receiver	
Electrical		
Voltage	10…30V DC	
Current consumption, max	30 mA	
Protection type	Reverse polarity, short circuit, and overload	
Outputs		
Response time, max	0.5 ms	0.25 ms
Output type	Auto NPN/PNP or IO-Link	
Output function	Selectable light operate or dark operate	
Output current, max	100 mA	
Output leakage current, max	10 µA	
Mechanical		
Material	Housing: ABS Lens: PMMA Cover: PMMA	

(1) For connection types, replace the x with: A2 for 2 m (6.6 ft) cable; P4 for integral 4-pin pico (M8) QD; F4 for 4-pin DC micro (M12) QD on 150 mm (6 in.) pigtail; and Y4 for 4-pin pico (M8) QD on 150 mm (6 in.) pigtail
(2) ECOLAB on P4 and A2 models only
(3) UL: -20…+50 °C (-4…+122 °F)

Description of Laser Class

Class I Laser Product
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser Notice No. 56 dated May 2019

Caution. Do not disassemble for repair.

Use of control or adjustments or performance of procedures other than those specified here, may result in hazardous radiation exposure. Do not attempt to disassemble this sensor for repair. A defective unit must be returned to the manufacturer.

Declaration of Conformity

CE Conformity

Rockwell Automation declares that the products that are shown in this document conform with the 2014/30/EU Electromagnetic Compatibility Directive (EMC) and that the respective standards and/or technical specifications have been applied.

For a comprehensive CE certificate visit: rok.auto/certifications

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Rockwell Automation declares that the products that are shown in this document are in compliance with 2016 No. 1091 Electromagnetic Compatibility Regulations and that the respective standards and/or technical specifications have been applied.

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Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)



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

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

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