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# Machine Vision Systems

## Robust, Reliable Vision Systems

**Cognex**<sup>®</sup>, the world's leading supplier of machine vision systems - or computers that can "see" - offers a family of vision systems designed to meet the needs of a wide range of customers. Because those needs are so diverse, we have designed our products with a choice of hardware platforms, development modes, and price/performance points.

Our product family gives you a choice of systems that are programmable in C or programmable with a graphical "point and click" interface. You also have the option to deploy your vision system on the factory floor in a variety of ways - on a board set designed for the VMEbus, on a board integrated into your ISA bus computer, or on a complete, stand-alone, rack-mountable system.

C-Programmable Vision Engines	"Point and Click" Programmable Systems	Application Specific Products
<a href="#">4000 Series</a>	<a href="#">Checkpoint 400 and 400/VME</a>	<a href="#">acuReader/OCR</a>
<a href="#">5000 Series</a>	<a href="#">Checkpoint 800 and 800/VME</a>	<a href="#">acuReader/2D</a>

Our systems are used around the world in a variety of manufacturing processes, automatically gauging, guiding, identifying, and inspecting products. Cognex vision systems perform these processes with the accuracy and speed needed to keep pace with even the fastest production lines, resulting in improved productivity, higher quality, and reduced costs for manufacturers. The robust performance of our systems is the main reason they have become the most widely used vision systems in the world.

No matter which Cognex system you choose, you'll get flexible, dependable solutions to your factory floor vision problems. And our experienced and knowledgeable engineers are ready to help you get your vision application up and running quickly by providing a variety of support services.

In addition to our headquarters in Natick, Massachusetts, Cognex has a network of support offices throughout the U.S., Europe, Southeast Asia and in Japan to assist you with your vision needs.



**Cognex Headquarters in Natick, Massachusetts**

## C-Programmable Vision Engines

Cognex Programmable Vision Engines (PVEs) perform a variety of machine vision tasks in industries ranging from semiconductors to pharmaceuticals to telecommunications. These vision engines are made up of software and hardware "building blocks" that enable you to construct a solution tailored to your application needs. The software is a library of tools that locate patterns, inspect for defects, measure geometric properties, and identify parts. The hardware is a family of vision computers, each of which contains on-board CPU and co-processors, image capture, memory, and I/O, so that a host computer can off-load all vision tasks to the vision processor. To create a vision solution, you write a C-language program that connects the software blocks appropriate for your vision task. And, you select the hardware platform that satisfies your speed and price requirements.

## **The Cognex 5000 Series™ - Machine Vision for the PC**

The Cognex 5000 Series, including the 5200, 5400 and our high performance system, the 5600, is a family of C-programmable PC plug-in board-level machine vision systems for the ISA bus. The Cognex 5000 Series combines the power and flexibility of Cognex's proven vision technology with all of the systems, packaging, and cost benefits of the PC environment.

Since the 5000 Series runs the entire library of Cognex image analysis, image processing and application specific software, the need to perform tedious pixel-level programming is eliminated. This allows the user to spend engineering time solving the application problem, not writing machine vision analysis routines.



**Cognex 5600**

Additionally, all vision processing occurs independently on the Cognex 5000, minimizing bus traffic and reducing the workload on the PC's CPU. When integrated into your PC, true parallel processing can be achieved as the PC can be running other tasks while the 5000 is independently performing machine vision.

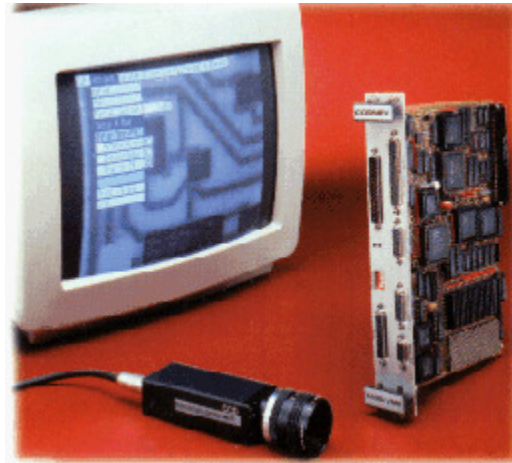
### **5000 Series Features**

- Plug-in vision system for the ISA bus
- Complete vision engine with custom vision ASICs, on-board CPU and local memory
- VGA display with "video in a window" capability for single monitor display
- High-level vision software tools

## **The Cognex 4000 Series™ - Designed for the VMEbus**

The Cognex 4000 Series is a family of board-level machine vision systems designed for the VMEbus. Two models, the Cognex 4200 and 4400, offer a choice of price/performance points. For example, the Cognex

4400, our highest performance VMEbus-based vision system, is ideally suited for complex vision tasks such as high speed SMD placement guidance. The Cognex 4200 provides a low-cost, flexible solution to complex alignment and guidance, gauging, inspection, and identification tasks.



**Cognex 4400**

The Cognex 4000 Series vision systems are also available in a compact, space-efficient enclosure called the Cognex Minibox, measuring approximately the same size as a typical phone book. These box-level machine vision systems simplify the hardware integration task of automation engineers and system integrators, enabling them to easily and cost effectively deploy a Cognex vision processor on the factory floor.

### **4000 Series Features**

- Fully-integrated VMEbus-based vision system
- Many price/performance points
- Video flexibility
- Software compatible with 5000 Series
- High-level vision software tools
- Custom vision ASICs

## **"Point and Click" Development Environment**

For those automation engineers who do not program in C and are looking for a rapid application development environment for their application, Cognex offers the Checkpoint product family.

### **Checkpoint<sup>®</sup> - flexible GUI**

The Checkpoint family of vision systems brings together Cognex's advanced machine vision technology with the most flexible graphical user interface (GUI) in the industry. The extensive library of proven vision tools available with Checkpoint enables users to solve a wide range of inspection, gauging, and assembly verification problems.

The combination of Checkpoint's advanced grey-scale machine vision hardware and software with its "point and click" interface results in the highest degree of accuracy, reliability, and flexibility in a factory floor vision system available today-all accessible via a Microsoft<sup>®</sup> Windows<sup>™</sup> 'point and click' programming interface.



**Checkpoint 800 and Checkpoint 400**

With Checkpoint, you can create robust, reliable solutions for a broad range of demanding applications- without having to learn image processing theory or write C-language computer programs. You'll get dramatic reductions in the time, expense, and resources traditionally required to develop, test, and install a custom machine vision solution in a manufacturing process.

The Checkpoint family currently consists of the Model 400 and 800 box-level systems, Model 400/VME and Model 800/VME board-level configurations and, new in 1996, the Checkpoint 600 plug-in board for the ISA bus PC. A Checkpoint Starter System includes everything you need to complete your vision application.

## **Checkpoint Features**

- High speed, grey-scale vision tools
- "Point and click" development environment
- Fully customizable operator interface
- Flexible video and image acquisition support

## **Application Specific Products**

Cognex has designed its application specific products to address the particular requirements of your vision application. These products combine Cognex hardware and software to create a solution that is tailored to your needs and requires no computer programming. We currently have two such products to choose from: acuReader/OCR and acuReader/2D.

### **acuReader/OCR<sup>®</sup> - wafer identification**

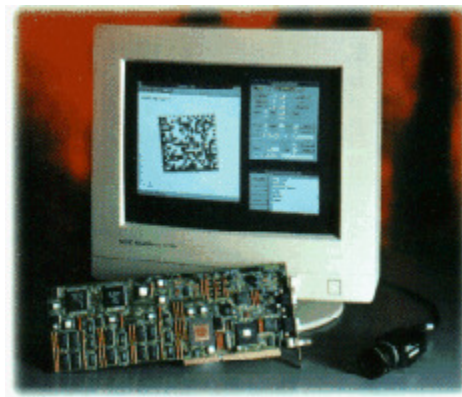
Cognex acuReader/OCR is a complete, easy-to-use character recognition system that automatically reads even the most degraded laser-etched serial numbers from semiconductor wafers. With its unique combination of software algorithms, high performance hardware, and wafer illumination module, acuReader/OCR achieves the highest reading reliability in the industry. To make your job easier, acuReader software includes a Windows-based application GUI that allows you to quickly and easily set up the system.



**acuReader/OCR**

## **acuReader/2D<sup>TM</sup> - data matrix code identification**

Cognex acuReader/2D is an easy-to-use identification system for reading AIM standard data matrix symbologies. Data matrix two dimensional symbology can be used as an alternative mark for identifying wafers, IC packages, LCD panels, and for pharmaceutical packaging and small parts tracking applications. Like the acuReader/OCR, the acuReader/2D provides highly reliable identification despite low contrast, poorly formed marks and process degradations.



**acuReader/2D**

Both acuReader/OCR and acuReader/2D consist of advanced, grey-scale identification software, a single ISA slot vision processor and an MS Windows-based graphical user interface for set-up and tuning. For the acuReader/OCR, an illumination module called UltraLight is also available for integrated optics and light optimization.

### **acuReader Features**

- Advanced grey-scale vision analysis software
- MS Windows based user interface
- Single board vision processing system
- Proprietary vision ASICs



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