Eyebot™

Eyebot is an advanced machine vision system with self-learning technology that can inspect products just by looking at them to identify variations in positioning, orientation, lighting and clutter. It trains in minutes without programing.

Eyebot is a revolutionary inspection device. It is a trainable machine vision system that installs fast and allows extreme flexibility.

How does Eyebot work? You show Eyebot some good parts and it learns them. After training it, you tell it to RUN. Eyebot will tell you when it sees anything you did not teach it. You never have to turn on a PC or struggle with complicated software.

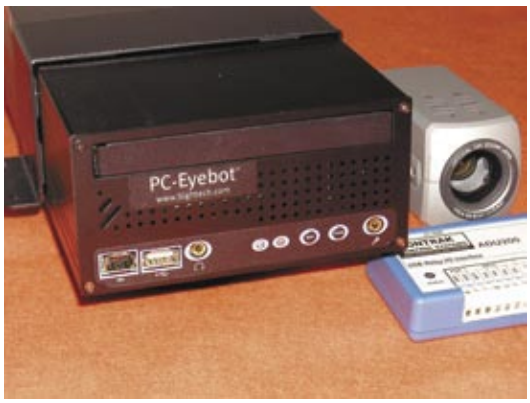
Eyebot trains in a few minutes to see defective products on manufacturing lines. If lighting or position varies, train Eyebot to accept those conditions.

How flexible is Eyebot? Eyebot is so easy to train and retrain, that in some factories, it is used for incoming, in-process, and outgoing inspection at different locations during an average week.

Eyebot requires no PC, no operating system, no frame-grabber, and no software. It is inexpensive to install and support, and you can teach it several products. You can use Eyebot wherever automated optical inspection was previously too complicated or too costly. Anyone can train Eyebot.

Eyebot's Key Features

- Trains in minutes or seconds.
- Learns variations in position and lighting.
- Low cost to install, maintain.
- No PC or software required.
- Retrains in minutes.
- Multiple training sessions can be saved and loaded to memory.
- Up to 3600 parts per minute.
- Compatible with any NTSC or PAL camera.
- Triggers or strobes may be unnecessary.
- RS-232 and two optically isolated relays (3A @ 60 volts).
- Can IGNORE clutter for object recognition.
- No need to attend a class.



What is Eyebot's primary technological advantage?

Eyebot uses a powerful and flexible "self-learning" technology. It's patented Neuro-RAM algorithm can inspect images that are too complex for conventional vision systems. Dedicated pipelined hardware scans incoming video signals for shapes and key product features at up to 13 million shapes per second.

Inspection speeds of over 3600 parts per minute are possible. Inspection decisions of the Eyebot can be made 60 times a second making it well suited for high speed manufacturing line applications.

Eyebot's ease of use and automatic "self-learning" ability provides significant cost and time advantages over alternative offerings. Do you want to go with an antiquated vision system technology involving programming and complicated menus, or do you want the simplicity of trainable technology?

www.sightech.com

Trainable Inspection

How Does Eyebot Work?

Training Eyebot to inspect your products can be as easy as setting up a photoeye sensor. Here are the five steps to making Eyebot work for you.

ERASE. Turn Eyebot's knob to ERASE and press YES. This erases Eyebot's memory, so you can begin training. Eyebot retains training for 10 years.

VIEW. Set the size and location of the VIEW area to cover the features you want to inspect (see Fig 1). Use the UP/ DOWN buttons to set the video threshold so that you can see the features and defects in the VIEW area.

LEARN. Turn the knob to LEARN and press YES. Now show Eyebot only good product. Move, rotate, or vibrate the samples to simulate how it will appear during actual inspection. The Score on the monitor will stabilize in a high range (80- 100)when Eyebot is done learning.

TEST. Turn knob to TEST and observe the Score; the higher the Score, the better the part. Lower the Decision Threshold so that good products pass and defective products do not pass. Learning is cumulative, so you can build on your training until all the good parts pass with a good margin.

RUN. Turn to RUN and get back to work. RUN gives you the same functionality as TEST, but Eyebot's solid-state relays activate your alarm, ejector mechanism, or PLC. Two optically isolated relays switch 3 amps at 60 volts.

Packaging frequently demands higher performance levels. Eyebot does label inspection. Eyebot can detect an 8th of a turn on a cap. Imagine this at 3600 PPM . Just point, LEARN, and RUN.

Features are imaged in the VIEW window. Eyebot can inspect cap, fill level, bottle shape, and label placement at up to 3600 PPM. You do not have to set up multiple inspection windows. If Eyebot sees anything other than what you taught it, it will tell you.

What Are Eyebot's Other Advantages?

Eyebot's trainable "self-learning" technologies have other advantages...

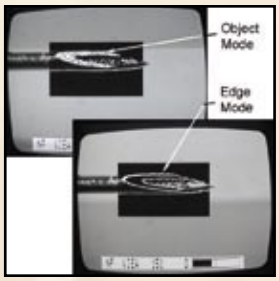
Random Location and Orientation. Eyebot's patented Neuro-RAM is a technology allows it learn up to 13 million features per second. Your process may have variations that are acceptable; Eyebot can learn them. Compare the costs of training Eyebot to the cost of software, courses, and costly integration of the previous generation of equipment.

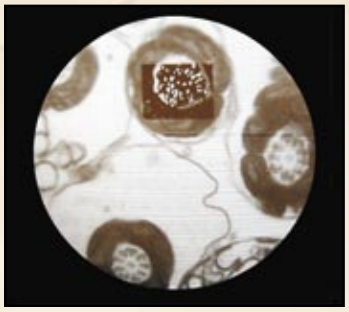
Variable Lighting. Most vision systems fail when the lighting changes. Eyebot's different. If you train Eyebot under varying lighting conditions, it will accommodate them when running. Imagine the time and programming it takes to achieve that using traditional machine vision software.

Able to Handle Clutter. If your application requires identifying similar objects mixed with clutter, Eyebot can handle it. How? Eyebot is not just a pixel counter. Teach Eyebot a part in all orientations. IGNORE the clutter, even with motion. It only takes a few minutes. Random motion and clutter in a background would overwhelm most software based inspection systems. Eyebot learns to ignore background clutter, and identify objects you seek.

Want More Info? Visit www.sightech.com. There you can download the manual, look up local Sightech representatives, see sample applications, review frequently asked questions, and get the latest prices and specifications.

Pharmaceutical apps are easy when using Eyebot to inspect the tips of a needle. Eyebot can detect bent tips.





Do you want to inspect for a small difference? Are blood cells small enough? Microscopes magnify images to where Eyebot can discern shapes. As long as you can see the defect on the screen, Eyebot can catch the defect. You can plug any video signal into Eyebot.

Eyebot easily learns and inspects car parts. Here it detects a small crimp. Eyebot can inspect tough parts where oil and shiny reflections would fool other machine vision systems.

Sightech

PC-Eyebot™

PC Eyebot is Sightech's next generation machine vision product running on PCs. PC Eyebot uses an enhanced and improved version of the patented machine vision algorithms running on standard Eyebot. PC Eyebot is more powerful and sensitive to defects and has more features and vision parameter settings. Using standard commercial technologies, PC Eyebot can offer more connectivity and integration with external systems, such as LAN, USB, Firewire/1394, Serial, LPT and a wide variety of camera types. PC Eyebot is an ideal choice for customers with either more complex vision application needs or requirements to use standard hardware or PC technologies for maintenance and support purposes.

PC Eyebot offers the following advantages over standard Eyebot:

- Enhanced vision algorithm
- More features and inspection parameter settings
- Expandable memory
- More interconnectivity and flexible integration with external system
- Connect CameraLink, Firewire and other digital cameras
- Three level decisions: Good, Bad, Marginal
- Exernal relay inputs or Digital I/O
- Multiple Camera input
- More flexible Area and regional definition and settings
- Running SPC and other inspection applications in the same machine

What Makes Eyebot the Best Value?

Higher Performance. Eyebot makes up to 3600 decisions per minute or 60 parts per second. That's fast. Eyebot may not even need special "part in place signals," strobe lighting, or special cameras. Eyebot is not slowed by Windows NT interrupts, table updates, or other overhead common in software-based systems.

Sees Small Defects. Eyebot connects to cameras or microscopes and if you can see the difference between a good and bad part on the monitor, Eyebot can see it too. Your optics and positioning determine the smallest defect Eyebot can detect. The more magnification and control, the smaller the defect Eyebot can catch.

Increases Productivity. As the chart on the right shows, you gain two ways with Eyebot: 1.Eyebot is so intuitive, you can quickly learn how to use it with a video tape and its basic, straightforward manual. 2.Integration is a snap. No contest!

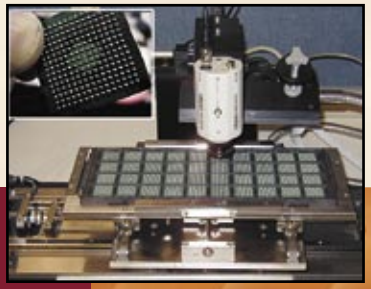
Easy to Integrate. No proprietary interfaces. You can hook your camcorder and TV to Eyebot! Eyebot has two optically isolated (open/close) relays built-in that switch 3 amps at 60 volts. Use them to stop the line, power a siren, or eject the part. You prefer RS-232? Eyebot delivers easy to use ASCII text. Visit www.sightech.com and download the manual and get more info.

Does Web Inspection. Eyebot can inspect continuous strips of material, such as metal extrusions, fruit, or paper rolls. Simply set a long, thin inspection window across the material flow on the screen and Eyebot will signal whenever it sees foreign (untrained) features. With a decision as fast as one per video field, your product can fly by!

Inspects Short Batch Runs. Eyebot trains or retrains in minutes so you can use it on short production runs. MS Eyebot stores up to eight training sessions on board and an unlimited number of sessions can be uploaded and downloaded via the RS-232 port. If power fails, Eyebot retains its training for up to ten years.

Inspects Color. Color Eyebot signals when it sees colors you did not teach it. It can learn thousands of colors. So Color Eyebot can grade produce, verify the colors of an injection molded part, and scan web print materials. Eyebots are inspecting French fries for mold, for example.

Saves Money and Time. Eyebot hardware is inexpensive. You realize the real savings, however, when you factor in the time saved from not having to attend classes and dealing with Byzantine user interfaces. Eyebot goes to work fast. It costs nearly nothing to maintain. No OS upgrades, PC hardware driver changes, compiler rev level incompatibilities, or expensive specialty programming costs.



Eyebot inspects BGA solder balls for position and shape. The Exatron X/Y stepper table integrates easily with Eyebot as it can handle triggers from PLCs.

Eyebot™ Specifications

Input: NTSC (RS-170) or PAL (CCIR) video.

Output: NTSC (RS-170) or PAL (CCIR).

Video Cables: BNC.

Max Cable Length: 30 meters.

Equipment Control PLC or PC Compatible RS-232: Industry standard 9 Pin DTE female connector. 150' maximum cable length.

Speed: 19,200 baud.

Optically Isolated Relays: Switch 3 amps at 60 volts AC/DC; DB 25 female connector; 300' cable length maximum.

Eyebot's Speed: Up to 3,600 parts per minute. Learns in minutes or seconds. Eyebot can make a macro decision on a video field or average over many fields. Eyebot does not slow down when you want it to inspect more features.

Physical and Electrical

Size: 14cm x 23cm x 4cm.

Weight: 1 kilogram (2.2 lbs).

Power: 12-24V 500 ma.

PC-Eyebot™ Specifications

Physical Specifications:

Dimensions with Panel Monitor: (WxHxD) 16.51" x 11.80" x 4.6"

Cutout dimension with Panel Monitor: 15.56" by 10.93"

Optional 15" XGA 1024 x 768 color TFT LCD

Strengthened glass or Resistive touch-screen protects LCD panel

Aluminum panel with steel chassis

Detachable CPU unit, easy maintenance and upgrade

Front bezel is NEMA 4/12 and IP65 compliant

Available in black

Cooling: Fan

CPU Specifications:

Power Supply: 120W ATX

Processor: High End Pentium-4 or Pentium-M CPU

Mass Storage: 30GB 2.5in HDD

Memory: 512MB

I/O Ports: RS-232, parallel port (supports ECP/EPP), PS/2 keyboard interface, PS/2 mouse interface

Connectivity: Serial, 2xUSB, 1394, Modem, LAN

Want more information? Read on and then visit our wwbsite at http://www.www.sightech.com.

Sightech

Sightech Vision Systems
6580 Via Del Oro
San Jose, CA 95119 USA

P: 408.282.3770
F: 408.413.2600
E: sales@sightech.com
W: www.sightech.com