# COGNEX

IN-SIGHT
Vision Systems

Vision has never been easier

The Cognex Advantage

Industry Leading Performance

Since the inception of Cognex over a quarter century ago, we've recognized that the true test of a vision system is that it works under real world conditions on the factory floor. Performance is not just related to high-speed image acquisition and processing, but also to the combined power of the vision hardware and software. And that's what Cognex delivers. This assures users reliable, repeatable performance even in the most challenging vision applications.
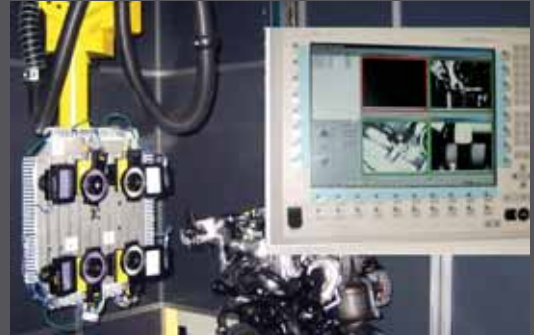
Exceptional Flexibility

The flexibility of the In-Sight® family of vision systems can be defined in a number of ways: processing power, resolution, vision tools, connectivity, and operator interface. Whether you are a system integrator, machine builder, or end user, In-Sight vision systems come equipped with a seamless application builder and networking environment. And, Cognex offers the widest range of vision systems found in the industry with the In-Sight product family, which means that you can match the correct platform to your application at the right price.

Unmatched Ease-of-Use

Ease-of-use is built into the heart of In-Sight vision systems starting with smart vision tools that automatically select features, set parameters, and operate in real world conditions without adjustment. Our EasyBuilder® software interface offers everything required to easily set up reliable applications. With no programming needed, applications are deployed quickly. In addition, In-Sight offers the most comprehensive and easiest to use connectivity suite of communications capabilities to interface to PLCs, robots, the factory network, and HMI devices.

Extreme Ruggedness

All In-Sight systems are self-contained, compact vision systems requiring no external processor or separate camera. In-Sight is the only family of vision systems available today that provide industrial grade features as standard. That means rugged, die-cast aluminum and stainless steel cases that can withstand punishment of vibration, and sealed M12 connectors and protective lens covers that provide IP67 and IP68 rated protection against dust and moisture. It all adds up to peace of mind on the factory floor.

In-Sight… for All Applications

Inspect

Cognex In-Sight vision systems help companies reduce scrap and re-work—which ultimately saves time and money—by inspecting products throughout the manufacturing process.

Industries from pharmaceutical to automotive to electronics rely on Cognex vision systems to ensure the end products they deliver to their customers meet the highest standards.

Guide

In-Sight vision systems are widely used with material handling systems and robots for general alignment and pick-and-place guidance in assembly and inspection applications with speed and accuracy, eliminating the need for expensive fixturing and enabling a new generation of flexible manufacturing.

The power of our patented PatMax® geometric pattern finding tool and the support for many robot controller protocols makes integrating In-Sight vision systems into robotic applications faster and easier.

Identify

Whether identifying parts using barcodes, alphanumeric characters, or by shape or color, Cognex In-Sight vision systems reliably and accurately identify parts, even on the fastest production lines.

In-Sight vision systems provide unmatched 1D and 2D code reading performance and handle a wide range of degradation to the appearance of the code with the industry's most reliable read rates. Our powerful OCR tool reads text strings, even under varying conditions such as rotation, uneven lighting and confusing scenes. And, our advanced color recognition tools can reliably distinguish between similar colors with high precision.

In-Sight Micro Series

Make it small. Make it smart. Make it easy.

That's what Cognex has achieved with the In-Sight Micro series vision system. In-Sight Micro packs a complete vision system into a remarkably small package that measures just 30mm x 30mm x 60mm. Powered by In-Sight Explorer software with the intuitive EasyBuilder interface, the In-Sight Micro can be used for single-point inspection tasks or for building an entire factory-wide network of vision systems.

Housing
Die-cast zinc and steel case stands up to industrial environments.

Lenses
Accepts standard CS or C mount lens (spacer for C-mount lens included).

Connectors
Single cable for power and Ethernet connects via the industrial M12 connector.

A M8 connector provides high speed trigger and outputs.

30mm (1.18in)

60mm (2.36in)

30mm (1.18in)

IN-SIGHT MICRO MODELS			
Standard Resolution	**High Resolution**	**ID**	**Color**
Offering a range of performance choices, the In-Sight Micro models handle even the highest speed manufacturing lines in the smallest vision system footprint available.	When large parts need to be inspected for small defects or precise measurements, turn to the high resolution models for greater accuracy.	In-Sight Micro ID Readers use our unmatched identification software tools for reading and verifying 1D and 2D codes, and advanced OCR/OCV tools for reading and verifying text.	Includes the powerful ExtractColor software tool to inspect color features of a part and the robust MatchColor software tool to recognize parts based on their color.
Models:	Models:	Models:	Models:
1020, 1050, 1100, 1400	1403, 1403C	1110, 1410, 1413	1100C, 1400C, 1403C

For more information on In-Sight Micro models, please refer to page 18.

In-Sight 5000 Series

Rugged, reliable and powerful.

In-Sight 5000 series vision systems offer users the highest level of performance and are the only vision systems available that are equipped with industrial-grade features as standard. Powered by In-Sight Explorer software with the intuitive EasyBuilder interface, the In-Sight 5000 series can be used for single-point inspection tasks or for building an entire factory-wide network of vision systems.

Resolution
Available in 640 x 480, 1024 x 768, 1600 x 1200 and 2448 x 2048 formats. Accepts standard C-mount lenses.

Connectors
Ethernet, power and I/O connect via the industrial M12 connectors.

Standard Housing
Die-cast and steel cases are IP67 (NEMA 6) rated and have a protective lens cover.

Stainless Steel Housing
IP68-rated case stands up to caustic environments.

IN-SIGHT 5000 MODELS		
Standard Resolution Built of rugged, die-cast aluminum, with sealed M12 connectors, and an included protective lens cover, the In-Sight 5000 Series models offer a wide array of performance choices, all with IP67 (NEMA 6) rated protection. Models: 5100, 5400, 5600	**High Resolution** When large parts need to be inspected for small defects or precise measurements, turn to the high resolution models for greater accuracy. Up to a 5MP version available. Models: 5401, 5403, 5603, 5605	**ID** In-Sight ID readers use our unmatched identification tools for reading and verifying 1D and 2D codes, and advanced OCR/OCV tools for reading and verifying text. Models: 5110, 5410, 5411, 5413, 5610, 5613, 5614, 5615
Color Includes the powerful ExtractColor tool to inspect color features of a part and the robust MatchColor tool to recognize parts based on their color. Models: 5100C, 5400C	**Line Scan** The In-Sight line scan builds an image line-by-line, as a product moves past the system. This alternative method for acquiring images is suited to applications such as inspecting 360° around a cylindrical object, building high quality, high resolution images, and inspecting parts on a web. Models: 5604, 5614	**High-Performance** The high-performance series offers a 1GHz processor running the Cognex vision tool library at the highest speeds to keep up with the fastest production lines. The 5600 is available in standard, high-resolution, and line scan, for ultimate acquisition flexibility. Models: 5600, 5603, 5604, 5605, 5610, 5613, 5614, 5615

Vision Has Never Been Easier

The most powerful In-Sight vision tools are now the easiest to use and are presented more simply than ever before with the EasyBuilder interface in our In-Sight Explorer Software. This easy-to-use interface walks you through the process of setting up your vision application, step by step.

Great for first time vision users, EasyBuilder doesn't require you to learn programming, allowing you to get the application deployed and running in a very short time and enabling you to focus on what's most familiar… your part! Plus, the advanced vision tools and logic make EasyBuilder a powerful interface for the experienced vision user too!

For advanced vision users, In-Sight Explorer gives you access to the power and flexibility of the spreadsheet to allow you to program solutions for the most challenging applications.

Four simple steps guide you through the setup process.

A **library of vision tools** are configured with the click of a mouse.
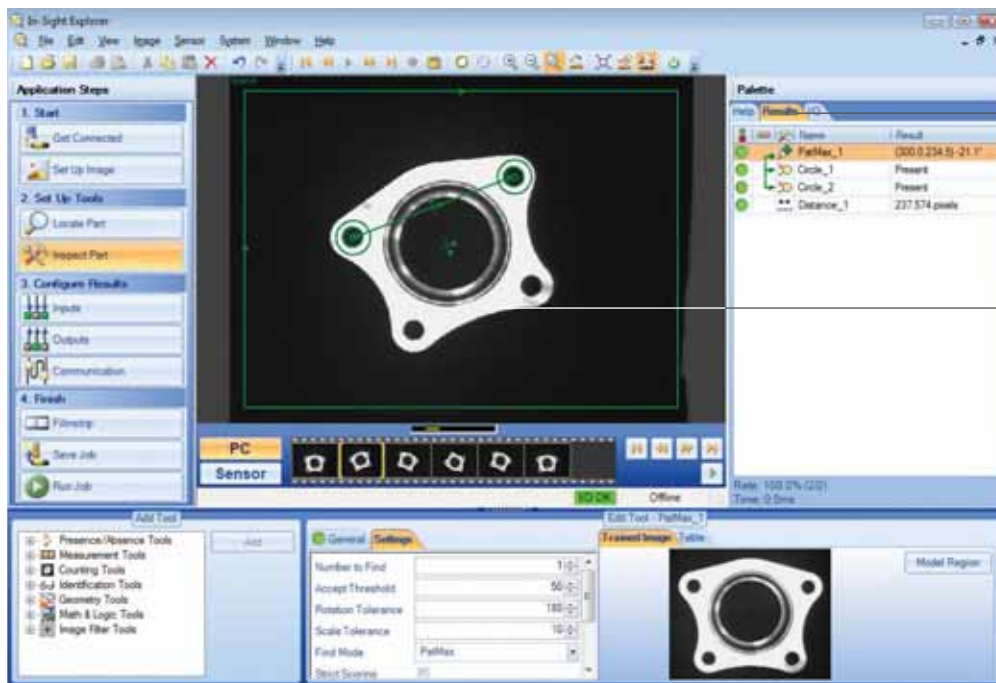
The **palette** provides quick access to tool results, I/O status and built-in help.

Point-and-Click Setup Drop in tools quickly by simply clicking on the features of interest.

Intuitive, Easy to Use

Working from an image of the part, four simple steps complete the application setup:

1	START	Connect your In-Sight vision system on your network and set up the image to inspect.
2	SET UP TOOLS	Locate and inspect the part using a library of over 40 industry proven vision tools.
3	CONFIGURE RESULTS	Point-and-click setup for inputs, outputs, and communication to PLCs, robots and HMIs.
4	FINISH	Choose the images to record while inspecting, and put your In-Sight vision system online.

That's all it takes to complete an application! In a fraction of the time that you would normally spend learning how to set up a vision system, you can have your entire solution configured and deployed.

Run-Time View
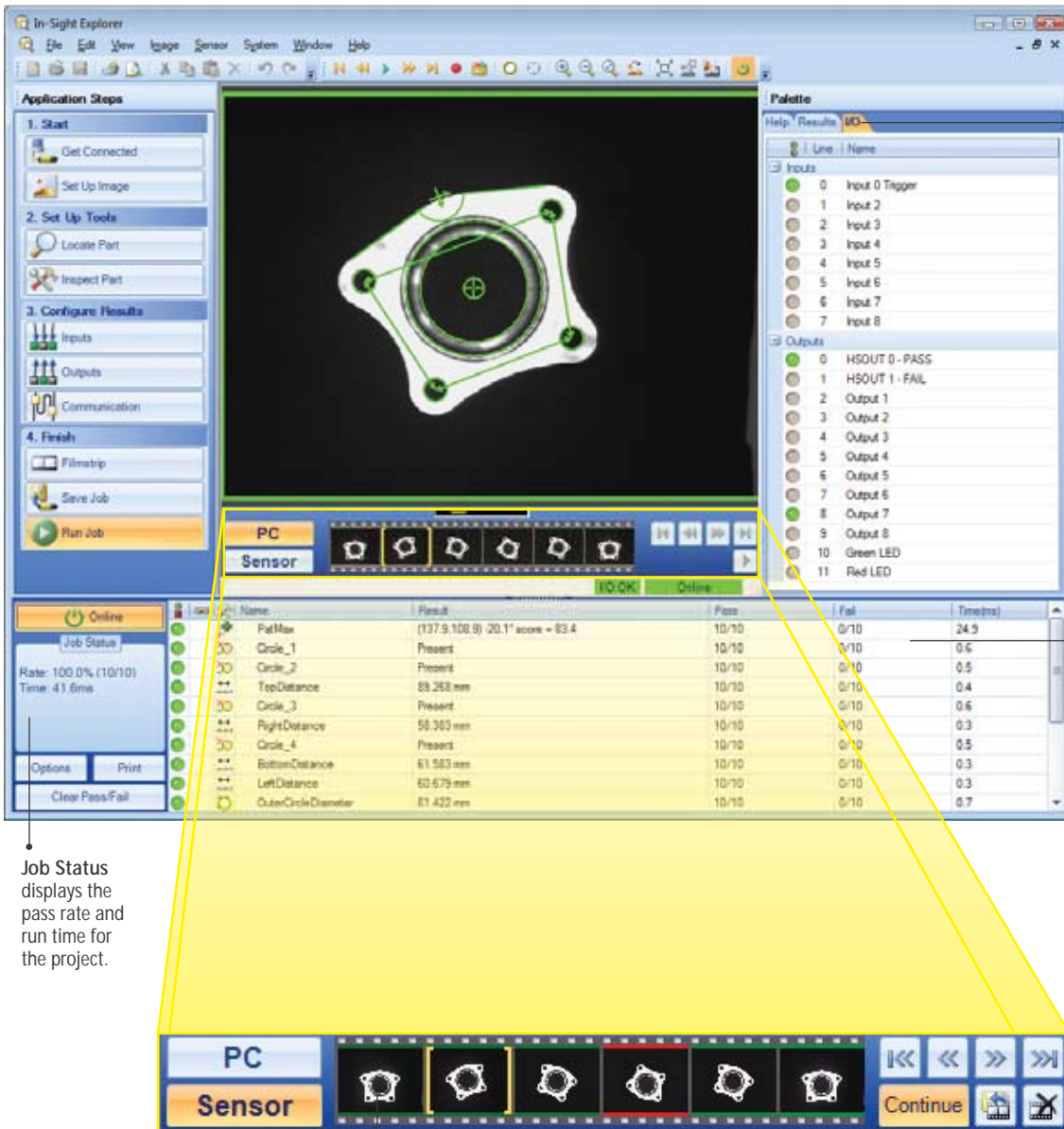
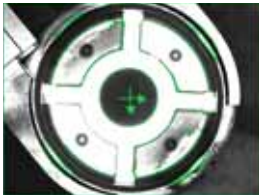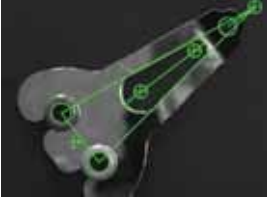**I/O Tab** allows the user to monitor the input and output signals.

Results table consolidates tool results for easy viewing and helps users understand tool references and performance timing.

Job Status displays the pass rate and run time for the project.

- The **Filmstrip** enables users to understand how their vision tools perform and to even troubleshoot manufacturing line issues.

- Recording up to 10,000 images to a PC—sorted by pass/fail results—provides robust process metrics on how vision tools will perform over time in changing conditions and boosts reliability when deploying vision to the line.

- Recording images directly to the vision system allows operators and technicians to understand why parts are passing or failing in real time, without halting the vision system.

Powerful Vision Tools

The industry-leading Cognex vision tool library provides reliable, repeatable performance in even the most challenging vision applications. Regardless of the application, In-Sight vision tools have the reliability and accuracy that is required to solve even the most difficult applications.

Tool Category	Advantages	Applications
PART LOCATION TOOLS... LOCATE PARTS IN WIDELY-VARYING CONDITIONS RELIABLY AND ACCURATELY		
	• PatMax, the industry's accuracy and reliability standard for part and feature location, utilizes patented geometric pattern matching technology to locate parts under difficult conditions • Simplifies mechanical fixturing and lighting, making vision projects easier and less expensive to implement	• Locate automotive, electronic, pharmaceutical, and consumer parts and assemblies for inspection • Identify locations of parts for robotic handling, tolerating changes in rotation, scale, and lighting variations • Precision part alignment
INSPECTION TOOLS... VERIFY THE CORRECT ASSEMBLY OF COMPONENTS AND FIND FLAWS IN PART APPEARANCE		
	• Provides robust, repeatable inspection results despite changes in part orientation • Allows users to easily classify defects by defect type	• Verify correct assembly of automotive parts • Verify the contents and seals of packaged goods for food, consumer, and pharmaceuticals • Inspect correct assembly of electronics
MEASUREMENT TOOLS... MEASURE CRITICAL PART DIMENSIONS AND VERIFY TOLERANCES		
	• Enables high-accuracy gauging of critical part dimensions despite changes in part orientation and lighting • Built-in geometry tools make complex measurements easy	• Measure and verify tolerances of automotive parts, assemblies, and product labels • Measure critical tolerances of medical and surgical devices
ROBOT GUIDANCE TOOLS... ELIMINATE PART FIXTURING		
	• Combines part location tools with communication protocols for total guidance capability • Eliminates costly fixtures in pick-and-place applications • Allows processing multiple part types at the same robotic station	• High-speed precision pick-and-place. Place or remove parts on pallets • Locate unfixtured parts on conveyor, and place them in package • Use robot to manipulate part or camera to inspect critical features of part

Tool Category	Advantages	Applications

INSPECT EDGE TOOL

- Provides robust, repeatable inspection results despite changes in part orientation
- Allows users to easily classify defects by defect type controlling thresholds that define a defect
- Works on straight or circular parts
- Determines min/max deviations and widths
- Helps to find gaps in addition to defects

- Verify the correct assembly of components and find flaws in part appearance
- Find deviations in edge position and defects and gaps with position and width
- Find width variations or missing beads along the bead path in bead tracking applications

COLOR VISION TOOLS... INSPECT AND IDENTIFY PARTS BASED ON COLOR

- The powerful ExtractColor tool learns simple or complex colors for color based inspection, location, and identification applications
- 24-bit resolution MatchColor tool reliably distinguishes between even subtle shade differences
- Point-and-click color training with simple adjustments make color application development easy
- External retraining enables color retraining on the factory floor without a PC

- Identify and sort products based on their color
- Monitor part color to ensure consistent quality
- Identify labels to ensure proper labeling of products
- Verify assembly of products based on the colors of components
- Inspect pharmaceutical blisterpack for the correct color tablets
- Verify color and proper assembly of LEDs

ADVANCED OCV /OCR TOOLS... VERIFY AND READ ALPHANUMERIC TEXT STRINGS

- Handles low-contrast characters, as well as confusing or unevenly-spaced characters
- Inspection speeds of faster than 1ms per character
- Font editor improves the readability of poorly-trained fonts or degraded characters

- Read or verify date/lot codes and SKUs of food and beverage, pharmaceutical, and consumer items
- Verify character legibility and proper printer operation
- Read direct-marked numbers and characters on automotive components

INDUSTRIAL CODE READING TOOLS... RELIABLY READ 1D AND 2D CODES ON LABELS OR DIRECTLY MARKED ON PARTS

- 1DMax™ is a fast, accurate, best-in-class 1D bar-code-reading tool
- 2DMax™ handles low-contrast, poorly formed 2D codes resulting from process degradation and marking techniques such as dot peen and laser etch
- Reads up to 7200 parts per minute

- Read direct-marked 2D codes on automotive, aerospace, and pharmaceutical parts
- Read and track 1D and 2D codes, and verify print quality to industry standards for consumer, food, beverage, and pharmaceutical products

NON-LINEAR CALIBRATION FOR THE MOST ACCURATE RESULTS
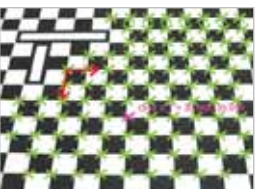
- Non-Linear Calibration improves accuracy and repeatability by correcting lens and perspective distortion
- Step-by-step wizard makes calibration simple, guiding users through the process of turning pixels into robot or real world coordinates
- Maintain accuracy even when the vision system is mounted off-axis

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

In-Sight Track & Trace for Healthcare

Ready for Serialization

The GS1 HUG™ (Global Healthcare User Group) "strongly recommends investing in camera-based" systems for automatic identification. But as healthcare product manufacturers preparing for the coming global traceability standards already know, a successful transition to mass serialization of product packaging involves more than simply reading a barcode on a label; all of the data on the label must be verified for accuracy.

In-Sight Track & Trace™ is up to the challenge.

Complete Identification and Data Verification Solution

In-Sight Track & Trace works with networked In-Sight vision systems to create a complete identification and data verification solution for serialized labels on pharmaceutical and medical device packaging. Whether you're looking for a standalone label inspection system, in the early stages of planning your traceability initiative, or you have active serialization projects, In-Sight Track & Trace can meet your needs today and equip you for tomorrow's requirements.

• Reads 2D and 1D barcodes, including Data Matrix, GS1-128, GS1 DataBar and Pharmacode

• Verifies correct ID code contents, including compliance with the GS1 Healthcare data standard

• Assesses Data Matrix code quality at runtime to detect print degradation

• Displays full color images, with graphic overlays and operator controls

• Verifies the accuracy of printed text

• Detects label misalignment and skew

• Provides a standard operator interface across enterprise

In-Sight Track & Trace is compatible with most In-Sight Micro and 5000 Series vision systems, allowing you to match the resolution and processing speed to the demands of your line. With dozens of models available, there's an In-Sight vision system to meet the price/performance requirements of any serialization application.

In-Sight Track & Trace provides a new approach to traceability that's less expensive to install, less complex to validate, and less costly to maintain. Because it can be combined with a variety of third party products, pharmaceutical manufacturers have the flexibility to customize and scale their serialization solutions to best suit their budgets and needs.

Ready for 21 CFR Part 11 Validation

In-Sight Track & Trace provides the technical controls needed for FDA 21 CFR Part 11 validation, including secure user authentication and support for automatic audit trail generation. Multi-level permissions can be configured to limit users' access to only the controls for which they are authorized. Plus, the compact, all-in-one In-Sight "smart camera" systems are easier to maintain and validate for Part 11 compliance than most Microsoft Windows® PC-based vision systems.

Easy to Integrate, Easy to Use

A touch screen friendly user interface makes In-Sight Track & Trace easy to configure and operate. Developers can integrate the In-Sight Track & Trace interface into a PC-based HMI or custom application using the included Cognex HMI Display Control for .NET. For a ready-to-deploy solution, In-Sight Track & Trace can also be controlled using the Cognex VisionView® 700 Operator Interface panel or VisionView PC software.

The In-Sight Track & Trace user interface is easily integrated into PC-based HMIs and custom applications using the Cognex HMI Display Control for .NET.

Specifications

In-Sight Track & Trace

ID CODE READING

Read one or two ID codes per label, including Data Matrix, Pharmacode, GS1-128, ITF-14 (Interleaved 2 of 5), Code 39, UPC/EAN, GS1 DataBar (RSS), QR Code

ID CODE GRADING

Assess Data Matrix code quality using ISO 15415/16022 and AIM standards

ID CODE DATA VERIFICATION

Match data in ID codes to expected values
Verify data compliance to GS1 Healthcare standard

OPTICAL CHARACTER VERIFICATION (OCV)

Verify up to six lines of printed text
Fixture position of OCV lines using ID code or user-trained pattern (requires In-Sight system with pattern matching tools enabled)
Match printed text to data in ID codes
Supports up to four user-trainable fonts per label

LABEL ALIGNMENT INSPECTION

Checks for correct horizontal/vertical label alignment and orientation

FDA 21 CFR PART 11 VALIDATION SUPPORT

Password protected user authentication and multi-level user permissions
Time stamped audit trail messages generated automatically for all user logins, system events and changes to setup parameters
Audit messages in XML format, for conversion to compliance database or log file
Idle timeout automatically logs out after period of inactivity

I/O AND COMMUNICATIONS

TCP/IP data exchange with MES and other software systems
PLC data exchange using EIP, PROFINET, TCP/Modbus
Input text string contains user-configurable batch information
Output text string contains user-configurable inspection results
Discrete outputs signal for up to 10 pass/fail conditions (requires CIO-1400 or CIO-Micro I/O Module, available separately)

COMPATIBILITY

In-Sight 5000 Series vision systems (32MB or higher): 5100, 5110, 5400, 5401, 5403, 5410, 5413, 5600, 5610, 5613
In-Sight Micro Series vision systems: 1100, 1110, 1400, 1403, 1410, 1413
In-Sight Explorer and firmware version 4.3.4
PC with minimum 1GB RAM and Microsoft Windows XP SP3 (32-bit edition)
Cognex HMI Display Control in a custom application, VisionView 700 operator interface panel, or VisionView PC software

PRODUCT CONTENTS

In-Sight Track & Trace single unit job file
Cognex HMI Display Control for .NET, including sample application, source code and API reference documentation
Cognex Audit Message Server, including sample code
In-Sight Track & Trace User Manual and sample images

PART NUMBER

IS-APP-TT-0100

Flexible Display Options

VisionView Features:

- **Three model options: VisionView® 700 touch panel; VisionView PC; and VisionView VGA**
- **Automatic detection of any Cognex system on your network**
- **Works with In-Sight® vision systems and DataMan® industrial ID products from Cognex**

Flexible Display Options

VisionView operator interface is ideal for monitoring and controlling vision systems and industrial ID readers on the factory floor, and allows operator controls specific to the application.

VisionView Application Software

The VisionView application software runs on all three platforms of VisionView offered from Cognex and offers the following features:

- **"Plug-and-Go"** configuration. No PC is required... just plug-in the VisionView and use the simple setup mode for a quick startup.
- **Automatic detection.** VisionView will automatically detect any Cognex vision system on your network.
- **Mix and match Cognex In-Sight systems.** VisionView allows you to view up to nine In-Sight vision systems in a tiled view.
- **Graphical interface.** VisionView displays full color images, with graphic overlays and operator controls.
- **Fast image updates.** VisionView provides the most recent inspection images so you can view your process in real-time.
- **Access to CustomViews.** The operator controls created in the spreadsheet automatically appear in VisionView.
- **EasyView display.** Items selected from In-Sight EasyBuilder® interface software will appear on the VisionView screen, with impressive ease of use.
- **Run-time ability to train fonts, without a PC.** No downtime is required during changeovers. Ideal for OCR/OCV applications.

Multiple Platforms

Cognex offers three platforms of VisionView to choose from:

1. VisionView PC Software
Monitor and control the vision application with the VisionView interface on a PC. This provides the flexibility of different display sizes. Choose your own PC and run VisionView directly on your existing machine... no additional hardware is required!

2. VisionView Operator Interface Panel
VisionView 700 is a powerful, low-cost operator interface panel that provides password-protected user control to adjust vision tool parameters and regions of interest without requiring a PC on your factory floor.

- Seven-inch touch screen gives total control during run-time operation
- Four Ethernet ports provide power for In-Sight Micro vision systems (power over Ethernet [PoE])
- One LAN port allows you to temporarily connect a PC for setup or use with an external switch to connect up to five additional cameras (total of nine connected cameras)
- Three USB ports facilitate your ability to save failed images for further analysis without interrupting your throughput

Setup is simple: use the four camera ports to connect cameras and use the LAN port to connect a PC or laptop to set up the vision application. Once this is done, the PC can be removed and VisionView 700 can be used for all run time controls. The LAN port can also be used to connect more cameras through an external switch so you can have up to nine cameras connected to the VisionView 700!

3. VisionView VGA
Monitor and control the vision application with the VisionView interface via a VGA connection. This provides the flexibility to connect smaller- or larger-size monitors for "control room" viewing of images, results, CustomViews, and EasyViews. The VisionView VGA supports VGA displays of different resolutions, as well as touch screen displays.

Specifications

VisionView 700 Dimensions
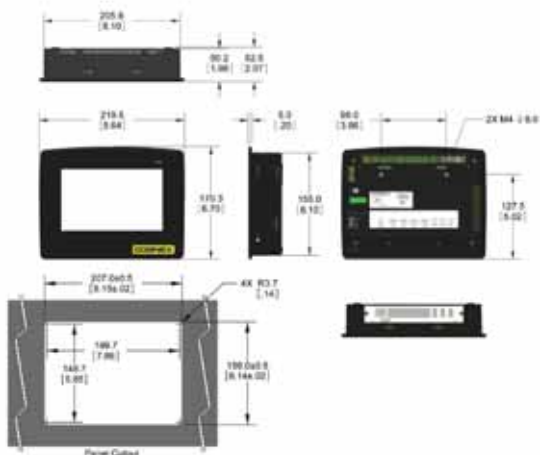
VisionView VGA Dimensions

VisionView 700 Specifications

DISPLAY

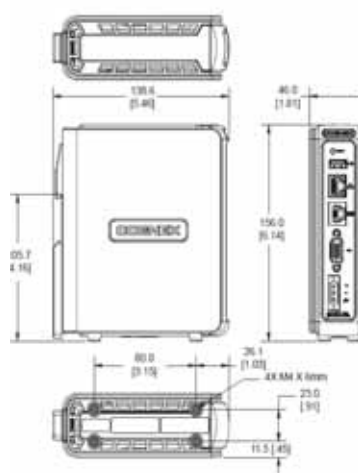|	
Size:	7" WVGA (16:9 aspect ratio)
Viewable Area:	6" (152.4mm) x 3.6" (91.44mm)
Type: TFT LCD	Resolution (pixels): 800 x 480 (384,000 pixels)
Number of Colors:	262,144 (18 bits/pixel) Luminance: 400 nit
Backlight Life:	10,000 hours to 50% brightness

TOUCH SCREEN

Analog Resistive:	4 wire

MEMORY

System:	64MB Mobile SDRAM Program: 128MB non-volatile flash memory
Video:	16MB Video SDRAM

Cooling System:	Fanless Design

I/O

Network:	5 Ethernet ports, 10/100 BaseT, TCP/IP protocol, Full Duplex (1 LAN for connecting to wide area network and 4 dedicated sensor ports to connect Cognex systems directly, additionally supplying power to Cognex systems requiring Power over Ethernet)
USB:	3 Host USB 2.0 (480 MB/sec.) ports

Power Consumption:	24VDC ±10%, 2A (1A when not providing Power over Ethernet to Cognex vision sensors)

Standalone mounting panel with optional accessory mounting kit

Environmental

Protection:	IP65 or NEMA 4 when properly panel-mounted in an IP65 or NEMA4 rated enclosure or panel
Shock:	30 G Shock per IEC 68-2-27
Vibration:	2 G from 10-2000 Hz. Vibration per IEC 68-2-6
Operating Temperature:	0°C to 45°C (32°F to 113°F)
Storage Temperature:	-30°C to 80°C (-22°F to 176°F)

Regulatory Compliance: CE, FCC, TÜV SÜD NRTL, RoHS

VisionView VGA Specifications

MEMORY

System:	128MB Mobile SDRAM
Program:	128MB non-volatile flash memory
Video:	16MB Video SDRAM

Cooling System:	Fanless Design

I/O

USB:	1 Host USB 1.1 (12 MB/sec.)
Network:	1 Ethernet port, 10/100 BaseT, TCP/IP Protocol, Full Duplex
Touch Screen:	1 Touch Screen port, RS232 serial protocol
Display:	1 VGA port

Power Consumption:	24VDC ±10%, input current 1A (maximum).

#3 Din Rail (35mm) or four M4 threaded mounting holes

Environmental

|	
Protection:	IP20 or NEMA 1
Shock:	30 G Shock per IEC 68-2-27
Vibration:	2 G from 10-2000 Hz. Vibration per IEC 68-2-6
Operating Temperature:	0°C to 45°C (32°F to 113°F)
Storage Temperature:	-30°C to 80°C (-22°F to 176°F)

Regulatory Compliance: CE, FCC, TÜV SÜD NRTL, RoHSS

Customized Visualization and Control

From CustomViews integrated directly into the In-Sight Explorer software environment, to ActiveX controls for integration into third-party HMI systems, to custom-built standalone applications, Cognex provides a full suite of tools for users needing highly customized operator interfaces.

In-Sight Explorer CustomView

Integrated into the In-Sight Explorer software, the CustomView allows sophisticated operator interaction to be configured in the vision application. Graphical controls such as indicator lights, buttons, data displays and entries, trend charts and message boxes are placed in the spreadsheet view to create the operator display. The CustomView is also designed to be displayed automatically on VisionView.
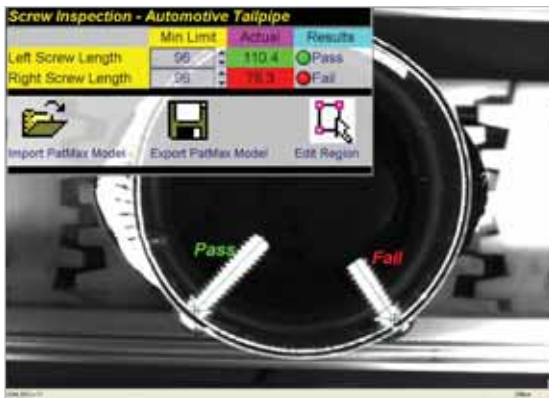
The CustomView interface is created easily, and is a cost-effective way to monitor single or networked In-Sight vision systems from a PC.

In-Sight Software Development Kit

A highly customized, standalone user interface can be tailored to your exact needs using the In-Sight Software Development Kit. This package provides the ultimate level of flexibility via programmatic methods for viewing data and images, changing parameters, and loading new jobs or recipes.

In-Sight Display Control

Integrating data and images from an In-Sight vision system into third-party, Windows-based HMI software is quickly achieved using the In-Sight ActiveX Display Control. Tested with the most common HMI software packages, the Display Control integrates the vision experience into the rest of the machine control with drag-and-drop simplicity.

Factory Floor Communications

Integrating In-Sight vision systems into your existing automation control system is easy with Cognex Connect™, the most comprehensive suite of communications capabilities ever available in a vision system. Whether you're connecting In-Sight directly to a PLC or robot controller, or managing multiple In-Sight vision systems remotely from a networked PC or HMI, Cognex Connect assures seamless communication between In-Sight and all of your equipment on the factory floor.

- Cognex Connect supports open-standard protocols used by the leading PLC manufacturers including CC-Link, MELSEC protocol, EtherNet/IP, PROFINET, and Modbus TCP. Whether connecting to Mitsubishi, Rockwell, Siemens, or any other brand of PLC, Cognex integrates into the control system with point-and-click simplicity.
- For interfacing to robots, Cognex Connect provides pre-configured communication tools for ABB, Denso, Kawasaki, Kuka, Motoman and Staubli. Communication with Mitsubishi, Adept, Epson, IAI, Nachi, Yamaha and many other robot manufacturers is also supported.
- For interfacing to HMIs, PCs and file servers, Cognex Connect provides an OPC Server, ActiveX Display Controls, In-Sight SDK, and support for TCP/IP, FTP, SFTP, Telnet and SMTP over Ethernet.

Because Cognex Connect is built with dedicated tools, developed to exacting standards, you can be confident that solutions based on In-Sight communication technology will be highly reliable and effective. And with Cognex Connect this will be the fastest and easiest integration you have ever experienced—saving you both time and money.

A Full Range of Accessories

To simplify and complete system integration, Cognex offers a variety of optional accessories designed specifically for use with In-Sight vision systems.

Lighting

LED array provides economical bright light for many applications.

In order to achieve the highest quality images possible, Cognex offers a wide array of lighting accessories. When basic lighting works for the application, integrated ring lights are ideal for In-Sight vision systems. Easily mounted directly to the vision system, these lights provide basic front lighting without having to purchase and install a separate light. Integrated ring lights are available in red LEDs, red diffuse LEDs, and white LEDs.

Lenses

Cognex offers a full range of high-quality compact lenses designed specifically for machine vision applications.

And, for In-Sight ID models, image formation systems are available in seven different lens focal lengths.

Cables

In-Sight cables provide superior performance with rugged, stainless steel M12 connectors and are rated for ten million linear and thirty thousand torsional flex cycles... ideal for robot-mounted applications.

VisionView Operator Interface

VisionView operator interface is ideal for monitoring and controlling vision systems and industrial ID readers on the factory floor, and allows operator controls specific to the application. Available in multiple platform options.

I/O Modules

In-Sight I/O modules are designed to simplify connections and expand the I/O capabilities of In-Sight vision systems.

They allow easy access to power, acquisition triggers, and light strobe, and provide convenient general-purpose input and output wiring. Rugged quick-connect cables ensure reliable connections to the In-Sight vision system.

Additionally, I/O modules provide an RS-232 communications port for serial devices.

Your Cognex sales engineer or certified Cognex partner can provide information on these and other accessories that enhance In-Sight vision systems.

In-Sight Fixed-Mount ID Readers

Cognex In-Sight fixed-mount ID readers provide unmatched code reading performance. These readers integrate lighting, camera, ID software, processor and communications into an industrial-grade design, making them the most versatile and rugged fixed-mount readers available today.

In-Sight ID readers incorporate IDMax®, breakthrough code-reading software based on the patented Cognex PatMax technology, through 1DMax™ and 2DMax™ algorithms. IDMax can read 1D code symbologies such as UPC, PDF, stacked and postal codes, 2D code symbologies such as Data Matrix and QR, or a mix of barcode and 2D codes simultaneously.

1DMax is a best-in-class 1D barcode-reading tool optimized for omnidirectional barcode reading and can handle extreme variations in contrast, blur, damage, voids, specularity, resolution, quiet zone violations and perspective distortion.

2DMax is optimized for reading QR codes and handles a wide range of degradations to 2D Data Matrix code appearance that result from dramatic degradations in Direct Part Marking (DPM) code quality due to differences in material types and surfaces. 2D Data Matrix code reading in DPM applications is an increasingly important part of manufacturing processes. An unreadable code may stop production, and can result in the part not being processed correctly.

Models

In-Sight Micro Series: 1110, 1410, 1413
In-Sight 5000 Series: 5110, 5410, 5411, 5413, 5610, 5613, 5614, 5615

Fast, Reliable Code Reading

Industrial identification is very challenging due to variations in mark appearance, uncertainty of part position and high production line speeds. The combination of sensor, processor architecture and optimized ID software, allows In-Sight fixed-mount readers to meet high-speed production requirements, while maintaining accurate reading.

Advantages

- Real-time reading of 1D and 2D codes at rates over 7200ppm
- Includes IDMax – the industry's most reliable Data Matrix reading software
- Industry-standard mark quality assessment metrics for 1D and 2D codes
- Fast setup, plus reliable, robust operation

In-Sight Model Comparison

In-Sight Micro Series

Model[1]	Speed Rating[2]	Acquisition[3] (fps)	Color Model	Available in Stainless Steel	Resolution				User Interface		Supported Tools[4]					Part Number
					640 x 480	1024 x 768	1600 x 1200	1K Line Scan	EasyBuilder	Spreadsheet	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Available	
1020	1x	60			•				•		E					ISM1020-00
1050	1x	60			•				•	•	E					ISM1050-00
1100	4x	60			•				•	•	E	X	I		P	ISM1100-00 ISM1100-10 (PatMax)
1100C	4x	58	•		•				•	•	E	X	I	C	P	ISM1100-C00 ISM1100-C10 (PatMax)
1110	4x	60			•				•	•			I			ISM1110-00
1400	10x	60			•				•	•	E	X	I		P	ISM1400-00 ISM1400-10 (PatMax)
1400C	10x	58	•		•				•	•	E	X	I	C	P	ISM1400-C00 ISM1400-C10 (PatMax)
1403	8x	14						•	•	•	E	X	I		P	ISM1403-00 ISM1403-10 (PatMax)
1403C	8x	7.5	•					•	•	•	E	X	I	C	P	ISM1403-C00 ISM1403-C10 (PatMax)
1410	10x	60			•				•	•			I			ISM1410-00
1413	8x	14						•	•	•			I			ISM1413-00

Notes:

1) All In-Sight vision systems have an input trigger and 2 high speed outputs built in. I/O modules are available for additional I/O on all In-Sight systems.

2) Speed rating compared to In-Sight Micro 1020 model and does not include image acquisition rate. The 5604 and 5614 models have acquisition speed rated in lines per second.

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

4) 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 and caliper tool.

   - PatMax is an option available on extended models

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

C - Color tool set includes MatchColor, ExtractColor, color historgram, color to greyscale filters and color to greyscale distance filter.

For additional In-Sight technical information, please visit www.cognex.com/support/insight

In-Sight 5000 Series

Model[1]	Speed Rating[2]	Acquisition[3] (fps)	Color Model	Available in Stainless Steel	Resolution					User Interface		Supported Tools[4]					Part Number
					640 x 480	1024 x 768	1600 x 1200	1K Line Scan	2448 x 2048	EasyBuilder	Spreadsheet	Essential Tools	Extended Tools	ID Tools	Color Tools	PatMax Available	
5100	4x	60			•					•	•	E	X	I		P	IS5100-00 IS5100-10 (PatMax)
5100C	4x	60	•		•					•	•	E	X	I	C	P	IS5100-C00 IS5100-C10 (PatMax)
5110	4x	60			•					•	•			I			IS5110-00
5400	10x	60		•	•					•	•	E	X	I		P	IS5400-00 IS5400-10 (PatMax) IS5400-S00 (Stainless Steel) IS5400-S10 (Both)
5400C	8x	60	•	•	•					•	•	E	X	I	C	P	IS5400-C00 IS5400-C10 (PatMax) IS5400-CS00 (Stainless Steel) IS5400-CS10 (Both)
5401	8x	20				•				•	•	E	X	I		P	IS5401-00 IS5401-10 (PatMax)
5403	10x	15		•			•			•	•	E	X	I		P	IS5403-00 IS5403-10 (PatMax) IS5403-S00 (Stainless Steel) IS5403-S10 (Both)
5410	10x	60		•	•					•	•			I			IS5410-00 IS5410-S00 (Stainless Steel)
5411	8x	20				•				•	•			I			IS5411-00
5413	10x	15					•			•	•			I			IS5413-00
5600	20x	60			•					•	•	E	X	I		P	IS5600-00 IS5600-10 (PatMax)
5603	20x	14					•			•	•	E	X	I		P	IS5603-00 IS5603-10 (PatMax)
5604	20x	44k lines[2]						•		•	•	E	X	I		P	IS5604-00 IS5604-10 (PatMax)
5605	20x	16							•	•	•	E	X	I		P	IS5605-01 IS5605-11 (PatMax)
5610	20x	60			•					•	•			I			IS5610-00
5613	20x	14					•			•	•			I			IS5613-00
5614	20x	44k lines[2]						•		•	•			I			IS5614-00
5615	20x	16							•	•	•			I			IS5615-01

For additional In-Sight technical information, please visit www.cognex.com/support/insight

COGNEX

Companies around the world rely on Cognex vision to optimize quality and drive down costs.

Corporate Headquarters One Vision Drive Natick, MA USA Tel: +1 508.650.3000 Fax: +1 508.650.3344

Americas		Europe		Asia	
United States, East	+1 508.650.3000	Austria	+43 1 23060 3430	China	+86 21 6320 3821
United States, West	+1 650.969.8412	Belgium	+32 2 8080 692	India	+91 80 4022 4118
United States, South	+1 615.844.6158	France	+33 1 4777 1550	Japan	+81 3 5977 5400
United States, Detroit	+1 248.668.5100	Germany	+49 721 6639 0	Korea	+82 2 539 9047
United States, Chicago	+1 630.649.6300	Hungary	+36 1 501 0650	Singapore	+65 632 55 700
Canada	+1 905.634.2726	Ireland	+353 1 825 4420	Taiwan	+886 3 578 0060
Mexico	+52 81 5030-7258	Italy	+39 02 6747 1200		
Central America	+52 81 5030-7258	Netherlands	+31 208 080 377		
South America	+1 972.365.3463	Spain	+34 93 445 67 78		
Brazil	+55 11 9648-6400	Sweden	+46 21 14 55 88		
		Switzerland	+41 71 313 06 05		
		United Kingdom	+44 1908 206 000	**www.cognex.com**	