

VisiSight M20A General Purpose Photoelectric Sensors

Catalog Numbers 42JA-B2LNA1-xx, 42JA-B2LNA2-xx, 42JA-B2LPA1-xx, 42JA-B2LPA2-xx, 42JA-C2LNA1-xx, 42JA-C2LPA1-xx, 42JA-D2LNA1-xx, 42JA-D2LPA1-xx, 42JA-E1EZB1-xx, 42JA-E2EZB1-xx, 42JA-N2LNA2-xx, 42JA-N2LPA2-xx, 42JA-P2LNA1-xx, 42JA-P2LPA1-xx, 42JA-R1LNA1-xx, 42JA-R1LPA1-xx, 42JA-R2LNA1-xx, 42JA-R2LPA1-xx, 42JA-W2LPA1-xx

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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.

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Updated -P4 description in Product Selection table footnote.	2

Description



42JA VisiSight™ M20A photoelectric sensors offer a wide range of sensing modes and an adjustable knob that simplifies sensitivity adjustment and offers light versus dark operate output selection.

The VisiSight offers a small rectangular package with visible light beam for ease of alignment and industry-standard mounting hole spacing of 25.4 mm (1 in.).

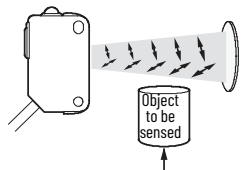
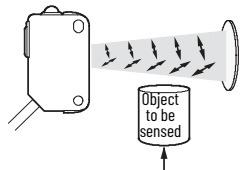
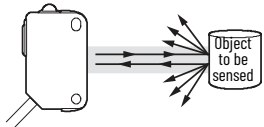
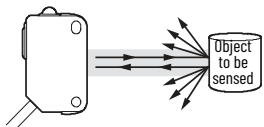
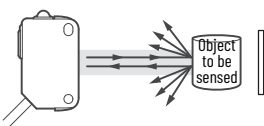
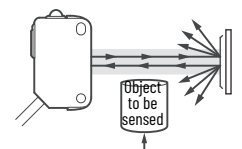
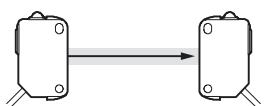
Features

- Visible light source offered on all models for ease of alignment
- Selectable light operate or dark operate adjustment knob
- Wide range of sensing modes
- 360° visible status indicators
- Additional transmitted beam models available with Infrared light source for excellent cross talk immunity
- Input to disable light source on transmitted beam emitter
- IP67 rated enclosure

Available Models

- Diffuse
- Wide angle diffuse
- Background suppression
- Background reflection
- Polarized retroreflective
- Clear object detection
- Transmitted beam

Product Selection

Sensing Mode	Light Source	Sensing Distance	Sensitivity Adjustment	Output Function	Output Type	Cat. No. ⁽¹⁾
 Field of View: 4° Polarized Retroreflective	Visible red	0.01...5 m (0.3...16.4 ft) with 92-125 reflector	Adjustable knob	Selectable light or dark operate	NPN	42JA-P2LNA1-F4
					PNP	42JA-P2LPA1-F4
 Field of View: 4° Clear Object Detection	Visible red	0.01...2.5 m (0.3...8.2 ft) with 92 125 reflector	Adjustable knob	Selectable light or dark operate	NPN	42JA-C2LNA1-F4
					PNP	42JA-C2LPA1-F4
 Field of View: 2° Diffuse	Visible red	3...1000 mm (0.1...39.4 in.)	Adjustable knob	Selectable light or dark operate	NPN	42JA-D2LNA1-F4
					PNP	42JA-D2LPA1-F4
 Field of View: 170 mm (6.7 in.) @ 200 mm (7.9 in.) Wide Angle Diffuse	Visible red	0...200 mm (0...7.9 in.)	Adjustable knob	Selectable light or dark operate	PNP	42JA-W2LPA1-F4
 Field of View: 4° Background Suppression	Visible red	3...100 mm (0.1...3.9 in.)	Adjustable knob	Selectable light or dark operate	NPN	42JA-B2LNA1-F4
		3...350 mm (0.1...13.8 in.)			PNP	42JA-B2LPA1-F4
					NPN	42JA-B2LNA2-F4
					PNP	42JA-B2LPA2-F4
 Field of View: 4° Background Reflection	Visible red	3...350 mm (0.1...13.8 in.)	Adjustable knob	Selectable light or dark operate	NPN	42JA-N2LNA2-F4
					PNP	42JA-N2LPA2-F4
 Field of View: 2° Transmitted Beam	Visible red	10 m (32.8 ft)	No adjustment knob	Selectable light or dark operate	—	42JA-E2EZB1-F4
			Adjustable knob		NPN	42JA-R2LNA1-F4
			Adjustable knob		PNP	42JA-R2LPA1-F4
	Infrared	15 m (49.2 ft)	No adjustment knob		—	42JA-E1EZB1-F4
			Adjustable knob		NPN	42JA-R1LNA1-F4
			Adjustable knob		PNP	42JA-R1LPA1-F4

(1) Connection options

The following suffixes describe the available connection options:

- F4: Describes a 4-pin DC micro (M12) quick-disconnect on a 300 mm (11.8 in.) pigtail
- P4: Describes a 4-pin Pico (M8) integral quick-disconnect
- Y4: Describes a 4-pin Pico (M8) quick-disconnect on a 300 mm (11.8 in.) length pigtail
- A2: Describes a 2 m (6.6 ft) PVC cable

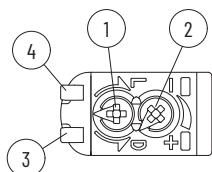
Additional connection options may be available. See configurator.rockwellautomation.com for available options by sensing mode.

Specifications

Attribute	Value
Certifications	CE and cULus
EMC Directive	EN 60947-5-2
Standards	UL 60947-5-2
Ambient light immunity	EN 60697-5-2:2007+A:2012
Functional Safety Parameters	
MTTFd	860 a
Mission Time (TM)	20 a
Diagnostic Coverage (DC)	0%
User Interface	
Status indicators	Green and orange
Adjustments	2 adjustable knobs
Optical	
Light-emitting diode (LED)	Red and Infrared (specific transmitted beam models)
Electrical	
Operating voltage	10 ...30V DC
Current consumption	<20 mA
Sensor protection	Reverse polarity and short circuit
Load current	100 mA max, resistive load
Output	
Output types	1 x PNP or 1 x NPN by catalog number
Response Time	
Diffuse	0.5 ms
Wide angle diffuse	0.5 ms
Background suppression	1 ms
Background reflection	1 ms
Polarized retroreflective	0.5 ms
Transmitted beam	2 ms
Clear object detection	0.5 ms
Mechanical	
Housing material	PC (Polycarbonate)
Lens material	PMMA
Environmental	
Enclosure rating	IP67
Operating temperature	-30...+60 °C (-22...+140 °F)

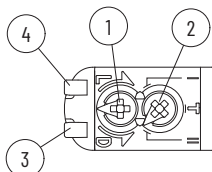
Status Indicators and User Interface

Diffuse, Polarized Retroreflective, Background Suppression, Background Reflection, Transmitted Beam, and Wide Angle Diffuse



Item	Description
1	Light or dark operate selection
2	Sensing range adjustment knob
3	Orange status indicator
4	Green status indicator

Clear Object Detection



Item	Description
1	Light or dark operate selection
2	Teach knob
3	Orange status indicator
4	Green status indicator

Table 1 provides indicator status in the RUN mode, during operation for diffuse, polarized retroreflective, background suppression, background reflection, transmitted beam, and wide angle diffuse models.

Table 1 - Operating Mode Indication

Status Indicator Color	Status	Description
Green	OFF	Power is OFF
	ON	Power is ON
Orange	OFF	Output de-energized
	ON	Output Energized

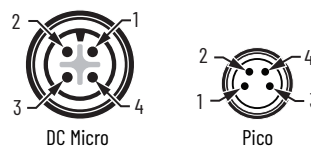
For clear object detection mode, the adjustment knob has three settings:

- Teach mode
- 18% contrast mode
- 40% contrast mode

Wiring

The quick disconnect connector is shown in Figure 1. The pin numbers correspond to the plugs on the sensor.

Figure 1 - Pinouts



Wiring Diagrams

Figure 2 - PNP Output Wiring

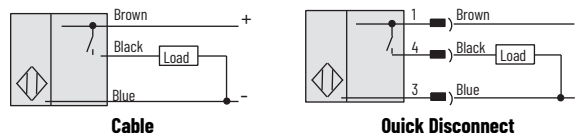


Figure 3 - NPN Output Wiring

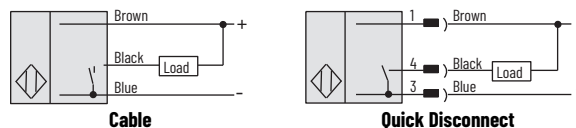
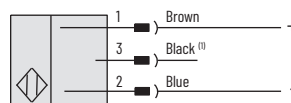


Figure 4 - Transmitted Beam Emitter



(1) Emitter light source is disabled when this pin is connected to 0V.

Approximate Dimensions

Figure 5 - Integral M8 Pico QD Models

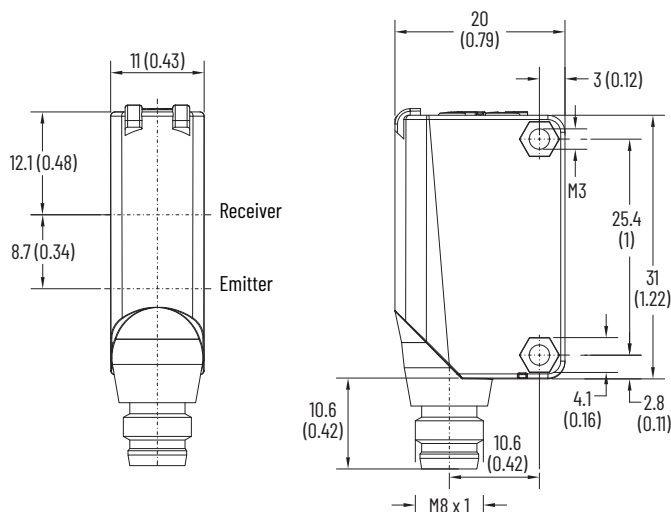
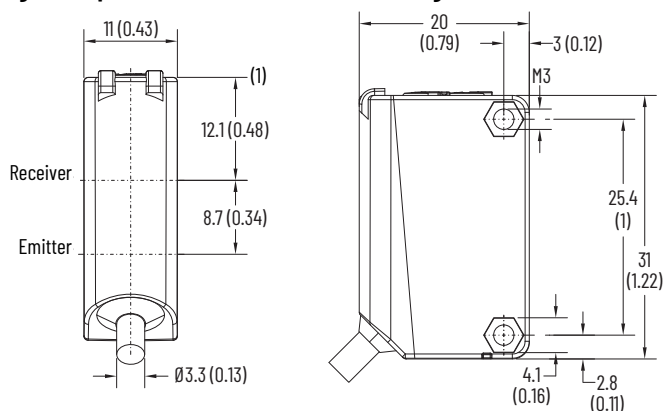


Figure 6 - 2 m (6.6 ft) Cable, 4-pin M12 QD on 300 mm (11.8 in.) Pigtail, 4-pin M8 QD on 300 mm (11.8 in.) Pigtail Models



(1) For transmitted beam emitter, the LED centerline is located 14.1 mm (0.56 in.) lower than this point.

Typical Response Curves

Figure 7 - Background Suppression - Beam Pattern

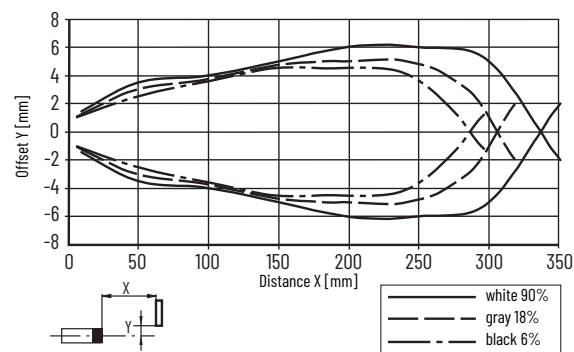


Figure 8 - Background Suppression - Detection Distance

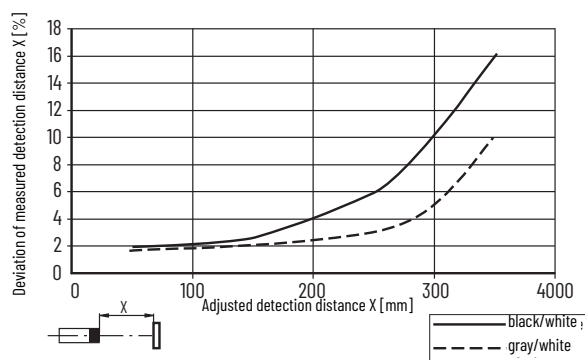


Figure 9 - Background Reflection - Minimum Object Height

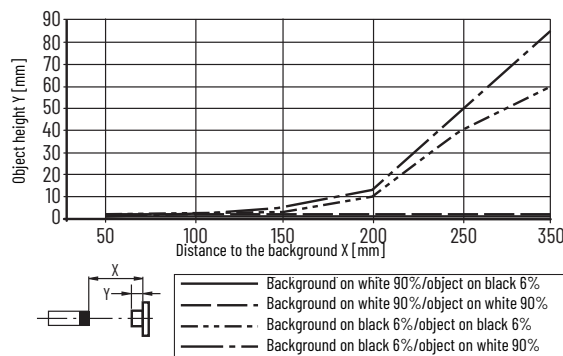


Figure 10 - Polarized Retroreflective - Beam Pattern

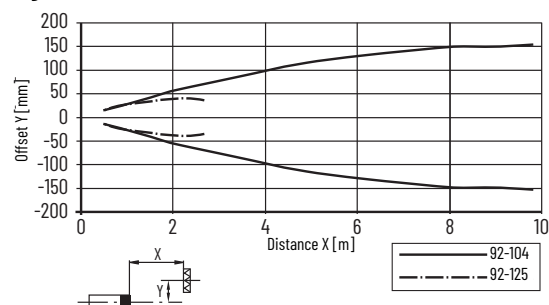


Figure 11 - Diffuse - Beam Pattern

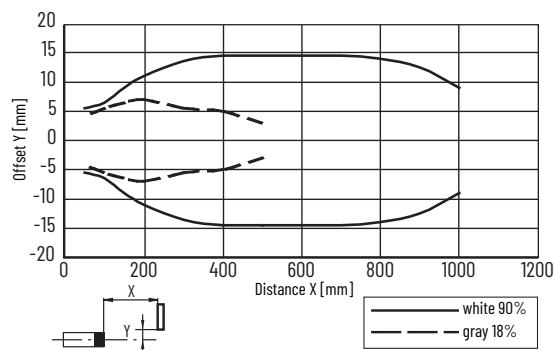


Figure 12 - Diffuse - Margin Curve

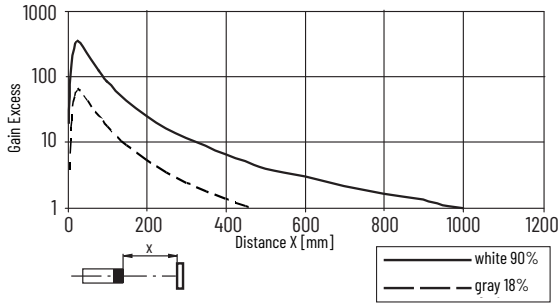


Figure 13 - Diffuse - Detection Ranges

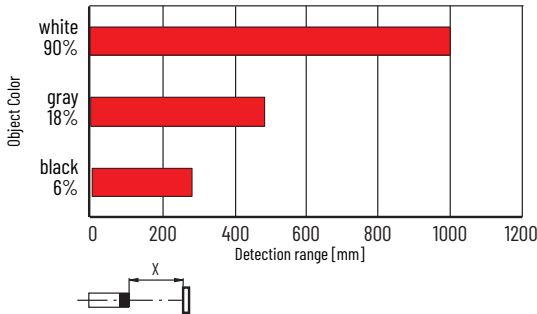


Figure 14 - Clear Object Detection - Beam Pattern

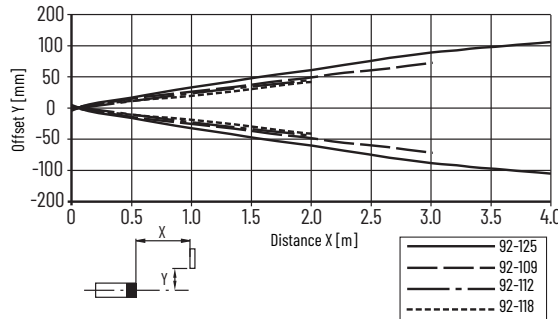


Figure 15 - Transmitted Beam - Beam Pattern

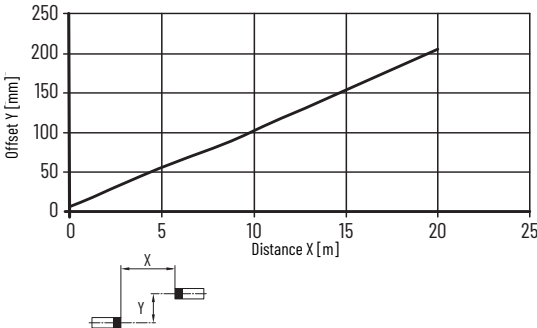


Figure 16 - Transmitted Beam - Margin Curve

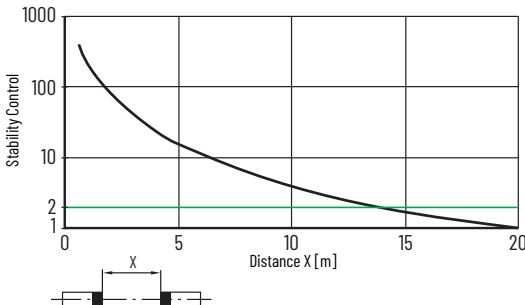


Figure 17 - Wide Angle Diffuse - Margin Curve

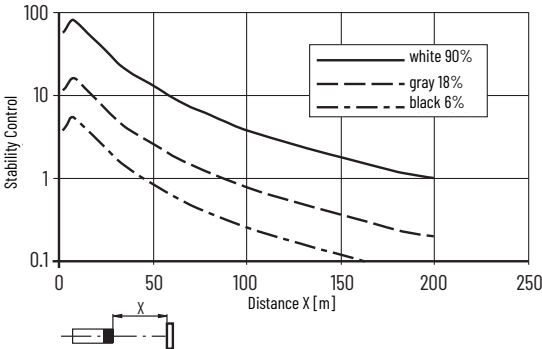


Figure 18 - Wide Angle Diffuse - Beam Pattern

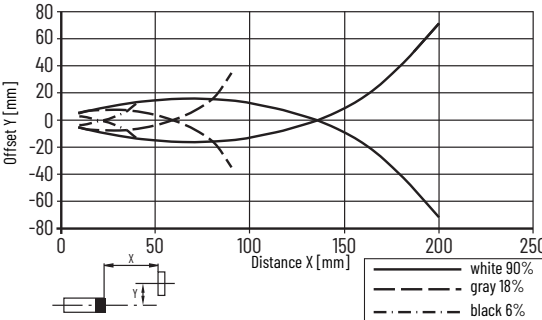
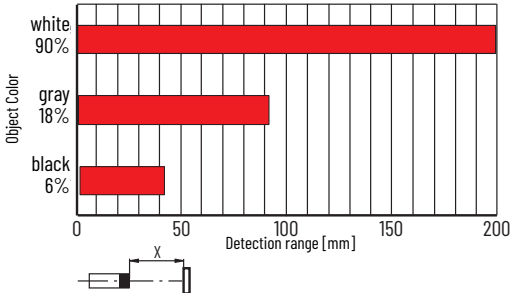


Figure 19 - Wide Angle Diffuse - Detection Ranges



Additional Resources

To download publications, visit rok.auto/literature and search for the following publication numbers.

Resource	Description
VisiSight M20A Installation Instructions, publication 42JA-IN001	Provides information to install and wire a VisiSight M20A sensor.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications .	Provides declarations of conformity, certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
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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