COGNEX

Advanced machine vision made easy

Compact, fully embedded vision system powered by AI

In-Sight 8900 Series

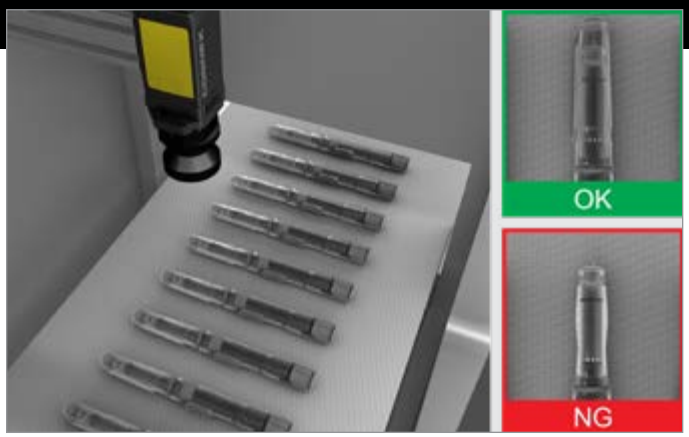
Automate defect detection and track-and-trace processes while meeting regulatory requirements

In-Sight 8900 Series

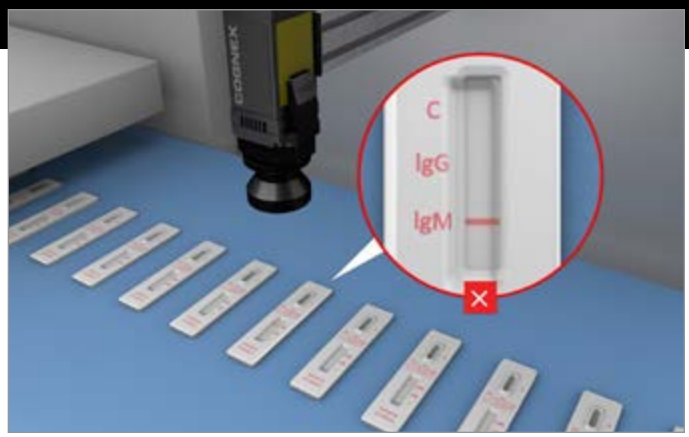
The In-Sight 8900 is an ultra-compact, AI-powered vision system designed for OEMs in highly regulated industries. Advanced AI capabilities and powerful imaging enable precise, automated inspections, ensuring product quality and minimizing the risk of recalls. With fully integrated functionality and features that support compliance, the In-Sight 8900 simplifies deployment and offers complete 21 CFR Part 11 readiness, making it the ideal solution for regulated environments.

Application examples

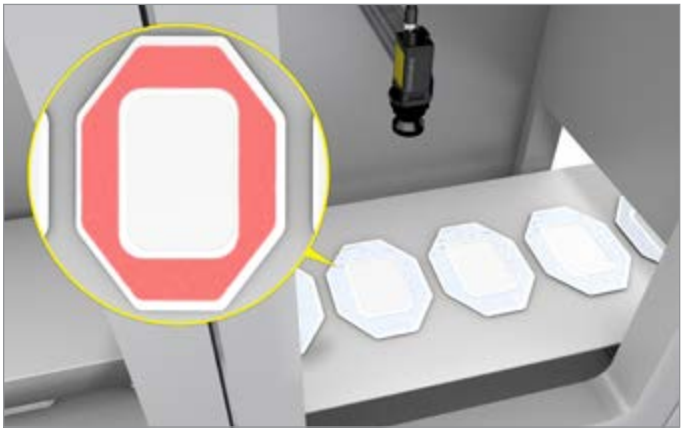
The In-Sight 8900 performs a wide range of critical inspection processes in pharmaceutical and medical device manufacturing, the automotive industry, and more.



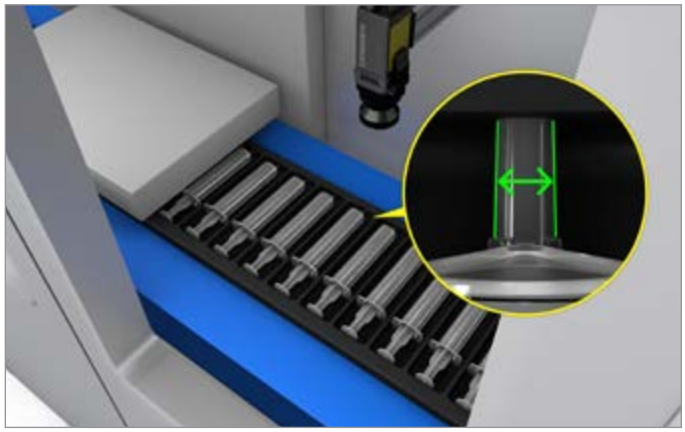
Inspection: Detect defects, such as incorrect markings, missing components, or printing errors, to comply with quality standards



Presence/absence detection: Identify damaged or missing components to ensure product integrity



Assembly verification: Verify components are present, correctly positioned, and fully assembled during the final stages of production



Measurement: Gauge the width of products to ensure they meet specifications and maintain consistency

Automotive text reading: Read lot codes and various text types, including distorted, angled, or direct part-marked characters, for accurate parts tracking

Packaging track and trace: Decode a range of barcodes for reliable, end-to-end traceability

Supporting end-to-end 21 CFR Part 11 readiness

Audit Logging

- **Comprehensive Tracking:** Automatically log operator actions with date and time stamps.
- **Efficient Record Retrieval:** Easily locate and obtain records for review.
- **Data Integrity:** Safeguard data by ensuring changes do not overwrite existing record.

Single Sign-on (SSO)

- **Centralized Management through Microsoft Windows:** Secure access with one set of credentials, eliminating the need for multiple passwords and simplifying authentication.
- **Controlled Access:** Restrict system access to authorized users only.
- **Verified Identity:** Confirm the identity of individuals who electronically sign records.
- **Secure Authentication:** Protect against unauthorized access.
- **User-Specific Settings:** Customize default views for different users for more discrete control.

Ensuring regulatory compliance across the product portfolio

Cognex offers a variety of vision systems that are 21 CFR Part 11 ready, allowing you to choose the solution that best suits your application or environment.

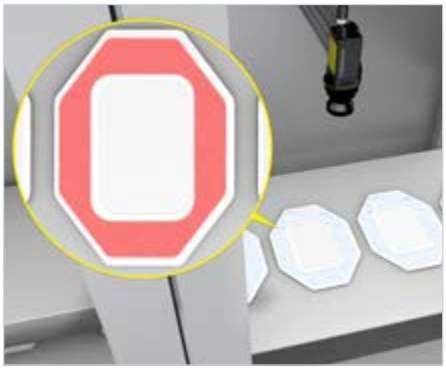
- In-Sight 2800
- In-Sight 3800
- In-Sight L38
- In-Sight 8900

Complete vision toolset solves tasks of any complexity

The In-Sight 8900 integrates AI and rule-based tools into a single vision system, making it flexible enough to handle a wide range of error-proofing applications. Use the tools individually for simple tasks or combine them to tackle more complex automation challenges.

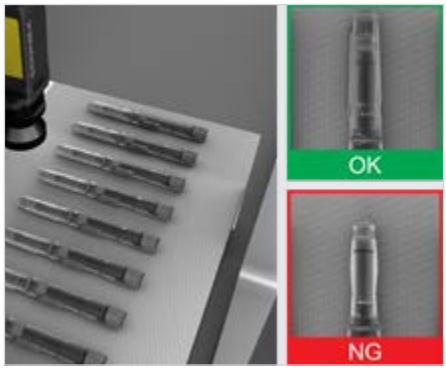
AI tools

The In-Sight 8900 uses AI-powered edge learning tools to process images directly on device and deliver accurate results in real time. With example-based training and no experience needed, these tools offer high ease of use and fast deployment.



Segmentation

Extract defects, regions, and objects from complex parts and backgrounds.



Classification

Detect and sort parts based on multiple features or characteristics.

Optical character recognition (OCR)

Read characters on reflective, low-contrast, and non-flat surfaces, including multi-line text.

Rule-based vision tools

The In-Sight 8900 is also embedded with an extensive library of industry-proven traditional vision tools and algorithms including: Measure Distance, Pixel Count, Count Patterns, Math and Logic Tools, and more.

Common software platform offers flexible development options

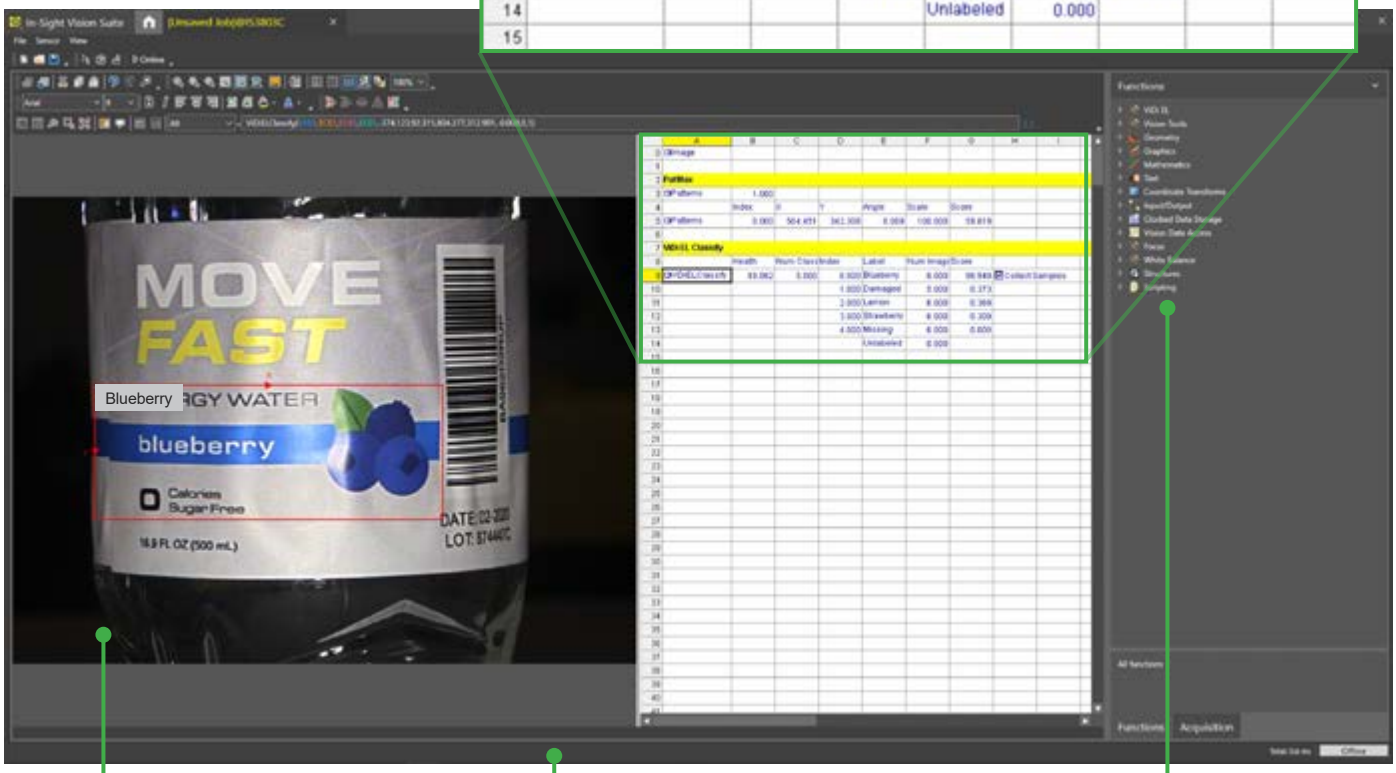
In-Sight Vision Suite software is common across all In-Sight products and includes two programming environments — spreadsheet and EasyBuilder®. Start with EasyBuilder, a wizard-like training interface designed for simplicity, and transition to more advanced, spreadsheet programming. In-Sight Vision Suite uniquely integrates these two approaches, providing a seamless experience within the same platform that allows users to efficiently scale their automation.

Spreadsheet facilitates deployment of advanced applications

The spreadsheet interface is ideal for building complex and highly customized applications. Robust in design, this development environment gives users the ability to make critical adjustments to job parameters and quickly adapt applications to address new requirements.

Powerful **spreadsheet** interface allows users to solve complex applications

	A	B	C	D	E	F	G	H	I
0	Image								
1									
2	PatMax								
3	Patterns	1.000							
4		Index	X	Y	Angle	Scale	Score		
5	Patterns	0.000	564.451	342.308	0.069	100.000	59.819		
6									
7	ViDi EL Classify								
8		Health	Num Class	Index	Label	Num Image	Score		
9	ViDiELClassify	99.882	5.000	0.000	Blueberry	8.000	98.949	Collect Samples	
10				1.000	Damaged	5.000	0.373		
11				2.000	Lemon	6.000	0.369		
12				3.000	Strawberry	6.000	0.309		
13				4.000	Missing	6.000	0.000		
14					Unlabeled	0.000			
15									



Easily review and recall files with image playback

Full I/O and communications function set streamlines factory integration

Full suite of AI- and rule-based **vision tools**

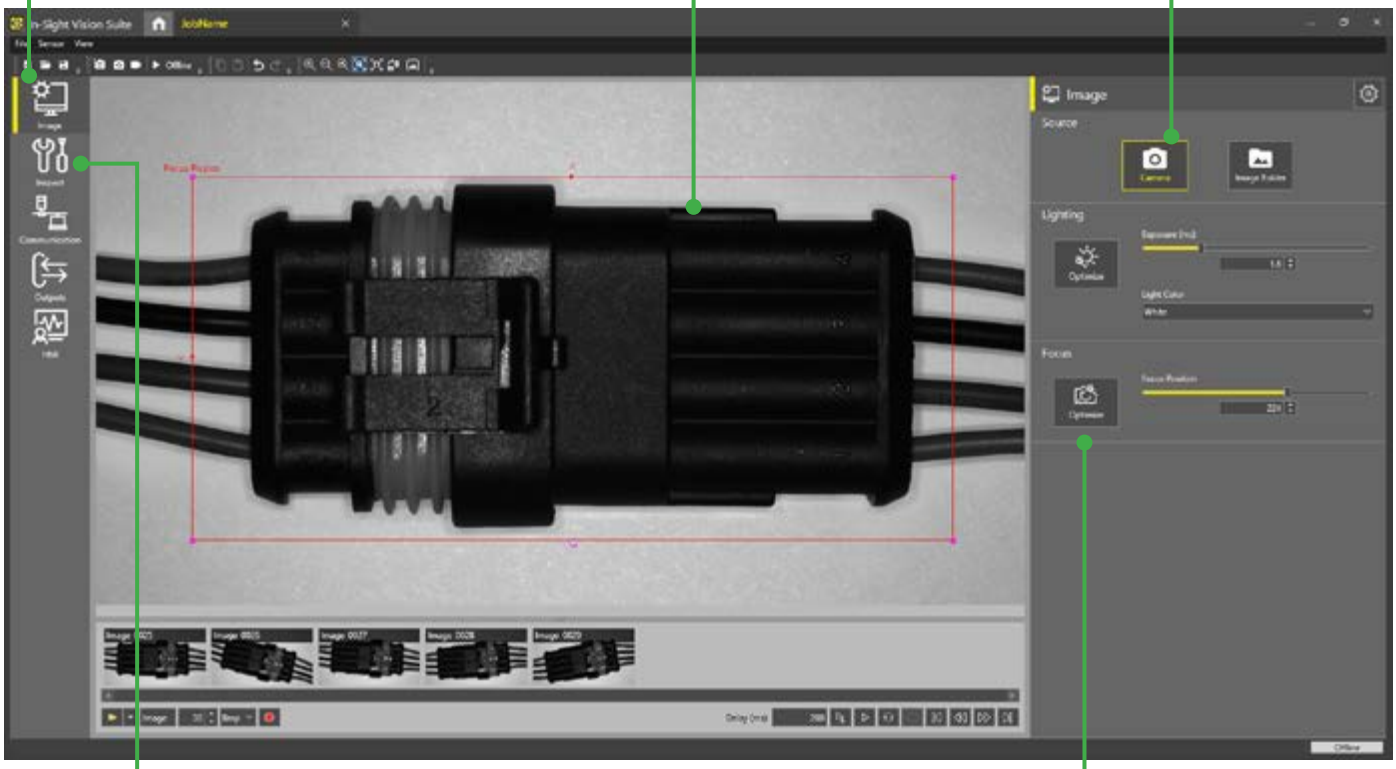
EasyBuilder development environment simplifies setup

With point-and-click training, the EasyBuilder interface within In-Sight Vision Suite is ideal for setting up simple or common jobs. The intuitive process guides users step-by-step through setup—from image capture to the final result and beyond—allowing both new and experienced developers to configure reliable vision applications.

Easy **step-by-step** application setup

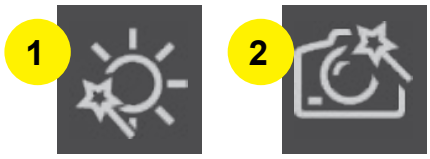
Image-centric **point-and-click** functionality allows users to quickly set up tools

Capture images live or upload existing libraries



Comprehensive set of traditional rule-based vision tools and **innovative edge learning tools**

Fast, **2-click** image formation

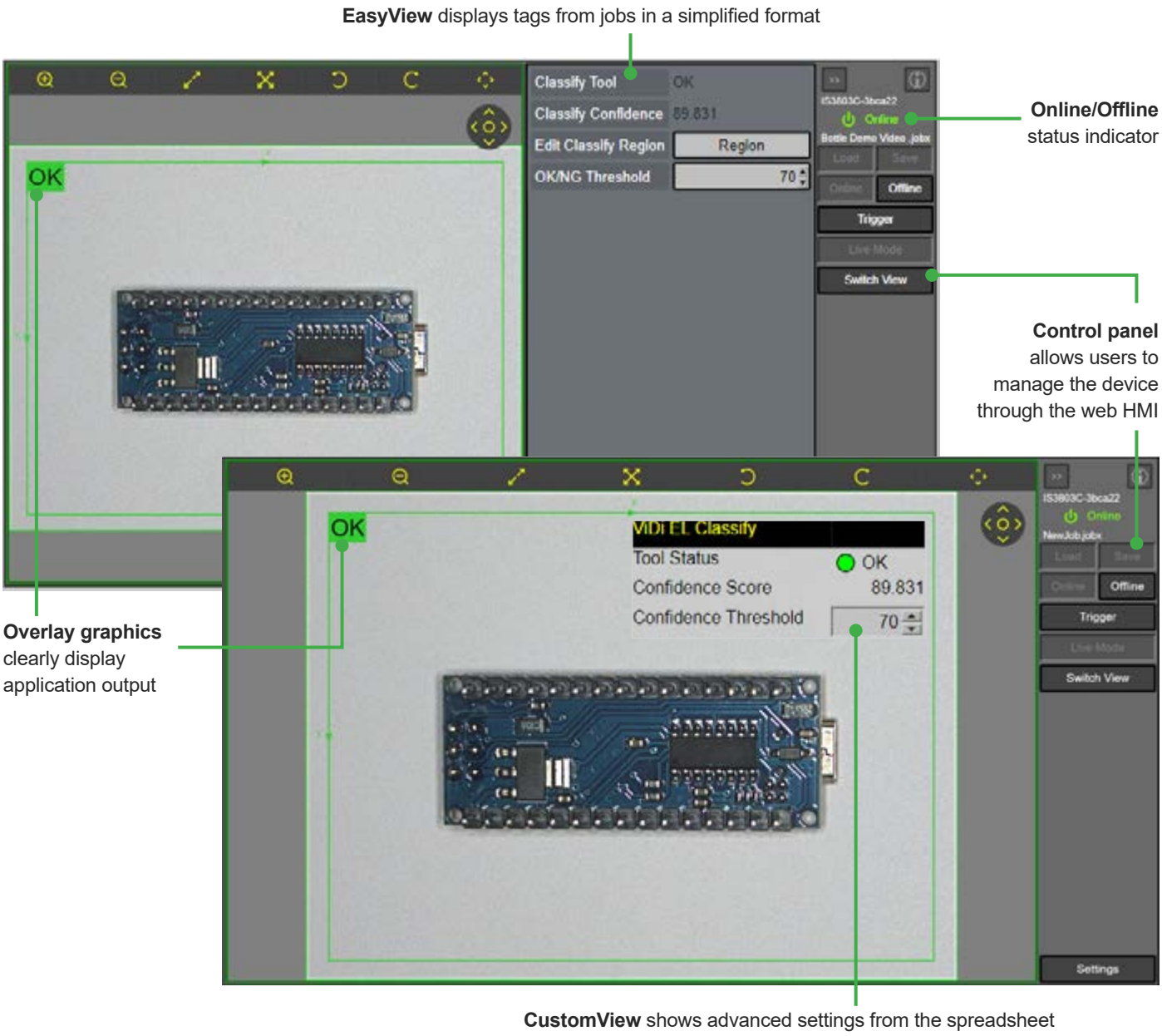


Optimize Exposure

Optimize Focus

Web-based HMI offers real-time application testing and optimization

The In-Sight 8900 provides access to a web-based human-machine interface (HMI) that enables runtime visualization. From the HMI, users can view inspection results and modify setup parameters to optimize their application.



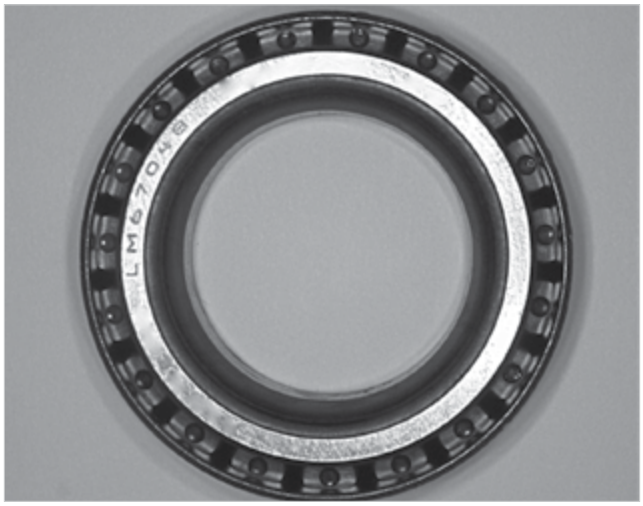
Innovative technology pushes the boundaries of HDR

HDR+ enhances the capabilities of HDR technology by optimizing contrast automatically. This creates a more uniformed, more detailed image in a single acquisition. Available in both monochrome and color options, HDR+ delivers higher contrast and image quality that allow you to:

- See features that were not visible before
- Reduce light intensity
- Increase depth of field

Part inspection and OCR

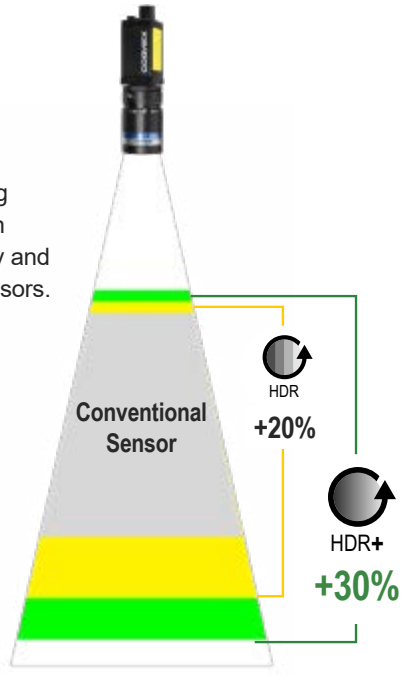
Without HDR: Embedded parts are unclear.



With HDR+: Serial code and bearings are both visible.

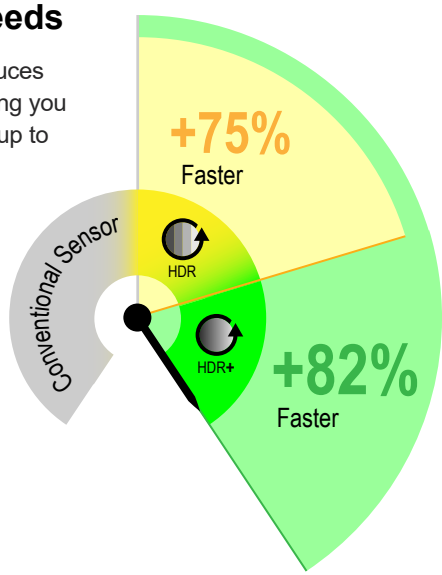
Greater depth-of-field

HDR+ reduces over- and under-exposure, providing greater depth-of-field than standard HDR technology and conventional imaging sensors.



Faster line speeds

HDR+ significantly reduces exposure times, enabling you to accommodate lines up to 80% faster.

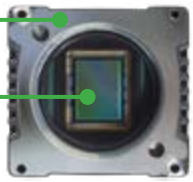


Integrated design offers flexible performance

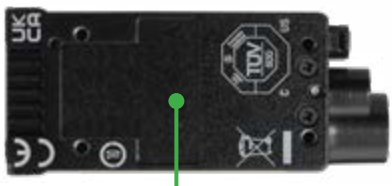
The In-Sight 8900 is engineered with the entire suite of innovative Cognex vision tools and convenient features that deliver fast, reliable automation.

Compatibility with C-mount lenses and High-Speed Liquid Lenses offers application flexibility and dynamic autofocusing to optimize depth of field.

HDR+ mono and color options deliver high-quality, high-contrast images.



Multiple resolution options, including SVGA, 2MP, 5MP, and 12MP, support diverse needs.



High-speed vision tool processing increases efficiency and throughput.

24V power and additional I/O

Class III PoE to simplify cable runs.

In-Sight 8900 Series Specifications

Image Sensor	IS8900M	IS8900C	IS8902M	IS8902C	IS8905M	IS8905C	IS8912M	IS8912C
Bit Depth	8-bit monochrome	24-bit color	8-bit monochrome	24-bit color	8-bit monochrome	24-bit color	8-bit monochrome	24-bit color
Frames per Second (Maximum, Full Resolution)	142 fps	100 fps	86 fps	49 fps	47 fps	29 fps	21 fps	10 fps
Sensor Type	CMOS, global shutter		CMOS, global shutter		CMOS, global shutter		CMOS, global shutter	
Sensor Properties	2.7 mm diagonal, 2.74 x 2.74 µm square pixels		6.2 mm diagonal, 2.74 x 2.74 µm square pixels		8.8 mm diagonal, 2.74 x 2.74 µm square pixels		14 mm diagonal, 2.74 x 2.74 µm square pixels	
Maximum Image Resolution (pixels)	800 x 600		1920 x 1200		2448 x 2048		4096 x 3000	
Electronic Shutter Speed	29.1 us to 200,000 us		29.1 us to 200,000 us		29.1 us to 200,000 us		29.1 us to 200,000 us	

Vision System	
Memory	4 GB
Lens Type	C-Mount or Cognex High Speed Liquid Lens Autofocus
Discrete Inputs	1 opto-isolated, general purpose input
Discrete Outputs	Two opto-isolated, high speed outputs
Status LEDs	Network LED and two configurable LEDs
High Speed Liquid Lens Lifespan	Number of focus cycles: 1800 M cycles
Job/Program Memory	7.5 GB
Image Processing Memory	512 MB SDRAM
Network Communication	1 Ethernet port, 10/100/1000 BaseT with auto MDIX. IEEE 802.3 TCP/IP Protocol Supports DHCP, static, and link-local address configuration
Communication Protocols	TCP/IP, PROFINET, EtherNet/IP, SLMP, ModbusTCP, (S)FTP
Power Consumption	24 V DC ± 10%, 2.0 A maximum Class III Power over Ethernet (PoE) USB-C power 1.5 A minimum
Material	Die-cast aluminum and zinc housing
Finish	Painted
Mounting	Four M3 threaded mounting holes. See Accessories for supported mounts. Pattern: 44.25 mm (1.74 in) length, 22 mm (0.87 in) width side 1, 18 mm (0.71 in) width side 2
Weight	In-Sight 8900 with no accessories attached: 205 g (7.2 oz) With High Speed Liquid Lens (25 mm): 320 g (11.3 oz)
Ambient/Environment Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-20° C to 80° C (-4° F to 176° F)
Humidity	<95% non-condensing
Protection	IP40 with all cables properly attached and lens properly attached
Shock (Packaging)	IEC 60068-2-27: 18 shocks (3 shocks in each polarity in each (X, Y, Z) axis) 80 Gs (800 m/s2 at 11 ms, half-sinusoidal) with cables or cable plugs and a 150 gram or lighter lens attached
Vibration (Shipping and Storage)	IEC 60068-2-6: vibration test in each of the three main axis for 2 hours at 10 Gs (10 to 500 Hz at 100 m/s2 / 15 mm) with cables or cable plugs and a 150 gram or lighter lens attached
Regulations/Conformity	CE, FCC, KCC, TÜV SÜD NRTL, EU RoHS, China RoHS

Field of view diagrams

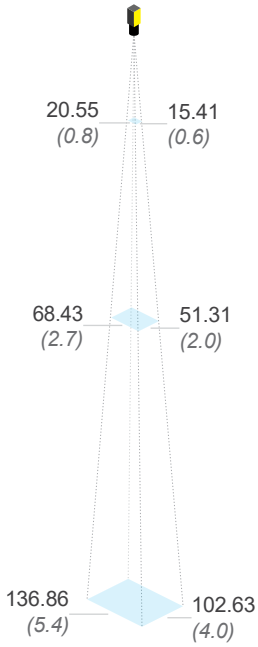
Working distances
Units: mm *(in)*

Minimum
150 *(5.9)*

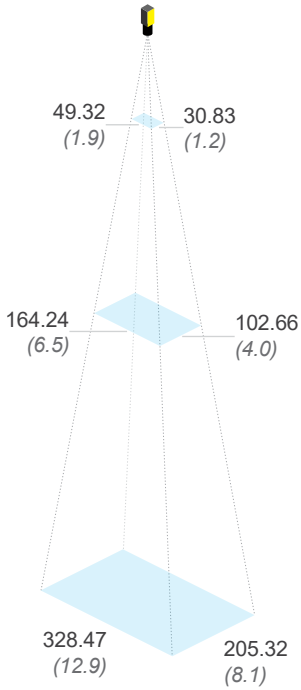
Midpoint
500 *(19.7)*

Maximum
1000 *(39.4)*

SVGA with 16 mm lens



2 MP with 16 mm lens



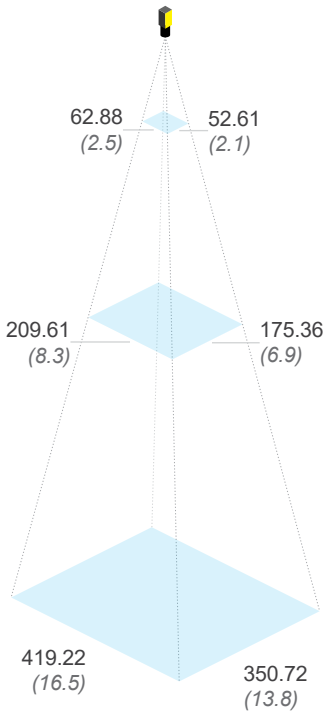
Working distances
Units: mm *(in)*

Minimum
150 *(5.9)*

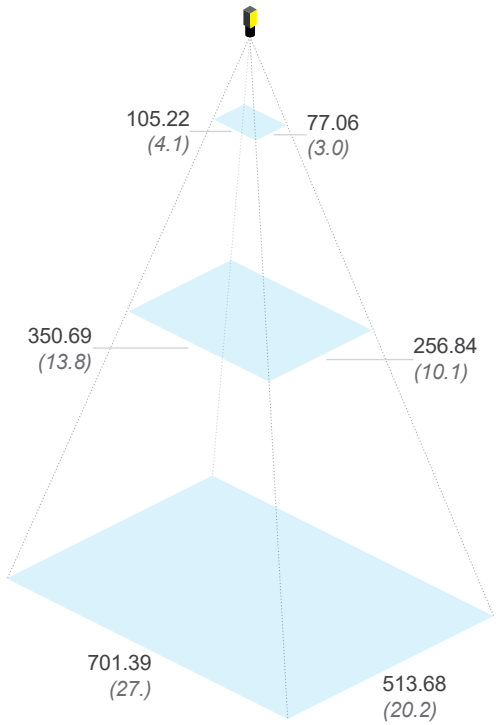
Midpoint
500 *(19.7)*

Maximum
1000 *(39.4)*

5 MP with 16 mm lens

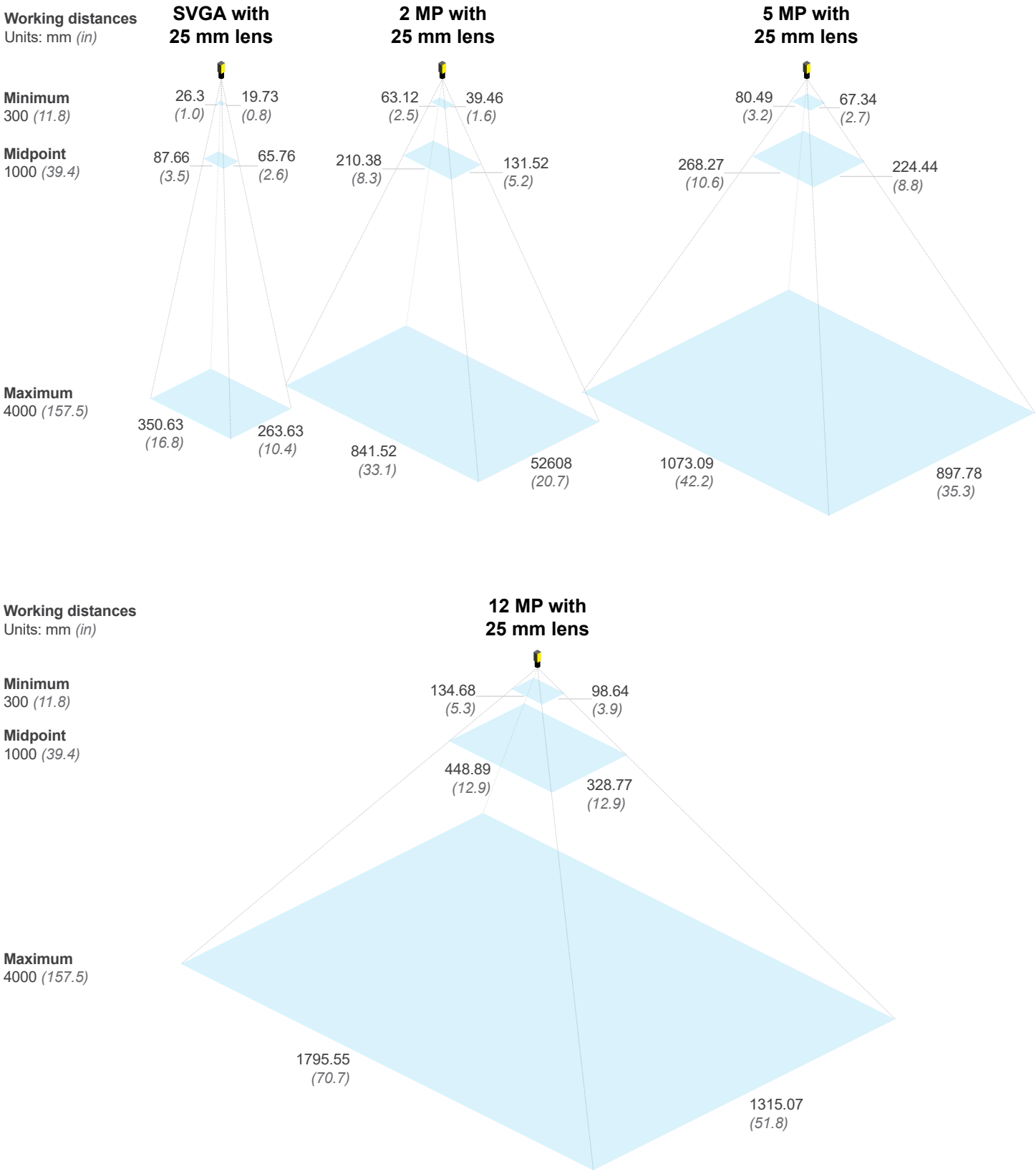


12 MP with 16 mm lens



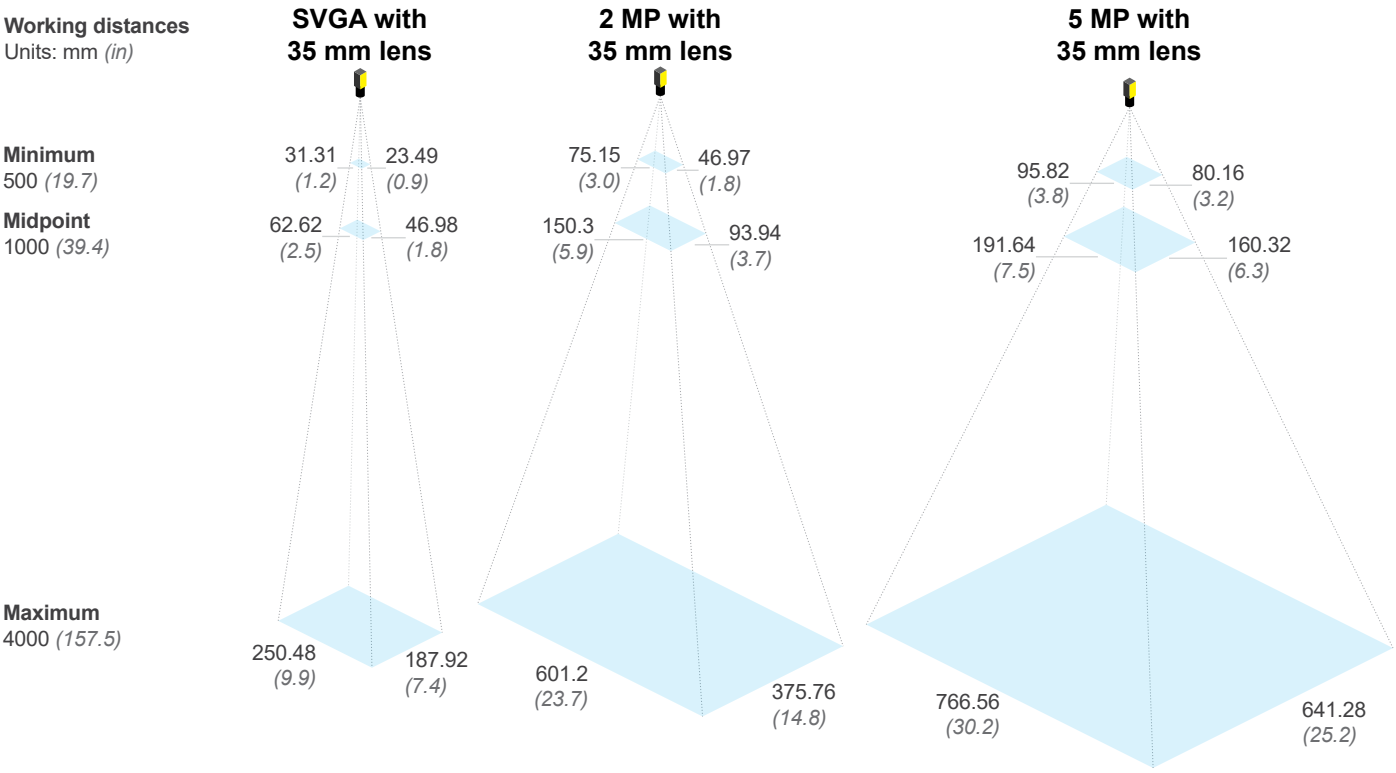
Field of view diagrams are based on the minimum and maximum focus distances of the High Speed Liquid Lens.

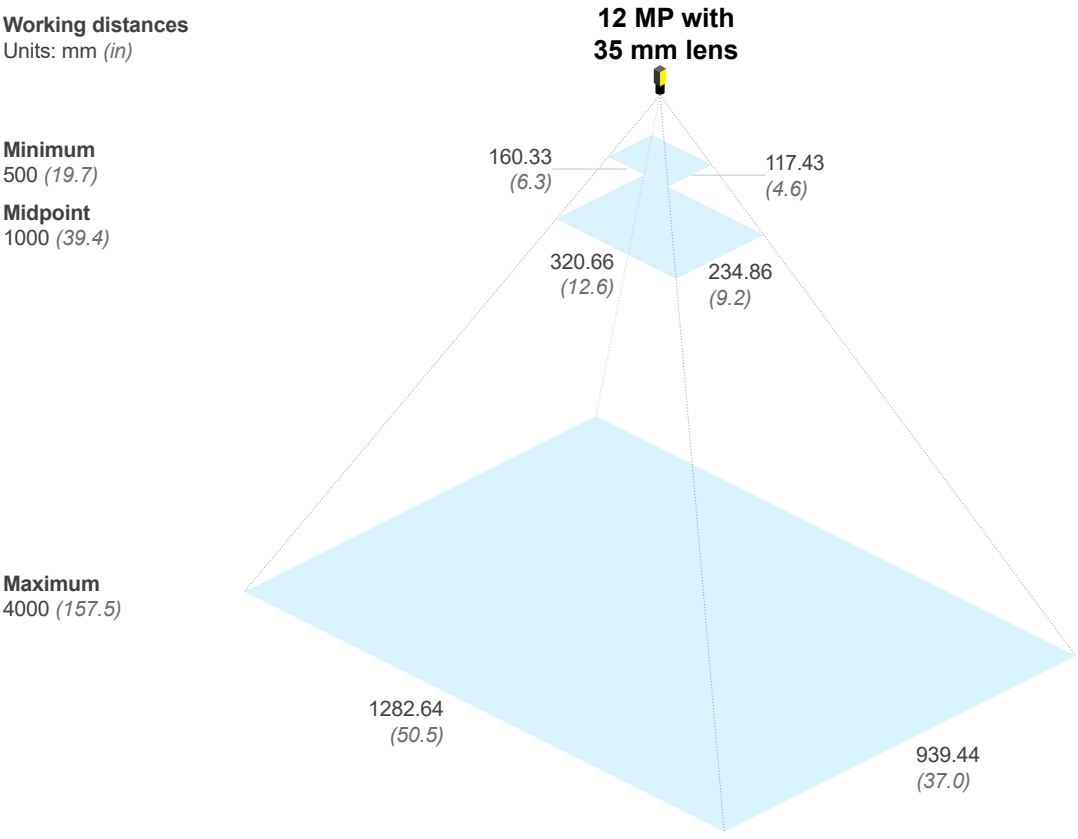
Field of view diagrams



Field of view diagrams are based on the minimum and maximum focus distances of the High Speed Liquid Lens.

Field of view diagrams





Field of view diagrams are based on the minimum and maximum focus distances of the High Speed Liquid Lens.

In-Sight 8900 Series

	Product ID	Resolution	Mono/Color	Performance	Lens Connector	Toolset
	IS8900MX-01-SA	SVGA	Mono	Max	C-mount only	EB/SS, all tools
	IS8900CX-01-SA	SVGA	Color	Max	C-mount only	EB/SS, all tools
	IS8900MX-01-SR	SVGA	Mono	Max	C-mount only	EB/SS, Rule-Based
	IS8900CX-01-SR	SVGA	Color	Max	C-mount only	EB/SS, Rule-Based
	IS8900MX-02-SA	SVGA	Mono	Max	HSLL adapter	EB/SS, all tools
	IS8900CX-02-SA	SVGA	Color	Max	HSLL adapter	EB/SS, all tools
	IS8900MX-02-SR	SVGA	Mono	Max	HSLL adapter	EB/SS, Rule-Based
	IS8900CX-02-SR	SVGA	Color	Max	HSLL adapter	EB/SS, Rule-Based
	IS8902MX-01-SA	2 MP	Mono	Max	C-mount only	EB/SS, all tools
	IS8902CX-01-SA	2 MP	Color	Max	C-mount only	EB/SS, all tools
	IS8902MX-01-SR	2 MP	Mono	Max	C-mount only	EB/SS, Rule-Based
	IS8902CX-01-SR	2 MP	Color	Max	C-mount only	EB/SS, Rule-Based
	IS8902MX-02-SA	2 MP	Mono	Max	HSLL adapter	EB/SS, all tools
	IS8902CX-02-SA	2 MP	Color	Max	HSLL adapter	EB/SS, all tools
	IS8902MX-02-SR	2 MP	Mono	Max	HSLL adapter	EB/SS, Rule-Based
	IS8902CX-02-SR	2 MP	Color	Max	HSLL adapter	EB/SS, Rule-Based
	IS8905MX-01-SA	5 MP	Mono	Max	C-mount only	EB/SS, all tools
	IS8905CX-01-SA	5 MP	Color	Max	C-mount only	EB/SS, all tools
	IS8905MX-01-SR	5 MP	Mono	Max	C-mount only	EB/SS, Rule-Based
	IS8905CX-01-SR	5 MP	Color	Max	C-mount only	EB/SS, Rule-Based
	IS8905MX-02-SA	5 MP	Mono	Max	HSLL adapter	EB/SS, all tools
	IS8905CX-02-SA	5 MP	Color	Max	HSLL adapter	EB/SS, all tools
	IS8905MX-02-SR	5 MP	Mono	Max	HSLL adapter	EB/SS, Rule-Based
	IS8905CX-02-SR	5 MP	Color	Max	HSLL adapter	EB/SS, Rule-Based
	IS8912MX-01-SA	12 MP	Mono	Max	C-mount only	EB/SS, all tools
	IS8912CX-01-SA	12 MP	Color	Max	C-mount only	EB/SS, all tools
	IS8912MX-01-SR	12 MP	Mono	Max	C-mount only	EB/SS, Rule-Based
	IS8912CX-01-SR	12 MP	Color	Max	C-mount only	EB/SS, Rule-Based
	IS8912MX-02-SA	12 MP	Mono	Max	HSLL adapter	EB/SS, all tools
	IS8912CX-02-SA	12 MP	Color	Max	HSLL adapter	EB/SS, all tools
	IS8912MX-02-SR	12 MP	Mono	Max	HSLL adapter	EB/SS, Rule-Based
	IS8912CX-02-SR	12 MP	Color	Max	HSLL adapter	EB/SS, Rule-Based

Components and accessories

Lenses

	Product ID	Description
	ML-M0625UR[1]	6 mm Moritex UR series lens
	ML-M0822UR[1]	8 mm Moritex UR series lens
	ML-M1218UR[1]	12 mm Moritex UR series lens
	ML-M1616UR[1]	16 mm Moritex UR series lens
	ML-M2516UR[1]	25 mm Moritex UR series lens
	ML-M3520UR[1]	35 mm Moritex UR series lens
	ML-M5025UR[1]	50 mm Moritex UR series lens
	CLN-C16F65-HSLL-HR[3]	16 mm HSLL - high resolution
	CLN-C25F65-HSLL-HR[3]	25 mm HSLL - high resolution
	CLN-C35F06-HSLL-HR[3]	35 mm HSLL - high resolution
	ML-U0618SR-18C[2]	6 mm Moritex SR series lens
	ML-U1217SR-18C[2]	12 mm Moritex SR series lens
	ML-U1615SR-18C[2]	16 mm Moritex SR series lens
	ML-U2515SR-18C[2]	25 mm Moritex SR series lens
	ML-U3518SR-18C[2]	35 mm Moritex SR series lens
	ML-U5022SR-18C[2]	50 mm Moritex SR series lens

1 Compatible with 8900/8902/8905.
2 Compatible with 8912.
3 Compatible with ALL.

Mounting Brackets

	Product ID	Description
	BKT-IS8K-01[3]	Mounting Bracket, Provides 1/4-20 Mounting Holes
	BKT-IS8K-02[3]	Thermal cooling bracket, Provides 1/4-20 Mounting Holes

Cables

	Product ID	Description
	CCB-84901-2001-XX[3]	Ethernet cable, X-coded M12-8 to RJ-45 (2 m, 5 m, 10 m, 15 m, 30 m)
	CCB-84901-2RBT-XX[3]	Ethernet cable, X-coded M12-8 to RJ-45 (2 m, 5 m, 10 m)
	CCB-PWRIOM8-S-XX[3]	Breakout cable, M8-8 to flying lead (5 m, 10 m, 15 m)
	CCB-M8CONVTR[3]	M8-5 to M8-8 converter cable

VisionView

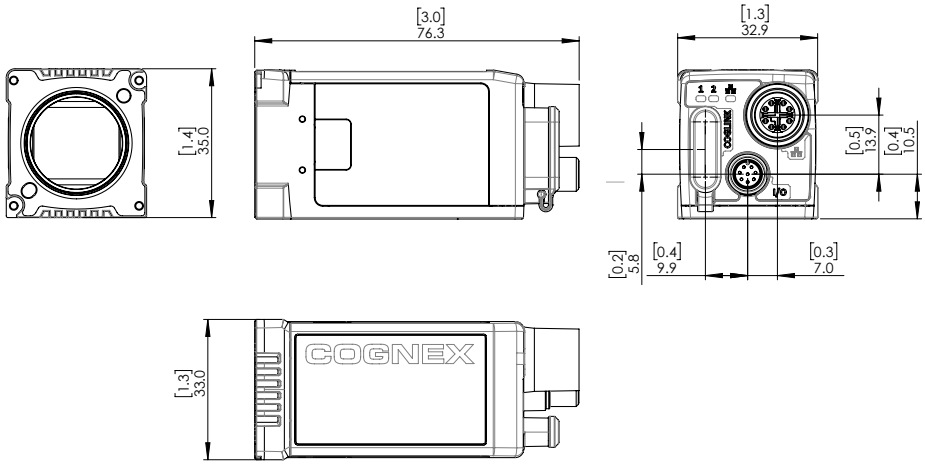
	Product ID	Description
	VVW-P[3]	VV Web HDMI Panel
	VVW-H-AU[3]	CFKIT, VV Web HDMI with AU PS
	VVW-H-EU[3]	CFKIT, VV Web HDMI with EU PS
	VVW-H-NOM[3]	CFKIT, VV Web HDMI with NOM PS
	VVW-H-UK[3]	CFKIT, VV Web HDMI with UK PS
	VVW-H-US[3]	CFKIT, VV Web HDMI with US PS

Dimensions

Units: mm, [in]

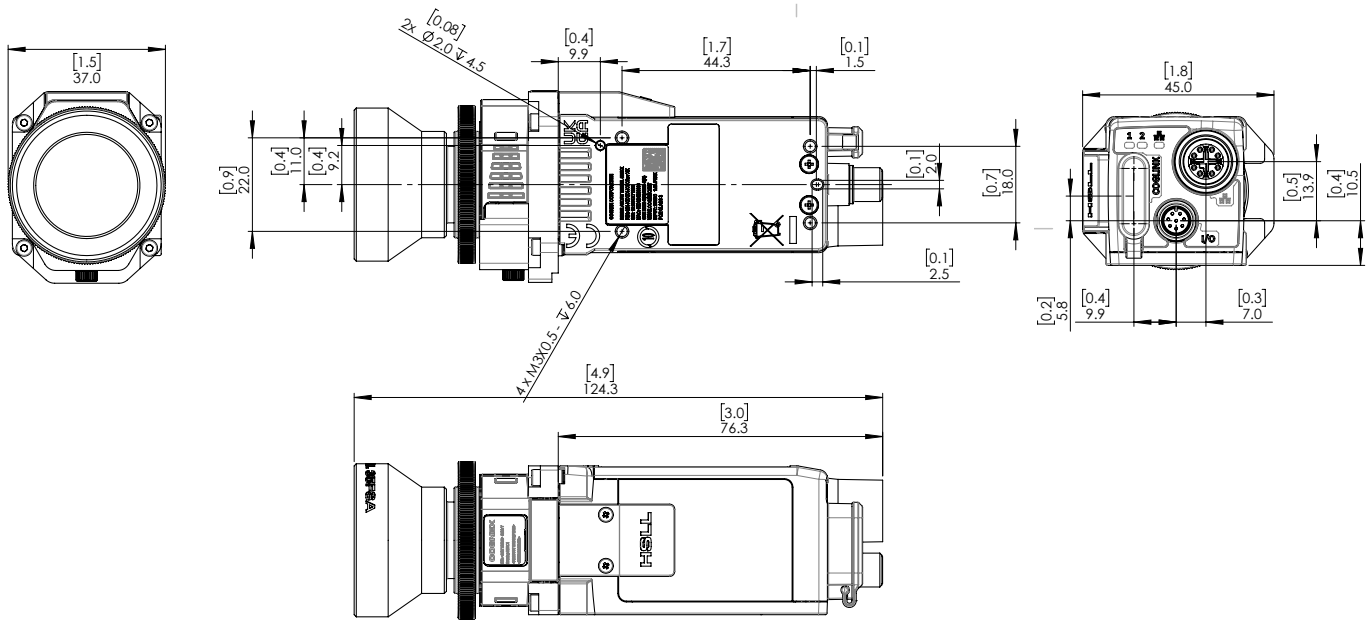
In-Sight 8900 Base Unit

Download CAD files



In-Sight 8900 with Autofocus Lens

Download CAD files



Build Your Vision

Vision Systems

Advanced AI makes it easy to deploy vision systems for automating inspection tasks, from defect detection to assembly verification and text reading.

www.cognex.com/machine-vision

Barcode Readers

Track and trace from the floor to dock door, with flexible readers and verifiers designed for ease of use and reliability.

www.cognex.com/barcodereaders

Industry Solutions

Tackle complex applications across a wide range of industries with powerful machine vision solutions that simplify today's manufacturing and logistics challenges.

www.cognex.com/solutions

COGNEX

Companies around the world rely on Cognex vision and barcode reading solutions to optimize quality, drive down costs, and control traceability.

Corporate Headquarters
One Vision Drive
Natick, MA 01760 USA

Contact us or find your regional sales office:
www.cognex.com/sales

Americas

North America	+1 855 426 4639
Brazil	+1 855 426 4639
Mexico	+52 552 789 5444

Europe

Austria	+49 721 958 8052
Belgium (FR)	+33 176 549 318
France	+33 176 549 318
Germany	+49 721 958 8052
Ireland	+353 21 601 9005
Italy	+39 02 9475 4345
Spain	+34 93 220 6237
Switzerland (DE)	+49 721 958 8052
Switzerland (FR)	+33 176 549 318
United Kingdom	+353 21 601 9005
Other Europe	+353 21 601 9005

Asia-Pacific

China	+86 021 8036 5424
India	+91 7305 040397
Japan	+81 345 790 266
Korea	+82 070 4784 4038
Singapore	+65 3158 2511
Taiwan	+886 801 492 017
Other Asia-Pacific	+65 3158 2511

Lit. No. IS8900DS-EN-02-2025

www.cognex.com