

# MACHINE VISION

2D AND 3D VISION SYSTEMS  
VISION SENSORS



THE LEADER IN MACHINE VISION & INDUSTRIAL ID  
**COGNEX**

# THE GLOBAL LEADER IN MACHINE VISION & INDUSTRIAL ID

Cognex is the world's most trusted vision company. With over one million systems installed in facilities around the world, and over thirty years of experience, Cognex is solely focused on machine vision and image-based industrial ID technology. Deployed by many of the world's top manufacturers, suppliers, and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex vision technology helps companies improve their manufacturing quality and performance by eliminating defects, verifying assembly, and tracking and capturing information at every stage of the production process. Smarter automation using Cognex vision and ID 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 vision experts to meet the most challenging applications, Cognex is the best choice to help you Build Your Vision.



Standalone Vision Systems



Vision Sensors



3D and Multi-camera Vision Systems

**\$486**  
**MILLION**  
2014 REVENUE

**OVER 30**  
YEARS IN THE BUSINESS

**500+**  
CHANNEL PARTNERS

GLOBAL OFFICES IN  
**IN 20 COUNTRIES**

**1,000,000+**  
SYSTEMS SHIPPED



# BUILD YOUR VISION

Cognex vision systems, vision sensors and 3D laser displacement sensors provide the widest range of application solutions with greater reliability and repeatability than any other supplier. Cognex also has a global network of vision experts with the knowledge to assist you wherever and whenever needed. With Cognex machine vision systems in place, you can perform 100% inspection, ensure brand quality and instantly improve your production processes.

Cognex vision technology performs tasks that are difficult or impossible for people to do reliably and consistently. Our vision systems help to automate and error-proof production, minimizing defects and reducing costs.

2D and 3D vision systems address the following applications:



## Inspection

Inspect for assembly errors, surface defects, damaged parts and missing features. Identify the orientation, shape and position of objects and features.



## Guide/Align

Guide automation equipment and robotic devices. Align parts for high accuracy assembly operations and other manufacturing processes.



## Gauge/Measure

Gauge parts to check critical dimensions. Measure components for sorting and classification.



## OCR/OCV

Read and verify alphanumeric characters marked directly on parts and printed on labels.



## Presence/Absence

Detect the presence or absence of simple features and objects to give basic pass/fail results.



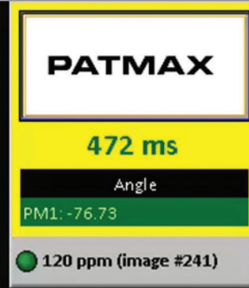
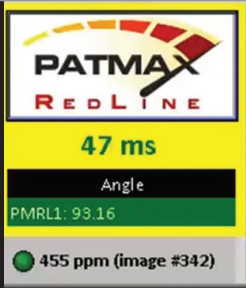
## Code Reading

Read 1-D barcodes and 2-D matrix codes as part of an overall inspection. For applications that are ID specific, also look to DataMan® ID readers.



**CALL NORTH AMERICA COGNEX SALES:  
844-999-CGNX (844-999-2469)**

# MACHINE VISION PRODUCTS



## IN-SIGHT VISION SYSTEMS

Cognex In-Sight® vision systems are unmatched in their ability to inspect, identify and guide parts. These self-contained, industrial-grade vision systems combine a library of advanced vision tools with high-speed image acquisition and processing. A wide range of models, including line scan and color systems, meet most price and performance requirements.

### Benefits:

- Powerful vision tools, including PatMax®, PatMax RedLine™, 1DMax®, and OCRMax™ algorithms
- World-class color vision tools
- Unmatched ease-of-use
- EasyBuilder® user interface for quick and easy application setup
- Spreadsheet programming environment delivers more power and flexibility
- Wide range of form factors, including IP67-rated housings
- Multiple lens and lighting options, including autofocus and integrated lighting
- High speed acquisition models available
- Scripting with JavaScript for powerful, compact jobs
- Resolution up to 5 megapixels

[www.cognex.com/InSight](http://www.cognex.com/InSight)







scan the code or visit  
[www.cognex.com/vision](http://www.cognex.com/vision)

CALL NORTH AMERICA COGNEX SALES: 844-999-CGNX (844-999-2469)

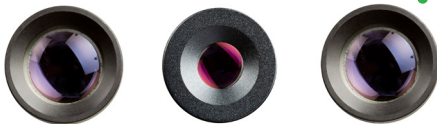
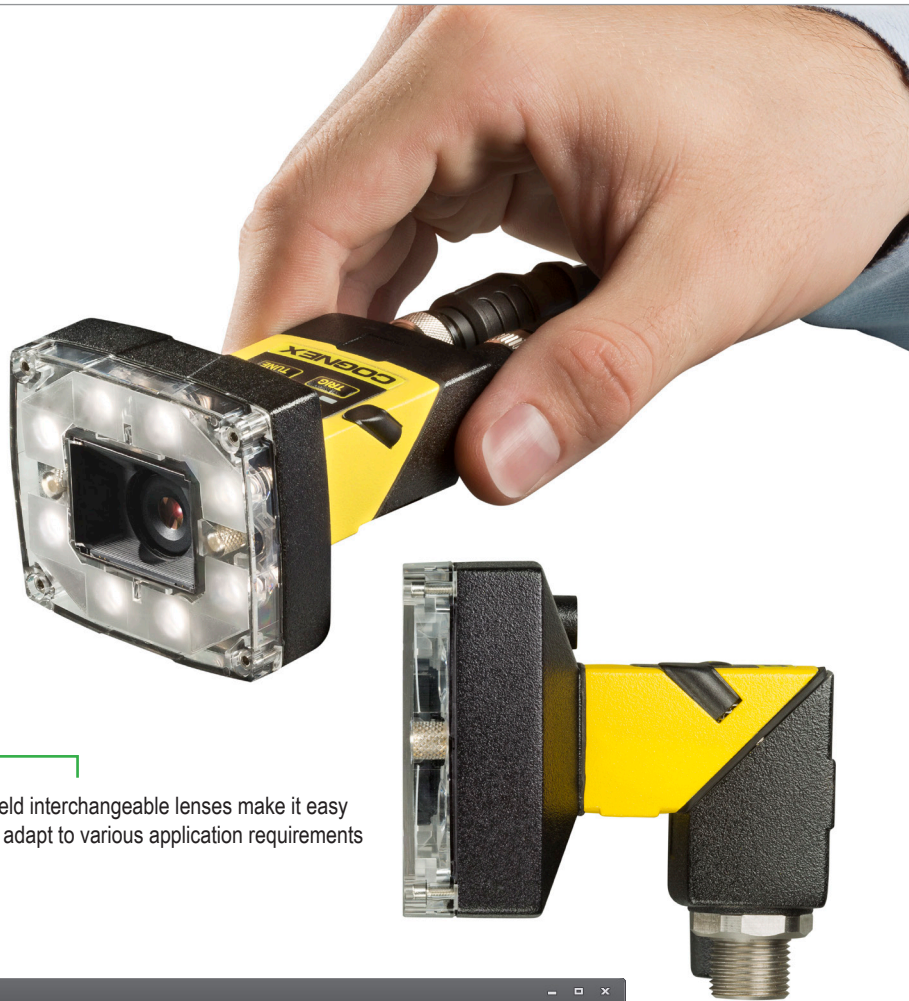
## IN-SIGHT VISION SENSORS

In-Sight 2000 series vision sensors combine the power of In-Sight with the simplicity and affordability of a vision sensor to solve simple error-proofing applications and set new standards for value, ease-of-use, and flexibility.

### Benefits:

- Powerful In-Sight vision tools
- Intuitive setup with EasyBuilder
- Field interchangeable lighting and optics
- Integrated, patent-pending diffuse lighting
- Modular body design

[www.cognex.com/2000](http://www.cognex.com/2000)



Field interchangeable lenses make it easy to adapt to various application requirements

Simple steps guide you through configuring and deploying your application

Choose tools from the list to add them to your inspection

The screenshot shows the In-Sight Explorer software interface. On the left, there are 'Application Steps' including '1. Start', '2. Set Up Tools', '3. Configure Results', and '4. Finish'. The main window displays a live inspection of a bolt with a green bounding box and a yellow highlighted area. On the right, a 'Palette' window shows inspection results:

Help	Results	I/O	TestRun™
Name	Result		
Find_thread	Pass		
Verify_Oring	Pass		
Pass	Pass		

At the bottom, the 'Edit Tool - Verify\_Oring' configuration window is visible, showing settings for 'Pixel Selector' (Auto, range 167-255) and 'Pixel Count Meter and Pass Range' (Auto, range 2077-3216). The 'Execution Time (ms)' is 1,421.

See inspection results at a glance

Point and click controls make it quick and easy to set up any tool to achieve reliable results

# MACHINE VISION PRODUCTS

## 3D Laser Displacement Sensors

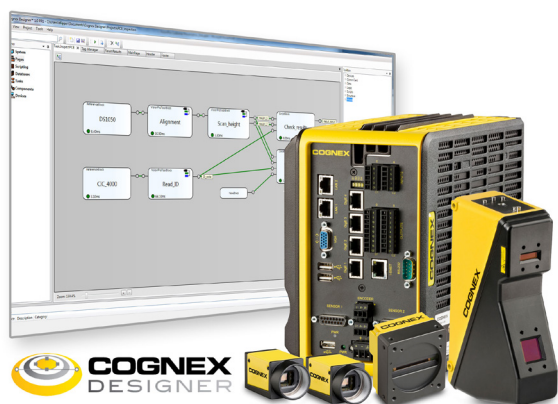
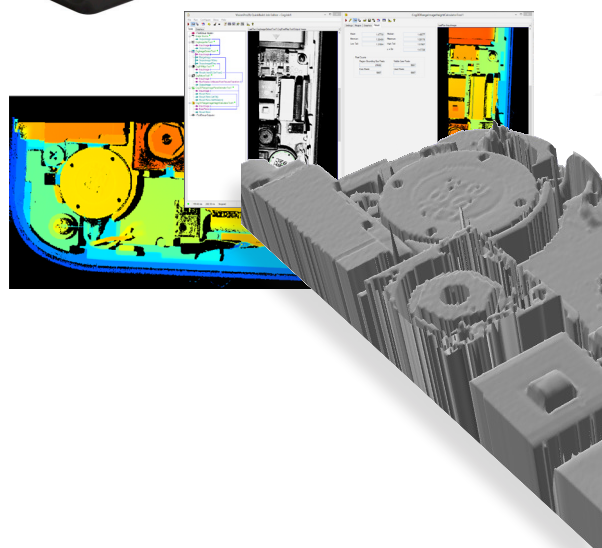
3D laser displacement sensors optimize product quality by providing three-dimensional inspection of your products. These industrial sensors come bundled with vision controller, Cognex Designer™ software and world-class 3D and 2D vision tools.

### Benefits:

Unlike traditional 2D machine vision, laser displacement sensors provide a topographical representation of the 3D features relative to any surface. Cognex 3D laser displacement sensors are factory calibrated to deliver results in real units of measurement with micron-level accuracy, and Cognex field calibration techniques allow preservation of accuracy despite mounting and motion errors. Multiple Cognex sensors can be used in combination across wide production lines to generate single high resolution 3D images.

- Inspects and measures in 3D: Volume, area, height, tilt, circle fitting and curvature removal tools
- Performs OCR on raised or embossed characters
- Calibrated to micron-level accuracy in real-world units
- Provides contrast independent inspection: Dark object on dark background
- Concurrently acquires intensity data for aligned 2D and 3D inspection
- Combines 3D sensors and 2D cameras with world-class 3D and 2D vision tools: PatMax, 1DMax and OCRMax algorithms
- Industrial IP65 housing: IP69K enclosure option
- Fast scan rates: Up to 18KHz

[www.cognex.com/DS1000](http://www.cognex.com/DS1000)



## Cognex Designer

The Cognex Designer development environment allows quick creation and deployment of high-performance vision applications. Providing all that's needed to configure vision tools, design professional graphical user interfaces, synchronize with external hardware, and connect to the factory network, Cognex Designer includes the rich, factory-proven VisionPro® library of alignment, inspection and identification tools that are optimized for fast, accurate performance.

### Benefits:

- Graphically create vision applications that are easy to deploy and maintain
- Connect Cognex 3D displacement sensors, or a wide range of other Cognex and third-party industrial cameras
- Efficiently inspect, identify, and guide parts using PatMax, 1DMax and OCRMax vision tools
- Interact with robots, motion stages, reject mechanisms and other industrial hardware
- Deploy on a Cognex Vision Controller for standalone operation, or integrate in a high-speed industrial PC

[www.cognex.com/CognexDesigner](http://www.cognex.com/CognexDesigner)

# INDUSTRY LEADING TECHNOLOGY

## Reliable Part Location

Finding a part in the image is an essential first step in most machine vision applications and is often the determining factor in the success of the application. Pattern matching is the most common method for finding a part in an image.

However, pattern matching can prove difficult in applications where the appearance of part features tend to vary from one image to the next, including changes in size, position and orientation, surface reflectivity and shadows. Cognex revolutionized the vision industry in 1998 when we developed PatMax technology to overcome these challenges.

The newest addition to Cognex's suite of pattern matching technology is the blazing fast PatMax RedLine, which typically locates patterns up to 7 times faster than PatMax—and in some cases, even faster—without sacrificing any of the robustness or accuracy for which PatMax is known.

PatMax is also the foundation for many companion tools, including PatQuick®, PatMax AutoTune and Multi-model PatMax. Together with PatMax RedLine, this PatMax technology is the “gold standard” for locating part features in images.

[www.cognex.com/PatMax](http://www.cognex.com/PatMax)

## Advanced Color Tools

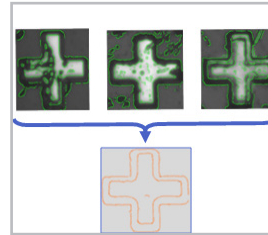
Locate, sort, extract match, identify, and monitor color images with powerful Cognex color tools that make it easy to:

- True color image processing with 22 color-to-color filters
- Find color features despite translation, rotation, scale and skew
- Simplify color definition for complex color scenes
- Extract complex colors for color-based inspection, location and identification applications
- Accurately differentiate between subtle color variations
- Create a grayscale image from segmented colors to enable other tools to be applied

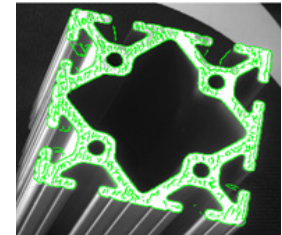
[www.cognex.com/Color](http://www.cognex.com/Color)

## 3D Measurement and Inspection

Factory-calibrated 3D laser displacement sensors from Cognex make it easy to create custom solutions and professional graphical user interfaces for 3D inspections. These sensors deliver fast performance with micron-level accuracy on the widest range of inspections using world-class 3D and 2D vision tools—regardless of lighting or contrast challenges.



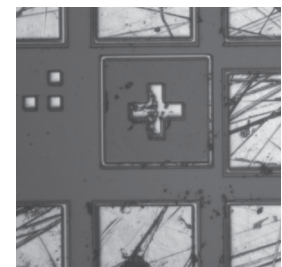
PatMax AutoTune



Perspective PatMax



Multi-model PatMax



Synthetic PatMax

## Breakthrough Robotic Guidance

Cognex delivers unmatched accuracy and ease of use in vision guided robotics (VGR) applications. Advanced software tools provide precise part location and accurate inspection to:

- Eliminate costly precision fixturing
- Simplify robot calibration
- Process various part types without tooling changeover
- Add pre- and post-placement inspection

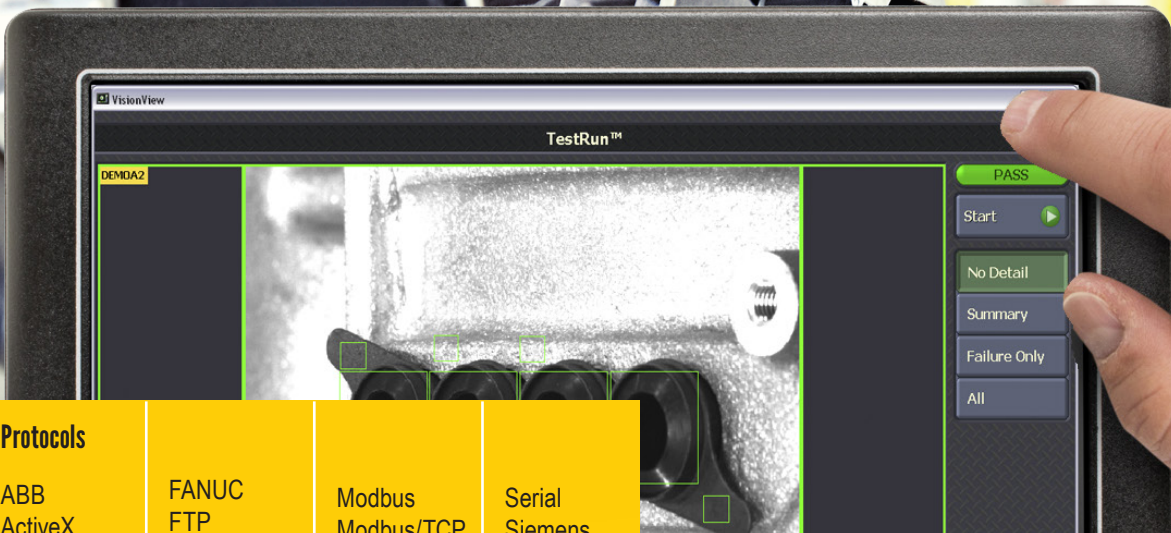
## Robust Optical Character Recognition (OCR)

OCRMax technology delivers the power to achieve the highest character read rates while keeping misreads to a minimum. This powerful algorithm prevents misreads, handles process variations and provides easy font management. It's fast, easy to set up with a unique Auto-tune feature, and simple to use across all platforms with minimal training for the user.

[www.cognex.com/OCRMax](http://www.cognex.com/OCRMax)



# INDUSTRY LEADING TECHNOLOGY



Protocols			
ABB	FANUC	Modbus	Serial
ActiveX	FTP	Modbus/TCP	Siemens
CC-Link	http	Motoman	SMTP
CC-Link IE	Ethernet	.NET	Staubli
CIP-Sync	Kawasaki	OPC	TCP/IP
Denso	Kuka	POWERLINK	... and more
EtherNet/IP	MC Protocol	PROFIBUS	
	Mitsubishi	PROFINET	



## Complete Visualization

VisionView® visualization is ideal for real-time monitoring and controlling In-Sight vision systems and DataMan® barcode readers on the factory floor, and allows operator controls specific to the application. The SensorView® 2 smart display allows users to set up, edit and monitor Checker® vision sensor activity on a large industrial IP65 panel without a PC.

- Multiple platform options
- Automatically detect Cognex systems on your network
- Display full color images, with graphic overlays and operator controls

[www.cognex.com/VisionView](http://www.cognex.com/VisionView)  
[www.cognex.com/SensorView](http://www.cognex.com/SensorView)



## Cognex Designer

Cognex Designer software is not just a vision programming tool, but it's also a full environment for creating factory-ready solutions. With Cognex Designer software, it's simple to add application recipes, record and play back image data, or communicate with cameras, lights and PLCs. It includes everything you need for rapid, professional application development, with the simplicity of a graphical flow-chart interface.

- Share application templates and interfaces between developers on the same or different projects
- Save time with pre-existing system tools for user access levels, real-time alarms, localizable controls, and SQL database logging
- Create plug-ins to drive external equipment, from automatic light control to robot pick and place
- Incorporate third-party .NET controls to customize professional user interfaces

[www.cognex.com/CognexDesigner](http://www.cognex.com/CognexDesigner)



## Comprehensive Communications Suite

Whether you connect directly to a PLC or robot controller, or manage multiple systems remotely from a networked PC or HMI, Cognex Connect™ communications suite provides a seamless, reliable communications link between Cognex products and factory floor equipment.

[www.cognex.com/Connect](http://www.cognex.com/Connect)



# POWERFUL TOOLS

## Part Location

- Accurately locate objects, features, edges and patterns
- Create fixtures for other tools, locate parts for robotic handling
- Extremely robust—no loss of accuracy despite occlusions, uneven lighting, blurred images, confusing backgrounds, and rotation and scale changes

## OCR/Verification

- Font trainable, high accuracy and excellent read rates on challenging print, confusing background, and variations in skew, angle and width
- Prevent misreads, handle process variations and provide easy font management
- Ease of use: quick set-up and deployment with the unique OCRMax Auto-tune functionality

## Industrial Code Reading

- Read 1-D and 2-D codes on labels or directly marked parts (DPM)
- Ability to read multiple codes in the image using a single ID code
- Industry-leading read rates
- Handle extreme variations in mark quality

## Color Applications

- Robust, reliable color detection of parts to locate measure, count and verify presence
- Train colors with a click—no need to understand color spaces
- Easy deployment and maintenance: All user trained colors are shared between color tools

## Defect Detection

- Solve challenging vision inspection problems that rely on accurate edge detection
- Perform bead inspections, finding dents in can lids, edge cracks in solar wafers etc.
- Flexible Flaw Detection and Surface Flaw Detection by performing advanced pattern matching analysis

## Scripting

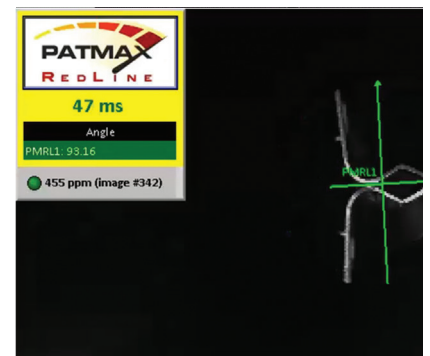
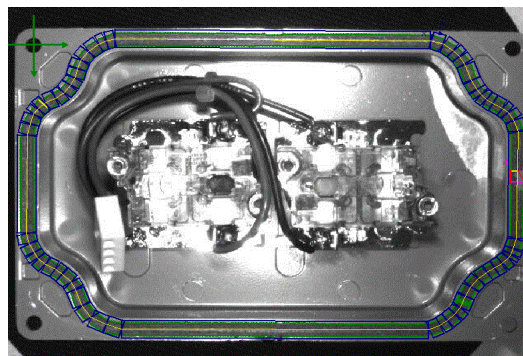
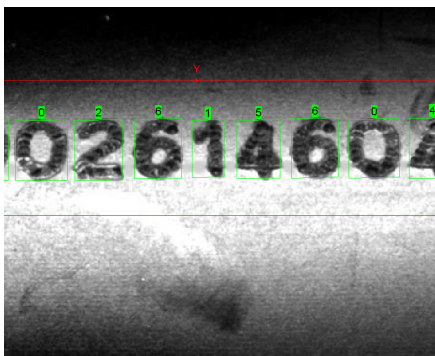
- Create repetitive processing routines, string parsing and formatting operations, custom graphics, and shared JavaScript modules
- Reduce spreadsheet clutter
- Intellectual property protection

## Robot Guidance

- High-speed precision pick-and-place
- Place or remove parts or locate unfixtured parts on conveyor and place them in package
- Use robot to manipulate part or camera to inspect critical features of part

## Non-linear Calibration Tools

- High-accuracy robotic pick-and-place for standard mounting and off-axis mounting due to space or robot motion constraints
- High-accuracy measurements of part location and critical dimensions



# IN-SIGHT 5705 & 5600 SERIES

Model <sup>1</sup>	Speed Rating <sup>2</sup>	Acquisition <sup>3</sup> (fps)	640 x 480 <sup>4</sup>	1600 x 1200	1K Line Scan <sup>4</sup>	2448 x 2048 <sup>4</sup>	EasyBuilder	Spreadsheet	Scripting	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Options	Part Number
5705	20x	16				■	■	■	S	E	X	I		RL P	IS5705-21 (PatMax and PatMax RedLine) IS5705-11 (PatMax)
5705C	20x	14				■	■	■	S	E	X	I	C	RL P	IS5705-C21 (PatMax and PatMax RedLine) IS5705-C11 (PatMax)
5605	20x	16				■	■	■		E	X	I		P	IS5605-11 (PatMax) IS5605-01
5604	20x	44K Lines <sup>2</sup>			■		■	■		E	X	I		P	IS5604-11 (PatMax) IS5604-01
5603	20x	14		■			■	■		E	X	I		P	IS5603-11 (PatMax) IS5603-01
5600	20x	60	■							E	X	I		P	IS5600-11 (PatMax) IS5600-01
ID Models															
5715	20x	16				■	■	■	S			I			IS5715-11
5615	20x	16				■						I			IS5615-01
5614	20x	44K Lines <sup>2</sup>			■							I			IS5614-01
5613	20x	14		■								I			IS5613-01
5610	20x		■									I			IS5610-01

## Notes:

- 1) In-Sight 5600 and 5705 vision systems have 1 dedicated trigger input, 3 high-speed inputs, and 4 high-speed outputs.
- 2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate. The In-Sight 5604 and 5614 models have acquisition speed rated in lines per second.
- 3) The number of image sensor rows are configurable and can be set within the In-Sight Explorer software. Decreasing the number of rows will increase the number of frames per second acquired by the vision system. Refer to the AcquireImage topic in the In-Sight® Explorer Help file for more information.
- 4) Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.

## 5) Supported tools:

- S** Use JavaScript to provide the ability to create repetitive processing routines, string parsing and formatting operations, custom graphics, and shared JavaScript modules.
- RL** Includes patented PatMax and PatMax RedLine geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.
- E** Essential tool set includes blob, edge, curve and line finding, histogram and geometry tools, image filters, pattern matching, and standard calibration.
- X** Extended tool set includes non-linear calibration, caliper, flaw detection, and InspectEdge tools.
- I** ID tool set includes: 1-D/2-D barcode reading and verification, text reading and verification (OCR/OCV), and image filters.
- C** Color tool set includes MatchColor (Color ID), ExtractColor, color-to-color filters, color-to-grayscale filters and color-to-grayscale distance filter.
- P** Includes PatMax, Cognex patented geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.



# IN-SIGHT MICRO 8000 SERIES

Model <sup>1</sup>	Speed Rating <sup>2</sup>	Acquisition (fps)	640 x 480	1280 x 1024 <sup>4</sup>	1600 x 1200	2592 x 1944 <sup>4</sup>	EasyBuilder	Spreadsheet	Scripting	Essential Tools	Extended Tools	ID Tools	PatMax Option	Part Number
8405	15x	10				■	■	■	S	E	X	I	RL P	IS8405M-373-10 (PatMax and PatMax RedLine) IS8405M-363-10 (PatMax)
8402	15x	53			■		■	■	S	E	X	I	RL P	IS8402M-373-50 (PatMax and PatMax RedLine) IS8402M-363-50 (PatMax)
8401	15x	70		■			■	■	S	E	X	I	RL P	IS8401M-373-50 (PatMax and PatMax RedLine) IS8401M-363-50 (PatMax)
8400	15x	200	■				■	■	S	E	X	I	RL P	IS8400M-373-50 (PatMax and PatMax RedLine) IS8400M-363-50 (PatMax)
8200	8x	60	■				■	■	S	E	X	I	RL P	IS8200M-373-40 (PatMax and PatMax RedLine) IS8200M-363-40 (PatMax)
ID Models														
8405	15x	10				■	■	■	S			I		IS8405M-303-10
8402	15x	53			■		■	■	S			I		IS8402M-303-50
8401	15x	70		■			■	■	S			I		IS8401M-303-50
8400	15x	200	■				■	■	S			I		IS8400M-303-50
8200	8x	60	■				■	■	S			I		IS8200M-303-40

## Notes:

- 1) In-Sight 8000 vision systems have 1 opto-isolated, acquisition trigger input. Remote software commands via Ethernet. 2 opto-isolated, NPN/PNP high-speed output lines
- 2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate.
- 3) The number of image sensor rows are configurable and can be set within the In-Sight Explorer software. Decreasing the number of rows will increase the number of frames per second acquired by the vision system. Refer to the AcquireImage topic in the In-Sight® Explorer Help file for more information.
- 4) Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.
- 5) Supported Tools:

**S** Use JavaScript to provide the ability to create repetitive processing routines, string parsing and formatting operations, custom graphics, and shared JavaScript modules.

**RL** Includes patented PatMax and PatMax RedLine geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.

**E** Essential tool set includes blob, edge, curve and line finding, histogram and geometry tools, image filters, pattern matching, and standard calibration.

**X** Extended tool set includes non-linear calibration, caliper, flaw Detection and InspectEdge tools.

**I** ID tool set includes: 1-D/2-D barcode reading and verification, text reading and verification (OCR/OCV), and image filters.

**P** Includes PatMax, Cognex patented geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.

# IN-SIGHT 7000 SERIES

Model <sup>1</sup>	Speed Rating <sup>2</sup>	Acquisition <sup>3</sup> (fps)	800 x 600	1280 x 1024	EasyBuilder	Spreadsheet	Base Tools	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Options	OCR Only	Part Number
7402	12x	60		■	■	■	B	E	X	I		P		IS7402-11 (PatMax) IS7402-01
7402C				■	■	■	B	E	X	I	C	P		IS7402-C11 (PatMax) IS7402-C01
7400	12x	102	■		■	■	B	E	X	I		P		IS7400-11 (PatMax) IS7400-01
7400C		102	■		■	■	B	E	X	I	C	P		IS7400-C11 (PatMax) IS7400-C01
7200	6x	102	■		■	■	B	E	X	I		P		IS7200-11 (PatMax) IS7200-01
7200C		102	■		■	■	B	E	X	I	C	P		IS7200-C11 (PatMax) IS7200-C01
7050	2x	102	■		■	■	B	E						IS7050-01
7020	2x	102	■		■	■	B	E						IS7020-01
7010	2x	102	■		■	■	B							IS7010-01
7010C		102	■		■	■	B	E			C			IS7010-C01
OCR Models														
7432	12x	60		■	■								O	IS7432-01
7430	12x	102	■		■								O	IS7430-01
7230	6x	102	■		■								O	IS7230-01
ID Models														
7412	12x	60		■	■	■				I				IS7412-01
7410	12x	102	■		■	■				I				IS7410-01
7210	6x	102	■		■	■				I				IS7210-01

## Notes:

1) In-Sight 7000 vision systems have 1 dedicated trigger input, 3 high-speed inputs, and 4 high-speed outputs.

2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate.

3) Acquisition rate is based on minimum exposure and a full image frame capture.

4) Supported Tools:

**B** Base tool set includes brightness, contrast, pattern, edge, point-to-point geometry, distance, angle, plot and blob tools.

**E** Essential tool set includes blob, edge, curve and line finding, histogram and geometry tools, image filters, pattern matching, and standard calibration.

**X** Extended tool set includes non-linear calibration, caliper, Flaw Detection and InspectEdge tools.

**I** ID tool set includes: 1-D/2-D barcode reading and verification, text reading and verification (OCR/OCV), and image filters.

**C** Color tool set includes Match Color (Color ID), ExtractColor, color histogram, color to grayscale filters and color to grayscale distance filter.  
Exception: In-Sight 7010C has Color ID tool only.

**P** Includes PatMax, Cognex patented geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.

**O** Tools for OCR applications.



# IN-SIGHT 5000 SERIES

CALL NORTH AMERICA COGNEX SALES: 844-999-CGNX (844-999-2469)

Model <sup>1</sup>	Speed Rating <sup>2</sup>	Acquisition <sup>3</sup> (fps)	640 x 480 <sup>4</sup>	1600 x 1200 <sup>4</sup>	EasyBuilder	Spreadsheet	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Options	Part Number
5403	12x	15		■	■	■	E	X	I		P	IS5403-11 (PatMax) IS5403-01
5400	12x	60	■		■	■	E	X	I		P	IS5400-11 (PatMax) IS5400-01
5400C	8x	60	■		■	■	E	X	I	C	P	IS5400-C11 (PatMax) IS5400-C01
5100	4x	60	■		■	■	E	X	I		P	IS5100-11 (PatMax) IS5100-01
5100C	4x	60	■		■	■	E	X	I	C	P	IS5100-C11 (PatMax) IS5100-C01
ID Models												
5413	12x	15		■	■	■			I			IS5413-01
5410	12x	60	■		■	■			I			IS5410-01
5110	4x	60	■		■	■			I			IS5110-01

## Notes:

- 1) In-Sight 5000 series has 1 dedicated trigger input and 2 high-speed outputs.
- 2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate.
- 3) The number of image sensor rows are configurable and can be set within the In-Sight Explorer software. Decreasing the number of rows will increase the number of frames per second acquired by the vision system. Refer to the AcquireImage topic in the In-Sight® Explorer Help file for more information.
- 4) Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.
- 5) Supported tools:

**E** Essential tool set includes blob, edge, curve and line finding, histogram and geometry tools, image filters, pattern matching, and standard calibration.

**X** Extended tool set includes non-linear calibration, caliper, Flaw Detection and InspectEdge tools.

**I** ID tool set includes: 1-D/2-D barcode reading and verification, text reading and verification (OCR/OCV), and image filters.

**C** Color tool set includes Match Color (Color ID), ExtractColor, color histogram, color to grayscale filters and color to grayscale distance filter.

**P** Includes PatMax, Cognex patented geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.

# IN-SIGHT MICRO 1000 SERIES

Model <sup>1</sup>	Speed Rating <sup>2</sup>	Acquisition <sup>3</sup> (fps)	640 x 480 <sup>4</sup>	800 x 600	1280 x 1024	1600 x 1200	EasyBuilder	Spreadsheet	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Options	Part Number
1500	12x	200**		■			■	■	E	X	I		P	ISM1500-11 (PatMax)
1403	8x	14				■	■	■	E	X	I		P	ISM1403-11 (PatMax) ISM1403-01
1403C	10x	7.5				■	■	■	E	X	I	C	P	ISM1403-C11 (PatMax) ISM1403-C01
1402	10x	60			■		■	■	E	X	I		P	ISM1402-11 (PatMax) ISM1402-01
1400	10x	60	■				■	■	E	X	I		P	ISM1400-11 (PatMax) ISM1400-01
1400C	10x	58	■				■	■	E	X	I	C	P	ISM1400-C11 (PatMax) ISM1400-C01
1100	4x	60	■				■	■	E	X	I		P	ISM1100-11 (PatMax) ISM1100-01
1100C	4x	58	■				■	■	E	X	I	C	P	ISM1100-C11 (PatMax) ISM1100-C01
1050	1x	60	■				■	■	E					ISM1050-01
1020	1x	60	■				■	■	E					ISM1020-01
ID Models														
1413	8x	14				■	■	■			I			ISM1413-01
1412	8x	60			■		■	■			I			ISM1412-01
1410	10x	60	■				■	■			I			ISM1410-01
1110	4x	60	■				■	■			I			ISM1110-01

## Notes:

1) In-Sight Micro vision systems have 1 dedicated trigger input and 2 high-speed outputs.

\* Software configurable in In-Sight Explorer: 150 fps at 800 x 600.

\*\* Software configurable in In-Sight Explorer: 400 fps at 640 x 240.

2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate.

3) The number of image sensor rows are configurable and can be set within the In-Sight Explorer software. Decreasing the number of rows will increase the number of frames per second acquired by the vision system. Refer to the AcquireImage topic in the In-Sight® Explorer Help file for more information.

4) Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.

5) Supported tools:

**E** Essential tool set includes blob, edge, curve and line finding, histogram and geometry tools, image filters, pattern matching, and standard calibration.

**X** Extended tool set includes non-linear calibration, caliper, Flaw Detection and InspectEdge tools.

**I** ID tool set includes: 1-D/2-D barcode reading and verification, text reading and verification (OCR/OCV), and image filters.

**C** Color tool set includes Match Color (Color ID), ExtractColor, color histogram, color to grayscale filters and color to grayscale distance filter.

**P** Includes PatMax, Cognex patented geometric pattern matching technology. PatMax tool is required for Flexible Flaw Detection tool.



# IN-SIGHT 2000 SERIES

CALL NORTH AMERICA COGNEX SALES: 844-999-CGNX (844-999-2469)

		Models		
		2000-110	2000-120	2000-130
<b>User Interface</b>		In-Sight Explorer EasyBuilder		
<b>Imager</b>	Type	1/3 inch CMOS, monochrome		
	Image Resolution	640 x 480 pixels (standard)	640 x 480 pixels (standard) 640 x 480 pixels (2x magnification)	640 x 480 pixels (standard) 640 x 480 pixels (2x magnification) 800 x 600 pixels (2x magnification)
	Acquisition Rate	20 fps	40 fps	
<b>Lens</b>	Standard M12 Lens	8 mm		
	Optional M12 Lenses	3.6 mm, 6 mm, 12 mm, 16 mm, 25 mm		
<b>Lighting</b>	Standard	8-LED diffuse ring light (white)		
	Options	8-LED diffuse ring lights (red and IR)		
		Light filters (red and IR) and polarized light cover		
<b>Vision Tools</b>	Part Location	Pattern	Pattern	Pattern Edge Circle
	Part Inspection	Pattern	Pattern Pixel count Contrast Brightness	Pattern Pixel count Contrast Brightness Edge Circle
	Measurement			Distance Angle Circle diameter
	Counting			Pattern Edge
<b>Communications &amp; I/O</b>	Protocols	Ethernet, EtherNet/IP, PROFINET, SLMP, SLMP Scanner, FTP, RS-232 Text	Ethernet, EtherNet/IP, PROFINET, SLMP, SLMP Scanner, FTP, RS-232 Text	Ethernet, EtherNet/IP, PROFINET, SLMP, SLMP Scanner, TCP/IP, UDP, FTP, RS-232 Text
	Connections	M12: Ethernet M12: Power, I/O and Serial		
	Inputs	2 (1 trigger, 1 general purpose)		
	Outputs	4 (general purpose)		
<b>Mechanical</b>	Dimensions	98 mm x 68 mm x 45 mm		
	Weight	200 g		
<b>Operating</b>	Power	5–24 VDC		
	Operating Temperature	4–40 °C		

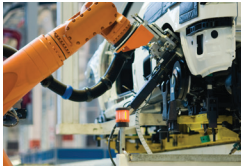
# COGNEX 3D LASER DISPLACEMENT SENSORS

Specifications	Models			
	DS1050	DS1101	DS1300	DS925B
<b>Near Field of View (mm)</b>	43	64	90	23.4
<b>Far Field of View (mm)</b>	79	162	410	29.1
<b>Clearance Distance (mm)</b>	87	135	180	53.5
<b>Measurement Range (mm)</b>	76	220	725	25
<b>Laser Class</b>	2M	2M	2M	2M
<b>Resolution X (mm)</b>	0.059–0.090	0.079–0.181	0.101–0.457	0.0183–0.0227
<b>Resolution Z (mm)</b>	0.004–0.014	0.010–0.052	0.016–0.265	0.002
<b>VC5 Controller</b>	Intel i5 processor Precision real time IO PLC connection Connect up to 4 DS sensor heads			
<b>Software</b>	Cognex Designer IDE software			
<b>World-class 3D and 2D vision tools</b>	Volume, area, height, tilt, circle fitting, curvature removal, PatMax, and OCRMax			

# VISION FOR EVERY INDUSTRY

Cognex vision systems perform 100% inspection, ensure brand quality and improve your production processes. With over one million systems installed worldwide, Cognex machine vision systems are accepted in nearly every industry and used by most major manufacturers.

## Automotive



The manufacturing processes for building virtually every system and component within an automobile can benefit from the use of machine vision.

## Mobile Devices



Machine-vision-enabled robots provide scalable, final assembly of mobile phones, tablets, and wearable devices. Cognex vision technology enables high precision touchscreen display manufacturing and 3D quality inspection.

## Medical Devices



Quality inspection is critical to success. Liability for defective products, inconsistent quality, rapidly changing costs and pending regulations, all challenge medical device manufacturers.

## Consumer Products



Improve production and packaging operations with high-speed image acquisition, advanced color tools, and 3D inspection systems.

## Pharmaceutical



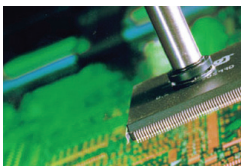
The need to comply with patient safety and traceability requirements is imperative, and machine vision helps meet compliance goals.

## Food & Beverage



Food and beverage applications require vision that can perform precisely, accurately and quickly to keep up with the fast-paced production lines.

## Semiconductor



Cognex vision provides the precise, sub-pixel alignment and identification essential to every step of the semiconductor manufacturing process, despite increasingly fine geometries and process effect challenges.

## Electronics



Machine vision provides the high-speed alignment and traceability for electronics assembly, even on the newest miniaturized components and flexible circuits.

**COGNEX** Companies around the world rely on Cognex vision and ID to optimize quality, drive down costs and control traceability.

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