COGNEX

IN-SIGHT 2000
VISION SENSORS

THE GLOBAL LEADER
IN MACHINE VISION AND INDUSTRIAL BARCODE READING

ISOTRON SYSTEMS

Cognex,the world's most trusted machine vision and industrial barcode reading company.

With over one million systems installed in facilities around the world and over thirty five years of experience, Cognex is solely focused on industrial machine vision and image-based barcode reading technology. Deployed by the world's top logistics companies, manufacturers and machine builders, Cognex solutions cut costs, improve efficiencies and maximize throughput.

Smarter automation using Cognex vision and barcode reading systems means fewer errors, which equates to lower costs and higher customer satisfaction. With the widest range of solutions and largest network of vision experts to meet the most challenging applications, Cognex is the best choice to help **Build Your Vision.**

$521 MILLION
2016 REVENUE

OVER 35
YEARS IN THE BUSINESS

500+
CHANNEL PARTNERS

GLOBAL OFFICES IN
20+ COUNTRIES

1,000,000+
SYSTEMS SHIPPED

THE NEED FOR
AUTOMATED INSPECTION

Increased throughput, higher quality, and lower costs are key drivers for automated inspection in manufacturing. Manual inspection can be slow, prone to errors, and often impossible considering the product size, lighting conditions, or line speed.

Given these factors, companies in a wide range of industries rely on vision sensors to perform simple pass/fail inspections that help ensure products and packaging are error-free and meet strict quality standards. Cognex vision sensors provide easy and reliable inspections thanks to powerful vision tools, integrated lighting, modularity, and an easy-to-use setup environment.
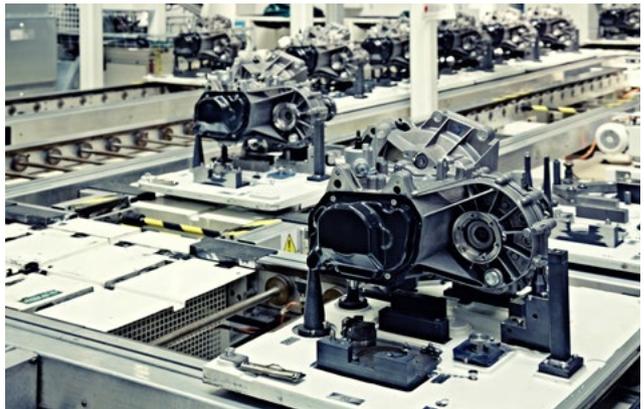
IN-SIGHT 2000 SERIES
VISION SENSORS

The power, ease-of-use, and flexibility to solve any error-proofing application

Cognex In-Sight® 2000 series vision sensors combine the power of In-Sight vision systems with the simplicity and affordability of an industrial sensor. Ideal for error-proofing applications, these vision sensors set new standards for value, ease of use, and flexibility thanks to a powerful combination of proven In-Sight vision tools, simple setup, and modular design.

- Intuitive EasyBuilder® interface allows even novice users to achieve reliable pass/fail inspections.

- Powerful In-Sight vision tools for accurate part location, inspection, measurement, and counting.

- Small form factor, in-line, and right-angle configurations for easy mounting in tight spaces.

- Integrated lighting minimizes the need for costly external illumination.
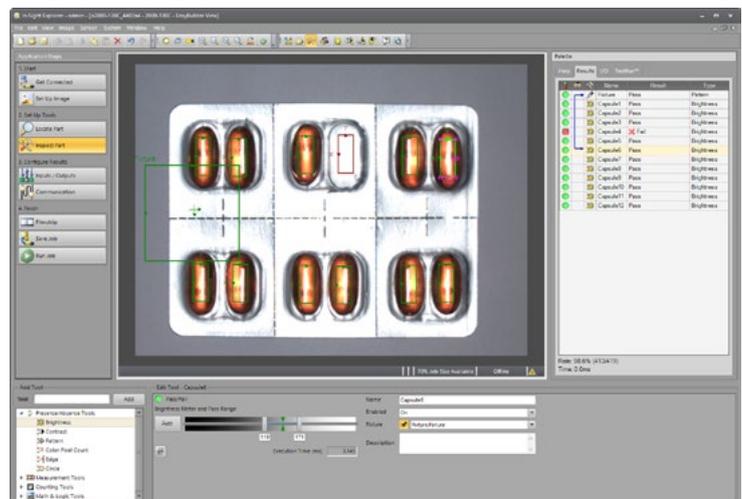
Modular Design

The In-Sight 2000 series also includes a modular design with field changeable lights, lenses, filters and covers. The In-Sight 2000 series can be easily configured to solve a wide range of applications. An integrated, patent-pending LED ring light produces even, diffuse illumination across the entire image, minimizing the need for costly external lighting.

In-Sight 2000
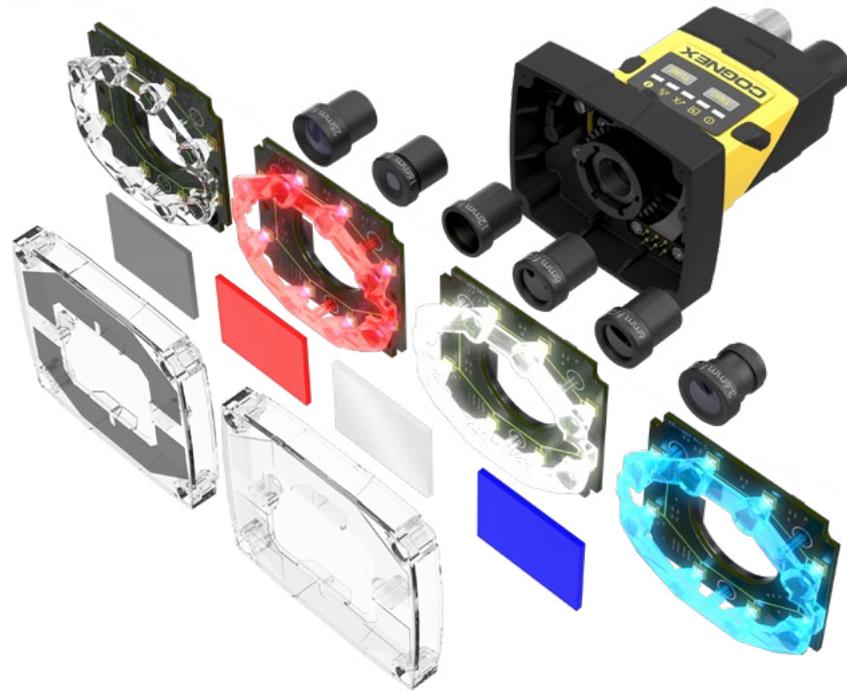
In-Sight 2000 Mini
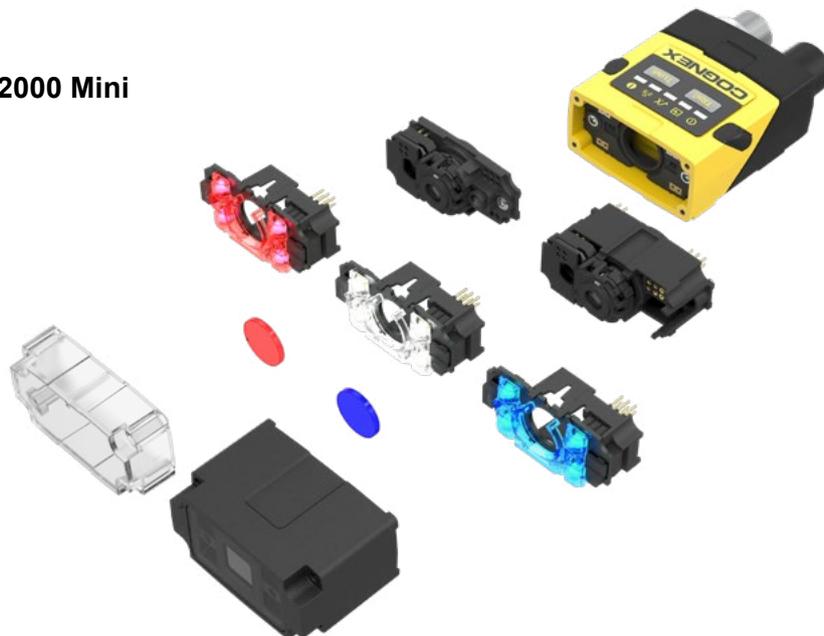
Flexible Mounting Configurations

In-Sight vision sensors can be configured for in-line and right-angle mounting installation. This modular body design provides maximum flexibility to mount in tight spaces, simplifies wiring and optical paths, and minimizes the need to design new mechanical fixtures.


Field of View Options

In-Sight 2000 vision sensors support a wide variety of modular lens options, making it easy to choose the correct configuration for your work cell. Simply choose the desired working distance and the minimum field of view to determine the appropriate lens. This will minimize the amount of time spent choosing and troubleshooting accessories for the application.

In-Sight 2000

Lens Options
- 3.6 mm
- 6 mm
- 8 mm
- 12 mm
- 16 mm
- 25 mm

In-Sight 2000 Mini

Lens Options
- 6.2 mm
- 16 mm

Visit www.cognex.com/InSight2000
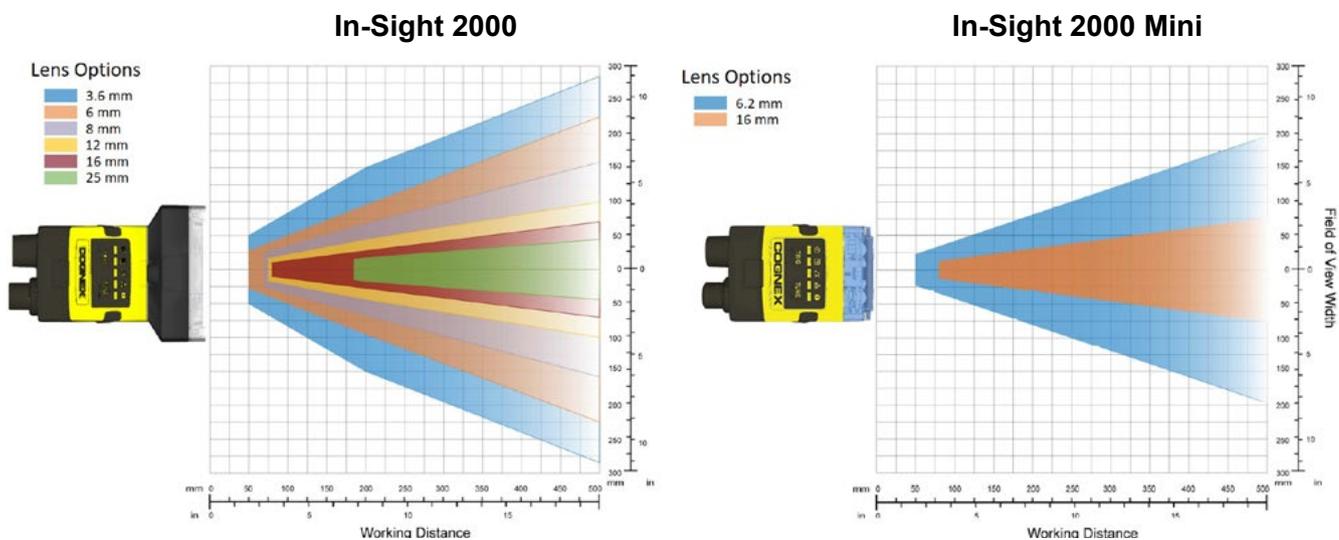
FAST, INTUITIVE SETUP WITH
EASYBUILDER

The In-Sight Explorer™ EasyBuilder interface provides fast, step-by-step application setup that allows even novice users to achieve extremely reliable inspection performance in nearly any production environment. Intuitive, point-and-click setup tools accomplish basic pass/fail inspections. Users can create more complex inspection applications using In-Sight vision systems in the same In-Sight Explorer interface.

Simple steps help you configure and deploy your application

View the image in real time to set up lighting and add inspection tools

See inspection results at a glance

Choose tools from the list to add to your inspection
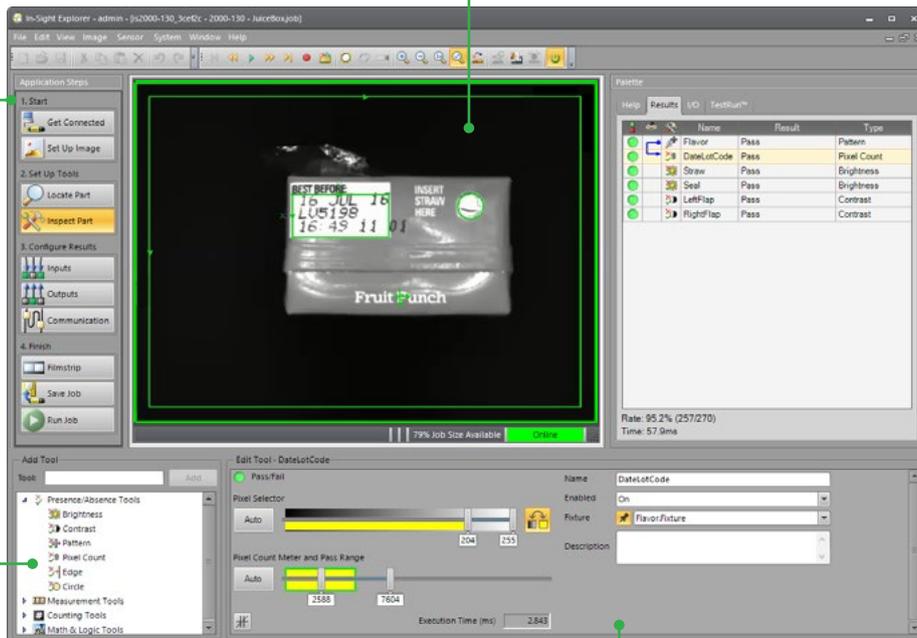
Point and click controls make it quick and easy to set up any tool to achieve reliable results

POWERFUL IN-SIGHT VISION TOOLS

The EasyBuilder interface provides access to a selection of powerful vision tools:
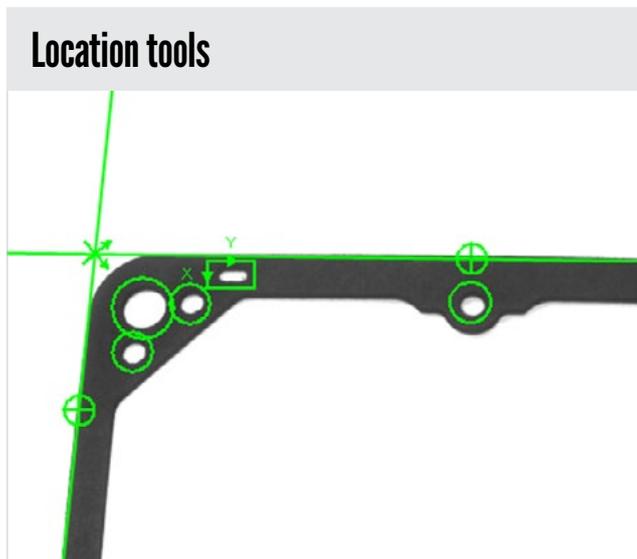
Location tools


Pattern, edge, and circle tools locate (or fixture) the part so other vision tools can use this as a reference to complete their inspections.

Presence/absence tools
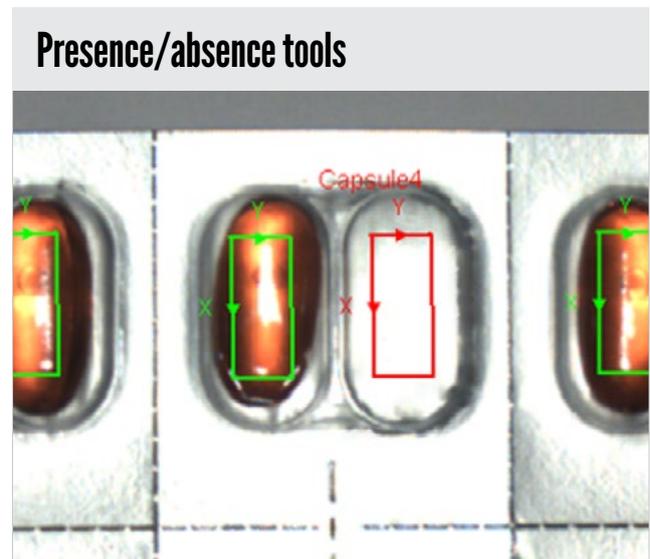
Brightness, contrast, pattern, pixel count, edge, and circle tools determine the presence or absence of a part.
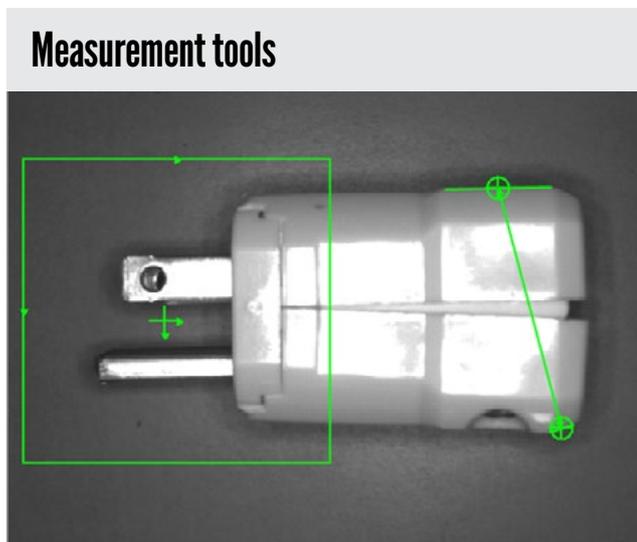
Measurement tools

Distance, angle, and circle diameter measurements verify a part's features are the correct size and in the correct position and orientation.

Counting tools
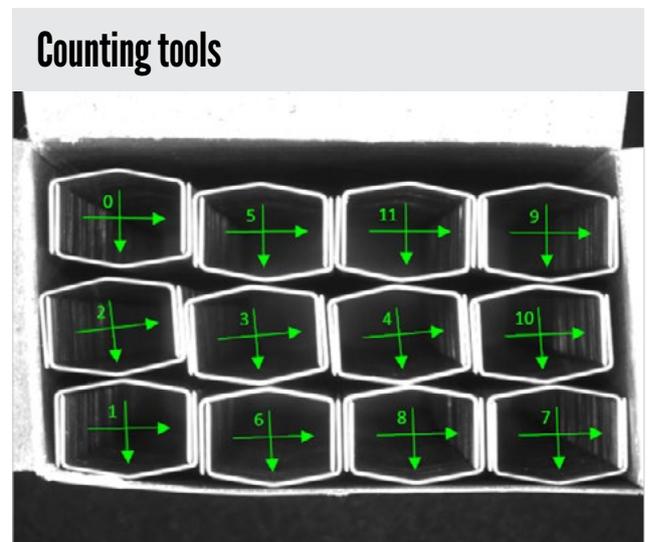
Counting patterns and edge features confirm the correct number of items are present on a conveyer or in a package.

ELECTRONICS
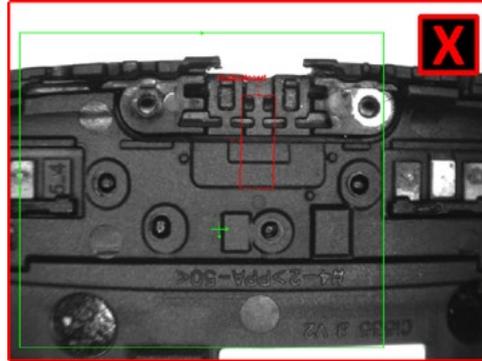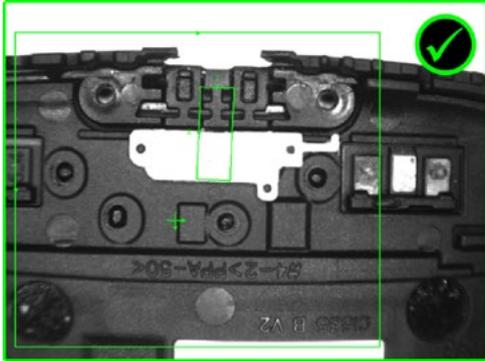
The presence of a rubber gasket attached to a molded plastic part is verified before an automated final assembly step.
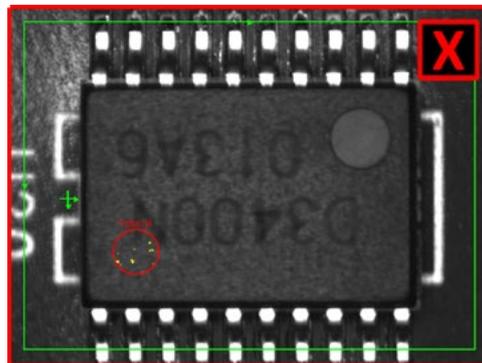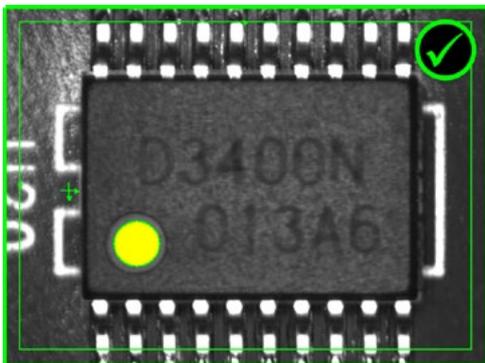
The presence of a fiducial is used to verify that an integrated circuit has been soldered onto the PCB in the correct orientation.
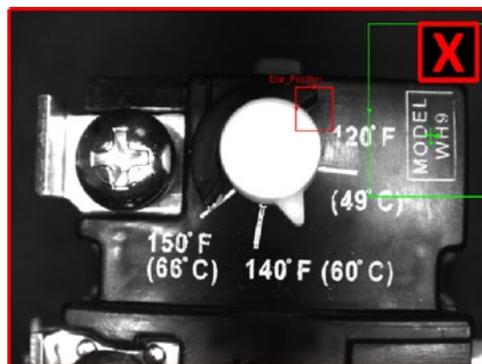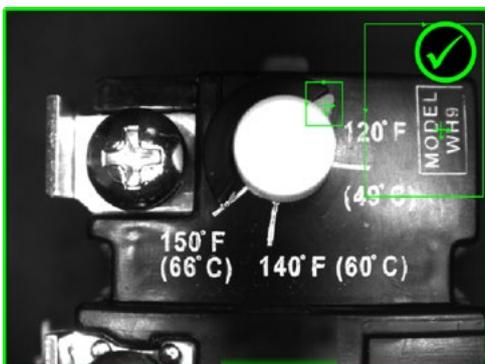
The dial on a thermostat is checked to confirm that it is in the correct position, which helps to ensure proper installation.

AUTOMOTIVE

A fuel filter assembly is checked for the presence of an O-ring installed in the proper location before final packaging.
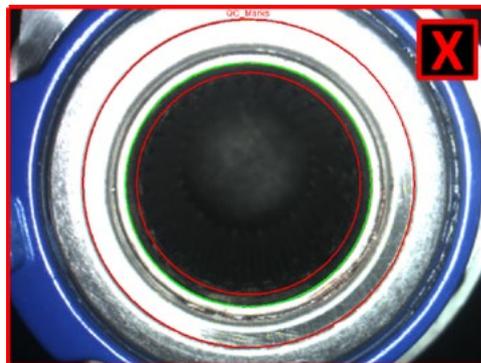
A wheel hub bearing is checked for the presence of quality control (QC) marks before moving to the next stage of assembly. The absence of the QC marks indicates that the hub bearing has not yet been inspected.


A fuel bowel gasket is inspected to verify that all 13 through holes have been punched out. A missing hole will cause the part to fail.

FOOD AND BEVERAGE
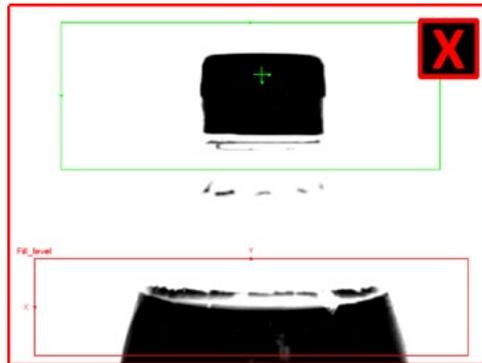
In-Sight vision sensors allow you to perform multiple inspections with each image. In this example, a bottle passes in front of the sensor, and both fill level and cap assembly are validated before the product is packaged.

A color pixel count tool verifies that the correct fruit snack flavor is present to ensure that it is packaged in the correct order.
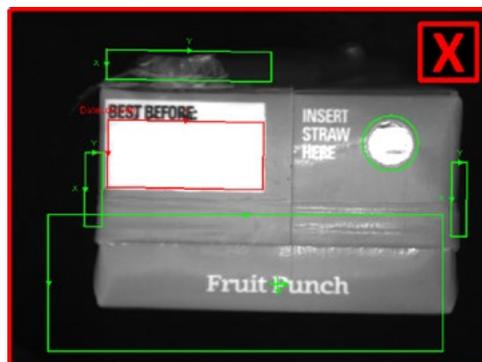

Inspections on a juice box verify that the date/lot code has been printed, confirm the safety seal is intact, check for the presence of a straw, and confirm that the flaps are fully secured.

CONSUMER PRODUCTS
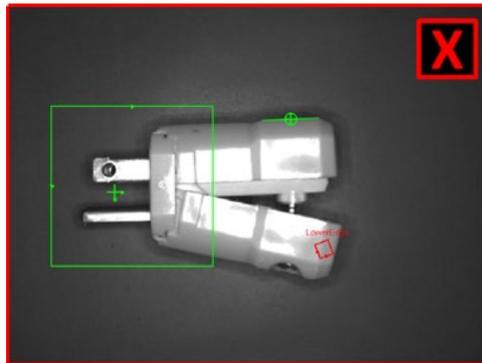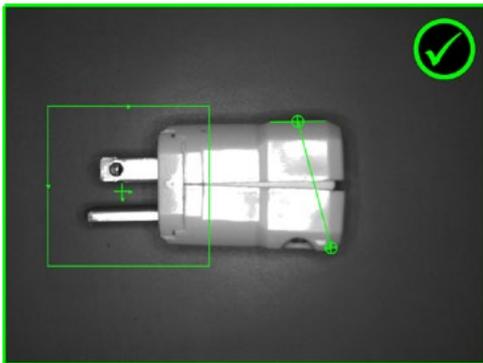
The distance between the two halves of an enclosure is measured to verify that the electrical plug has been assembled correctly. An open plug will cause a failure in the downstream packaging equipment.
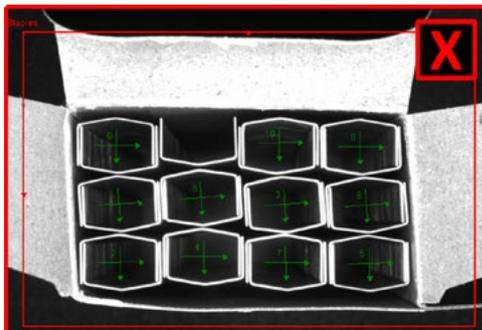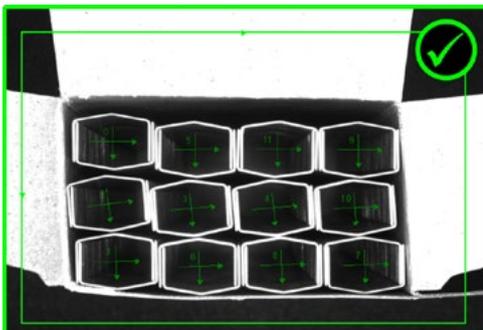
A pattern counting tool is used in this example to inspect the carton and to verify that the correct number of staple strips have been added.
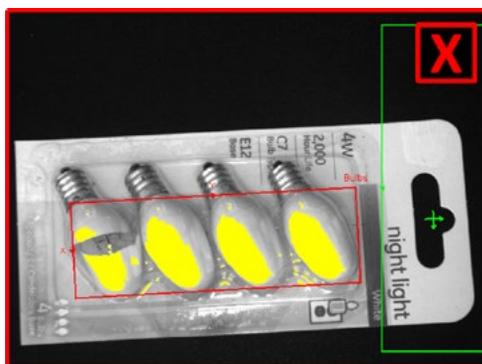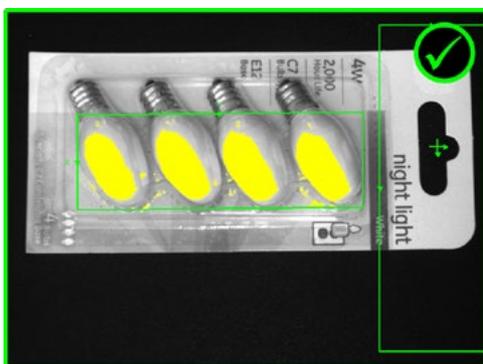
A package of light bulbs is inspected to confirm that all 4 bulbs are present and that none of the bulbs are broken.

HEALTH AND PHARMACEUTICALS
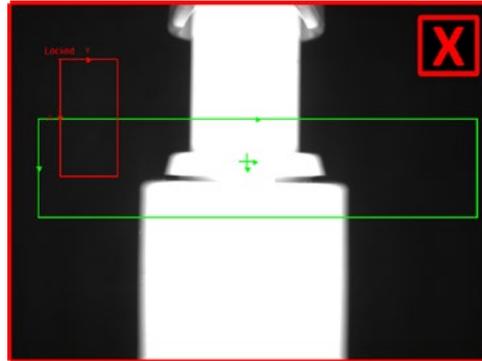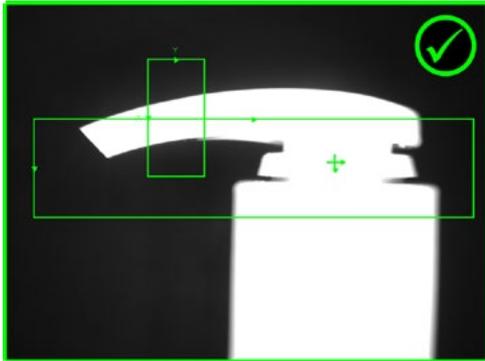
A lotion bottle is checked to confirm that the pump dispenser is in the locked position before the bottle is packed into a carton.
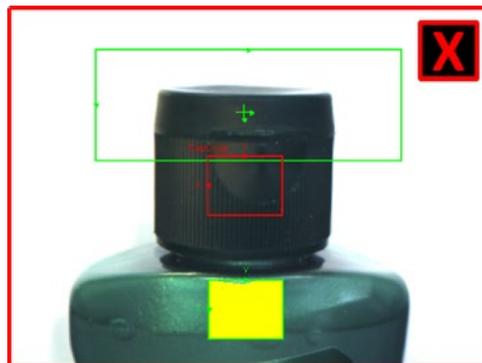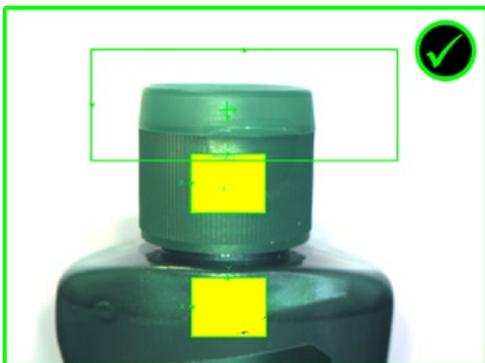
A shampoo bottle is inspected to confirm that the cap and bottle colors match.
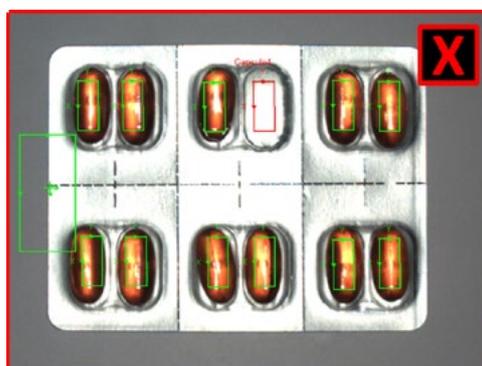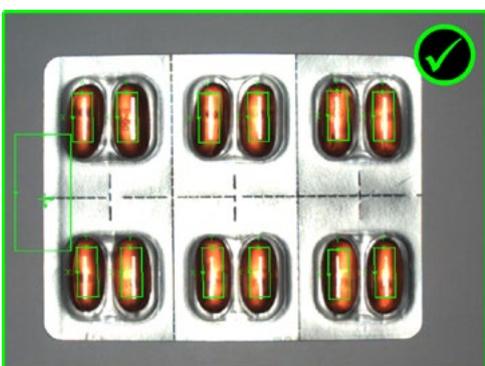
A blister pack is inspected to verify that all the capsules are present after sealing.

IN-SIGHT 2000 SPECIFICATIONS

ISOTRON SYSTEMS

		In-Sight 2000 Models				
		2000-110	**2000-120**	**2000-130**	**2000-120C**	**2000-130C**
User Interface		In-Sight Explorer EasyBuilder, Cognex VisionView® PC Software and VisionView 900 HMI touchscreen panel				
1/3" CMOS Imager		Monochrome	Monochrome	Monochrome	Color	Color
S-Mount/M12 Lenses		8 mm (standard), optional 3.6 mm, 6 mm, 12 mm, 16 mm, 25 mm				
Image Modes	640 x 480 (standard)	✓	✓	✓	✓	✓
	640 x 480 (2x magnification)	✗	✓	✓	✓	✓
	800 x 600 (2x magnification)	✗	✗	✓	✗	✓
Lighting	Standard	Diffuse white LED ring light				
	Options	Red, blue and IR LED ring lights and lens filters, and polarized light cover			Polarized light cover	
Maximum Acquisition Speed[1]		40 fps	75 fps	75 fps	55 fps	55 fps
Relative Processing Speed		1x	2x	2x	2x	2x
Location Tools	Pattern	✓	✓	✓	✓	✓
	Edge, Circle	✗	✗	✓	✗	✓
Inspection Tools	Pattern	✓	✓	✓	✓	✓
	Pixel Count	✗	Grayscale	Grayscale	Color	Color
	Brightness & Contrast	✗	✓	✓	✓	✓
	Edges	✗	✗	✓	✗	✓
Measurement & Counting Tools	Distance, Angle & Diameter	✗	✗	✓	✗	✓
	Patterns & Edges	✗	✗	✓	✗	✓
Communications & I/O	Protocols	EtherNet/IP, PROFINET, SLMP, SLMP Scanner, Modbus TCP, TCP/IP, UDP, FTP, Telnet (Native Mode), RS-232				
	Connectors	(1) Industrial M12 Ethernet, (1) M12 Power & I/O				
	Inputs & Outputs	(1) Acquisition trigger, (1) General purpose input[2], (4) General purpose outputs[2]				
Mechanical	Dimensions	In-line configuration: 92 mm (3.61 in) x 60 mm (2.38 in) x 52 mm (2.05 in) Right-angle configuration: 61 mm (2.42 in) x 60 mm (2.38 in) x 52 mm (2.05 in)				
	Weight	200 g (7.05 oz)				
	Material and Protection	Painted aluminum, IP65-rated housing				
Operating	Power	24 VDC ±10%, 48 W (2.0 A) maximum when the illumination is on				
	Temperature	0°C to 40°C (32°F to 104°F)				

[1] Maximum framerate with minimum exposure; no vision tools; and 640 x 480 image with 2x Image Magnification enabled (for 2000-120/130 models)

[2] (7) general purpose inputs and (8) general purpose outputs when using optional CIO-1400 I/O Expansion Module.

22.25mm [0.88in]
75.05mm [2.95in]
19.92mm [0.78in]
91.71mm [3.61in]
52.17mm [2.05in]

52.17mm [2.05in]
19.50mm [0.77in]
61.34mm [2.42in]

58.91mm [2.32in]
32.05mm [1.26in]
37mm [1.46in]

IN-SIGHT 2000 MINI SPECIFICATIONS

		In-Sight 2000 Mini Models				
		2000-110 Mini	**2000-120 Mini**	**2000-130 Mini**	**2000-120C Mini**	**2000-130C Mini**
User Interface		In-Sight Explorer EasyBuilder, Cognex VisionView® PC Software and VisionView 900 HMI touchscreen panel				
1/3" CMOS Imager		Monochrome	Monochrome	Monochrome	Color	Color
Liquid Lens Autofocus		6.2 mm or 16 mm				
Image Modes	640 x 480 (standard)	✓	✓	✓	✓	✓
	640 x 480 (2x magnification)	✗	✓	✓	✓	✓
	800 x 600 (2x magnification)	✗	✗	✓	✗	✓
Lighting	Standard	Modular red LEDs			Modular white LEDs	
	Options	White, blue & red LED lights, band-pass filters & polarizing filter			Polarized light cover	
Maximum Acquisition Speed[1]		40 fps	75 fps	75 fps	55 fps	55 fps
Relative Processing Speed		1x	2x	2x	2x	2x
Location Tools	Pattern	✓	✓	✓	✓	✓
	Edge, Circle	✗	✗	✓	✗	✓
Inspection Tools	Pattern	✓	✓	✓	✓	✓
	Pixel Count	✗	Grayscale	Grayscale	Color	Color
	Brightness & Contrast	✗	✓	✓	✓	✓
	Edges	✗	✗	✓	✗	✓
Measurement & Counting Tools	Distance, Angle & Diameter	✗	✗	✓	✗	✓
	Patterns & Edges	✗	✗	✓	✗	✓
Communications & I/O	Protocols	EtherNet/IP, PROFINET, SLMP, SLMP Scanner, Modbus TCP, TCP/IP, UDP, FTP, Telnet (Native Mode), RS-232				
	Connectors	(1) Industrial M12 Ethernet, (1) M12 Power & I/O				
	Inputs & Outputs	(1) Acquisition trigger, (1) General purpose input[2], (4) General purpose outputs[2]				
Mechanical	Dimensions	In-line configuration: 43.1 mm (1.69 in) x 22.4 mm (0.88 in) x 64 mm (2.51 in) Right-angle configuration: 43.1 mm (1.69 in) x 35.8 mm (1.40 in) x 49.3 mm (1.94 in)				
	Weight	142 g (5 oz)				
	Material and Protection	Painted aluminum, IP65-rated housing				
Operating	Power	<3.0 W (PoE or external power)				
	Temperature	0 °C to 40 °C (32 °F to 104 °F)				

[1] Maximum framerate with minimum exposure; no vision tools; and 640 x 480 image with 2x Image Magnification enabled (for 2000-120/130 models)

[2] (7) general purpose inputs and (8) general purpose outputs when using optional CIO-1400 I/O Expansion Module.

BUILD YOUR VISION

2D VISION SYSTEMS

Cognex machine vision systems are unmatched in their ability to inspect, identify and guide parts. They are easy to deploy and provide reliable, repeatable performance for the most challenging applications.

- Industrial grade with a library of advanced vision tools
- High speed image acquisition and processing
- Exceptional application and integration flexibility

www.cognex.com/machine-vision

3D LASER PROFILERS

Cognex In-Sight laser profilers and 3D vision systems provide ultimate ease of use, power and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

- Factory calibrated sensors deliver fast scan rates
- Industry-leading vision software with powerful 2D and 3D tool sets
- Compact, IP65-rated design withstands harsh factory environments

www.cognex.com/3D-laser-profilers

IMAGE-BASED BARCODE READERS

Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1-D, 2-D and DPM codes regardless of the barcode symbology, size, quality, printing method, or surface.

- Reduce costs
- Increase throughput
- Control traceability

www.cognex.com/BarcodeReaders

COGNEX

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

ISOTRON SYSTEMS

www.isotron.eu

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