PRELIMINARY

i2S
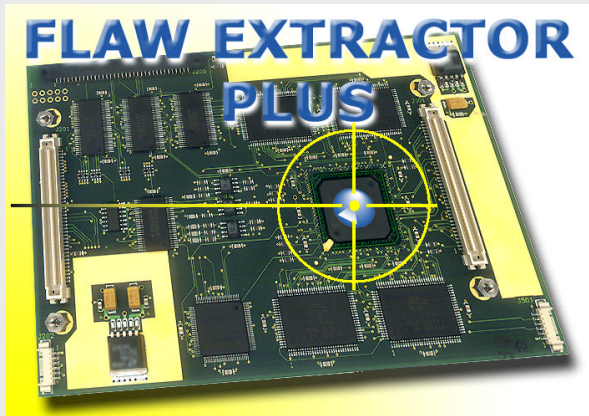LAND OF VISION

FLAW EXTRACTOR PLUS

Line scan real time processing modules for HORIZON boards

FLAW EXTRACTOR PLUS

HORIZON Processing Modules are optional plug-in cards, improving real time features of Horizon 4LC and Horizon Link boards.

The Latest module the Flaw Extractor Plus present a state of the art FPGA based architecture. The module can be configured with different processing kernels such as Low contrast web inspection kernel and **Color** classification kernel. Custom kernels can be developed by i2S upon request for OEM applications.

This module provide a unique solution for high speed continuous inspection/sorting applications where bandwidth exceed processing capabilities of the CPUs

Applications

- Laminated Steel inspection
- Paper inspection
- Non Woven inspection
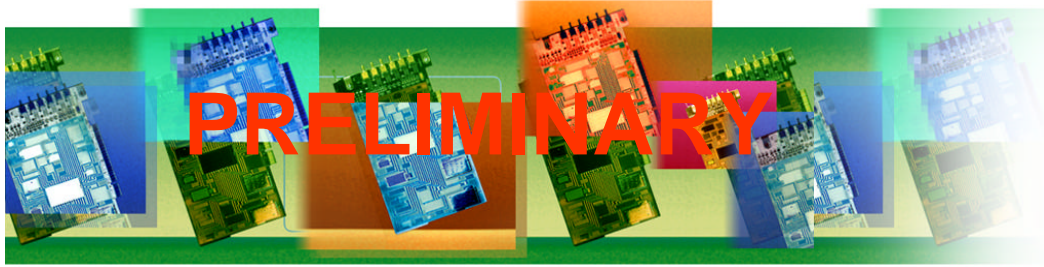- **Color** sorting applications : Food, Wood, Waste Recycling

FEATURES :

- **Advanced Real time 2D filtering** for extracting subtle defects
- **Filter kernel up to 32x32**
- **User configurable kernels**
- **Data flow reduction (Run Length Encoding)**
- **Process data from single, Dual or 4 tap cameras**
- **Accepts up to 2 dual tap cameras**
- **Flat Filed correction**

- **Color Space conversion**
- Compatible with **HORIZON 4LC** and **HORIZON LINK**
- Up to 80 MHz pixel clock/channel
- Easy Set up using CAP software
- **Custom FPGA kernel design for OEM applications**

www.i2S-linescan.com

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Processing Kernels

Web Inspection Kernel

Image → Filter A / Filter B → +/- → Run Length Encoding 2 thresholds → To DMA

Optional Graylevel data
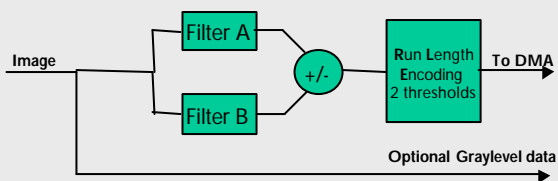
To detect small or low contrast defects the Flaw Extractor Plus provides a complete range of filters allowing a very robust detection of your toughest defects to catch.

- Average Filters up to 32x32
- Morphological filters 3x3, 5x5 : Erosion, Dilation, Open and Close
- Gradient/Sobel filter
- User defined convolution kernel up to 7x7
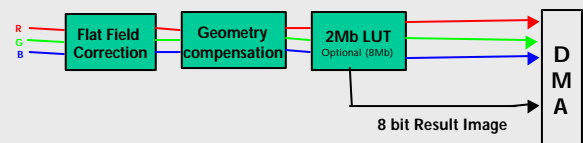- Strike enhancement

Oil on Paper   **Hole in Paper**   **Dirt in Non-Woven**

Color Classification Kernel

R G B → Flat Field Correction → Geometry compensation → 2Mb LUT Optional (8Mb) → D M A
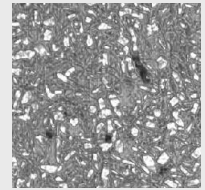
8 bit Result Image

- Flat Field correction for compensating lighting non uniformity, PRNU, FPN and White Balance.
- Real time geometrical color compensation for trilinear linescan color cameras
- RGB Look Up Table for Color space conversion (2MB default up to 8Mb)
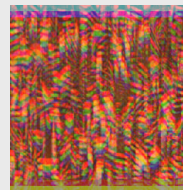
Raw image   **Flat Field & Geometric correction**   **Color Space conversion**

Data flow reduction method

To increase the speed of the blob analysis the Run Length Encoding kernel threshold and compress the result image of the preprocessing. As a benchmark performing blob analysis on RLE rather than Raw graylevel data is usually 10 times faster.

Transfers only the address of the defects

@1 @2   @3 @4
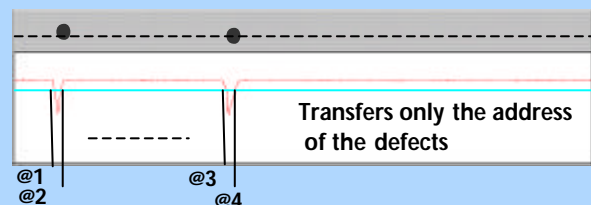
Ordering Reference:

iSM508   Flaw Extractor Plus processing module for Horizon 4 LC & Horizon Link

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