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 manufacturers, suppliers and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex solutions help customers improve manufacturing quality and performance by eliminating defects, verifying assembly and tracking information at every stage of the production process. Smarter automation using Cognex vision and barcode reading systems means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. With the widest range of solutions and largest network of global vision experts, Cognex is the best choice to help you Build Your Vision™.

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

Cognex In-Sight 2000 vision sensors combine the power of In-Sight vision systems with the simplicity and affordability of an industrial sensor. Ideal for solving 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 a 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.
- 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. With over 200 different combinations, the In-Sight 2000 can be easily configured to solve a wide range of applications. The integrated, patent-pending LED ring light on the In-Sight 2000 produces even, diffuse illumination across the entire image, minimizing the need for costly external lighting.

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.

Visit www.cognex.com/InSight2000
The In-Sight Explorer EasyBuilder interface, which provides fast, step-by-step application setup, allows even novice users to achieve extremely reliable inspection performance in nearly any production environment. Basic pass/fail inspections can be accomplished with intuitive, point-and-click setup tools. When more complex inspections are required, users can build on their experience to create vision applications using more advanced In-Sight vision systems—in the same In-Sight Explorer interface.

FAST, INTUITIVE SETUP WITH EASYBUILDER

Simple steps walk you through configuring and deploying your application

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

Choose tools from the list to add them to your inspection

See inspection results at a glance

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 that include:

Location tools

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

Presence/absence tools

Pass/fail results can be determined using brightness, contrast, pattern, pixel count, edge, and circle tools.

Measurement tools

Distance, angle, and circle diameter measurements can verify that a part's features are the correct size and in the correct positions and orientations.

Counting tools

Counting patterns and edge features confirm the correct number of items are present on a conveyer or in a package.
The presence of a fiducial is used to verify that an integrated circuit has been soldered onto the PCB in the correct orientation.

The presence of a rubber gasket attached to a molded plastic part is verified before an automated final assembly step.

The dial on a thermostat is checked to confirm that it is in the correct position, which helps to ensure proper installation.
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.
With In-Sight vision sensors, you have the ability 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 too verifies that the correct fruit snack flavor is present to ensure that it is packaged in the correct order.

Multiple inspections are performed on a juice box, including verifying that the date/lot code has been printed; making sure the safety seal is intact; checking for the presence of a straw; and confirming that the flaps are fully secured.
CONSUMER PRODUCTS

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.

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 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 the bottle and the bottle colors match. A mismatched cap and bottle color results in a failure.

A blister pack is inspected to verify that all the capsules are present after sealing.
## IN-SIGHT 2000 SPECIFICATIONS

### In-Sight 2000 Models

<table>
<thead>
<tr>
<th>User Interface</th>
<th>In-Sight Explorer EasyBuilder, Cognex VisionView PC Software and VisionView 900 HMI touchscreen panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3” CMOS Imager</td>
<td>Monochrome, Monochrome, Color, Color</td>
</tr>
<tr>
<td>S-Mount/M12 Lenses</td>
<td>8 mm (standard), optional 3.6 mm, 6 mm, 12 mm, 16 mm, 25 mm</td>
</tr>
<tr>
<td>Image Modes</td>
<td>640 x 480 (standard) x 640 x 480 (2x magnification) x 800 x 600 (2x magnification)</td>
</tr>
<tr>
<td>Lighting</td>
<td>Standard Diffuse white LED ring light</td>
</tr>
<tr>
<td>Options</td>
<td>Red, blue and IR LED ring lights and lens filters, and polarized light cover</td>
</tr>
<tr>
<td>Maximum Acquisition Speed1</td>
<td>40 fps, 75 fps, 75 fps, 55 fps, 55 fps</td>
</tr>
<tr>
<td>Relative Processing Speed</td>
<td>1x, 2x, 2x, 2x, 2x</td>
</tr>
<tr>
<td>Location Tools</td>
<td>Pattern, Circle</td>
</tr>
<tr>
<td>Inspection Tools</td>
<td>Pattern, Pixel Count, Brightness &amp; Contrast, Edges</td>
</tr>
<tr>
<td>Measurement &amp; Counting Tools</td>
<td>Distance, Angle &amp; Diameter, Patterns &amp; Edges</td>
</tr>
<tr>
<td>Communications &amp; I/O Protocols</td>
<td>EtherNet/IP, PROFINET, SLMP, SLMP Scanner, Modbus TCP, TCP/IP, UDP, FTP, Telnet (Native Mode), RS-232</td>
</tr>
<tr>
<td>Connectors</td>
<td>(1) Industrial M12 Ethernet, (1) M12 Power &amp; I/O</td>
</tr>
<tr>
<td>Inputs &amp; Outputs</td>
<td>(1) Acquisition trigger, (1) General purpose input, (4) General purpose outputs</td>
</tr>
<tr>
<td>Mechanical</td>
<td>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)</td>
</tr>
<tr>
<td>Weight</td>
<td>200 g (7.05 oz)</td>
</tr>
<tr>
<td>Material and Protection</td>
<td>Painted aluminum, IP65-rated housing</td>
</tr>
<tr>
<td>Operating</td>
<td>Power: 24 VDC ±10%, 48 W (2.0 A) maximum when the illumination is on</td>
</tr>
<tr>
<td>Temperature</td>
<td>0°C to 40°C (32°F to 104°F)</td>
</tr>
</tbody>
</table>

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.

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![In-Sight 2000 Models Diagrams](image-url)
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