

Sightech Vision Systems, Inc.

PC-Eyebot

Tutorial – The PC-Eyebot's improvements and differences

Both Eyebots, the PC-Eyebot™ and the legacy Eyebot™, offer our unique self-learning vision technology. There are, however, many important new improvements incorporated in the PC-Eyebot. This document discusses these differences and how they improve performance and usability.

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Sightech Vision Systems, Inc.
6580 Via del Oro
San Jose, CA 95126
Tel: 408.282.3770 Fax: 408.413-2600
Email: sales@Sightech.com
Web: www.Sightech.com

Comparison Table – PC-Eyebot versus legacy Eyebot

Feature:	PC-Eyebot:	Eyebot:	Comments:
Max Training Memory Size	32MB	1MB	16 to 32 times more memory per Area.
Max memory size choices:	3	1	PC-Eyebot: 'Small', 'Medium', and 'Large'.
Max # Sessions (Product Types)	1000	8	PC-Eyebot: Unlimited # of SKU's
Handheld barcode scanner option for selecting product types (SKU's or Sessions on legacy Eyebot).	Yes	No	PC-Eyebot: This option implements a hands-off way for operators to changeover production lines for different SKU's. The scanner offers an enormous improvement in functionality.
LAN-based statistics reporting	LAN - based	No	PC-Eyebot: QC-Reporter option allows production statistics reports to be sent to collection LAN-based PC.
Max # of processing Areas (ROI's)	100	1	PC-Eyebot: separate memory and parameters allocated to each Area.
2-Level decision hierarchy	Yes	No	PC-Eyebot: regional and global decision threshold binarization. Greatly enhances decision control and sensitivity. Decisions are much more reliable.
Decision Consolidation	Yes	No	PC-Eyebot: OR, AND, or CONSOLIDATE All Areas
Optional marginal decision band	Yes	No	PC-Eyebot: Marginal product often can be re-worked, etc.
Cameras	NTSC, PAL, 1394, USB-2.0, Internet	NTSC, PAL	PC-Eyebot: Choice from many more cameras including high-quality digital cameras.
Digital cameras	Yes	No	PC-Eyebot: Firewire and USB-2.0.
Max camera resolution (pixels)	2048x2048 (4MP)	720x480 (.3MP)	PC-Eyebot: High resolution digital cameras with 12 times the imaged area compared to NTSC cameras used with previous Eyebot.
Circular & rectangular masks	Yes	No	PC-Eyebot: New feature – masking processing area. Good for gasket inspection, bulb inspection, etc.
# Video preprocessing transformations	12	2	PC-Eyebot: Offers many more choices to better fit you application.

Comparison Table – PC-Eyebot versus legacy Eyebot - Continued

Feature:	PC-Eyebot:	Eyebot:	Comments:
Video transformations:	Intensity, Tiny, (same as Eyebot's Shape), Small, Medium, Large, Multi-Res, Line, Horizontal, Vertical, Spot, Scratch	Shape (same as PC-Eyebot's Tiny), Intensity	PC-Eyebot: Many addition convolution choices ranging from tiny defect to gross large contours. Line and scratch convolutions are available as well.
User defined convolutions	Yes	No	PC-Eyebot: User may define text-based configuration files that specify special convolutions – called Special_1 and Special_2.
Max transformation kernel size	13x13	2x2	PC-Eyebot: Larger convolutions provide much more imaging preprocessing ability – great noise filtering as well.
Emphasis modes: Dark, Bright, etc.	Yes	No	PC-Eyebot: Allows convolutions to de-emphasize bright or dark areas of image as desired. Can simplify application setup expense and difficulty.
Connectivity	LAN, RS-232, USB-2.0, 1394, Relays, Digital TTL	RS-232, Relays	PC-Eyebot: Offers all the modern connectivity we expect today.
Capture images of defective products	Yes	No	PC-Eyebot contains a hard drive and can store more than 10 thousand images.
Max # of Relay Outputs	4 or 8	2	PC-Eyebot: 4 Areas may be specified and a separate relay may be assigned to each Area. Allows much better defect classification.
Max # of Digital TTL Outputs	40	0	PC-Eyebot: Special version can supply up to 40 digital outputs for fine-pitch air ejector control and other uses.
Marginal Relay	Yes	No	PC-Eyebot: Relay can be set up to implement the Marginal decision band.
Triggers	Camera Trigger / Wake-up	Wake-up	PC-Eyebot: In addition to the Wake-up type trigger, camera image triggering is available as well. Aids ejector timing control.

Improvements over Previous Eyebot

- page 3 -

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Comparison Table – PC-Eyebot versus legacy Eyebot - Continued

Feature:	PC-Eyebot:	Eyebot:	Comments:
# Learning feature types	12	2	PC-Eyebot: Features such as Wide, Coloration, Texture, and Graylevel greatly extend the learning ability into areas that were impossible with the previous Eyebot.
# Fixture modes	10	2	PC-Eyebot: Offers Coarse, Medium, and Fine to partial and full fixture modes. A new Radial fixture has been added as well.
# Feature sizes	3	1	PC-Eyebot: Three feature size choices greatly improve learning flexibility.
Feature: coloration	Yes	No	PC-Eyebot: Coloration takes color inspection to a new higher level. It learns the "shape of color" – not just spectrum information. This is a new very powerful ability.