HSI Examiner 200 QD

Hyperspectral Imaging System for Questioned and Security Document Examination

▸ Examination of covert security features

▸ Authentication of travel documents and currency

▸ Printed ink comparison and document authentication

▸ Detection of alterations and counterfeits

▸ Revealing concealed or obliterated information

▸ Advanced imaging of TLC plates

HSI Examiner™ 200 QD

For Questioned Document & Security Document Examination

Providing Superior Discrimination, Speed, and Ease-of-Use

The unique hyperspectral imaging and processing capabilities of the HSI Examiner™ provides greater sensitivity to alterations and forgeries, thereby reducing the amount of time spent examining documents. In addition, the cutting edge liquid crystal imaging filter and state-of-the-art software platform allows images to be collected quickly and compared accurately. With so many new features and improved functionality included in the HSI Examiner™, our customers still marvel at how easy this system is to use!

Applications

- *Examination of covert security features and watermarks*

- *Authentication of travel documents and currency (comparision database available)*

- *Printed ink comparison and document authentication*

- *Detection of alterations and counterfeits*

- *Revealing concealed or obliterated information*

- *Advanced imaging of TLC plates*

Product Overview

- High resolution hyperspectral imaging from UV to IR using:

    - Reflectance

    - Absorbance

    - Transmittance

    - Fluorescence

- IR luminescence imaging

- Transmitted light imaging

- Hyperspectral image processing

- Spectral analysis

- High resolution 3.1 mega pixel RGB camera

New Features & Functions

- OVD imaging using automated multi-angled illumination

- Image comparison and overlay

- Image measurement and annotation for feature measurement and comparison

- Save HSI files as movies to play back in courtroom presentation

- Workspace management tools and live recording

Kessing Documentchecker - Banknotes

Annual Subscription

Documentchecker Banknotes is the useful and user-friendly solution for any organization that needs to verify banknotes on a regular basis. It is an online reference database that enables you to inspect and authenticate more than 4,800 banknotes from nearly 200 countries with supreme confidence. Verify the authenticity of banknotes online against the most up to date information from around the world.

Documentchecker - Banknotes Highlights:

- Online verification of banknotes
- Access to over 4,800 banknotes from nearly 200 countries
- Library of over 70,000 images and details of security features
- Continuously updated and always accessible
- Free modules included
- Over 50,000 users around the world
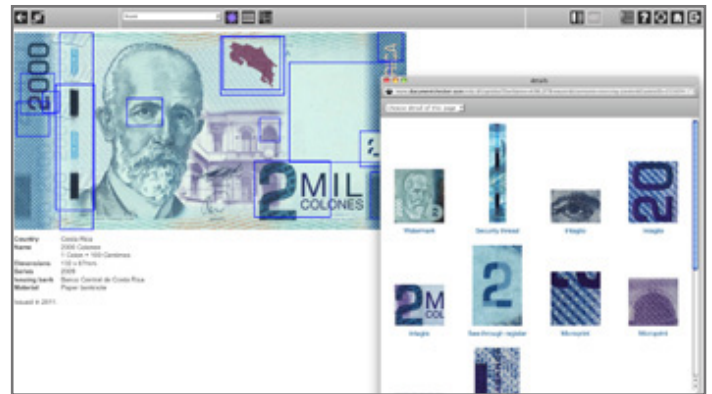- Stand-alone item or to incorporate within an intranet

Kessing Documentchecker - Banknote Alert

Annual Subscription

Documentchecker Banknote Alert is a superb tool which provides subscribers with an up to the minute overview of all counterfeit EUR, GBP, CAD and USD banknotes intercepted to date.

Documentchecker - Banknote Alert Highlights:

- Includes images of the face and back of genuine as well as counterfeit notes
- Provides technical analysis of individual banknotes
- Facilitates accurate and efficient comparisons
- Covers the printing techniques used, printing errors and UV response
- Provides views of important security features that can be enlarged
- Is a constantly updated database, compiled with the knowledge of the European Central Bank (ECB) and in cooperation with several reputable banks
- Stand-alone item or to incorporate within an intranet

Screenshot Documentchecker Banknotes

Additional Database Module Options:

You can combine any of the Keesing database options to build an even more comprehensive database.

- *Identity Documents + Banknotes*
- *Banknotes + Banknote Alert*
- *Identity Documents + Banknotes + Banknote Alert*

HSI Examiner™ 200 QD Optional Accessories

Optional document and bank note databases from Keesing Reference Systems

Global leader in anti-counterfeiting and authentication solutions since 1923, Keesing Reference Systems is a specialist provider of digital anti-counterfeiting and authentication solutions offering state of the art solutions for counterfeit detection, ID document and banknote authentication, brand protection and antipiracy.

Keesing Documentchecker - ID Documents

Annual Subscription

Documentchecker provides all the information you need to verify ID documents. This is the most complete and up to date database available, used by 6,000 companies worldwide including leading financial institutions, employers and governments.

One DVD now gives organizations unprecedented capability to validate and authenticate thousands of passports, ID cards, residence permits and driving licenses rapidly and with confidence. The comprehensive database within this DVD gives your organization access to more than 20,000 images of over 2,400 issued ID documents from over 200 countries and organizations, with key information on security features such as UV and watermarks.

Screenshot Documentchecker ID

Documentchecker - ID Documents Highlights

- Access to over 2,400 ID documents from more than 200 countries
- Check passports, ID documents, visas, residence permits and driving licenses
- Clear description of the biographical data page, supported by images
- Can be used to inspect security features such as watermarks, holograms and UV features
- Hologram viewer: a unique, interactive viewer that enables the user to mimic the behavior of the hologram in a very intuitive way
- Verification of the Machine Readable Zone (MRZ)
- Over 50,000 users around the world
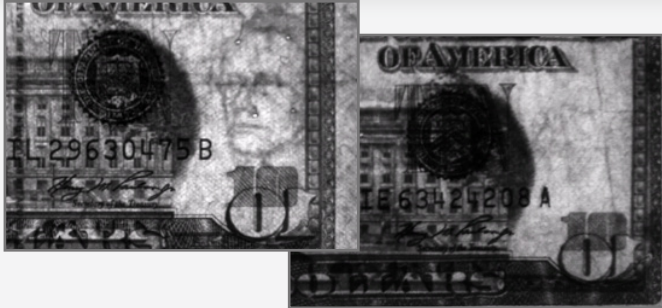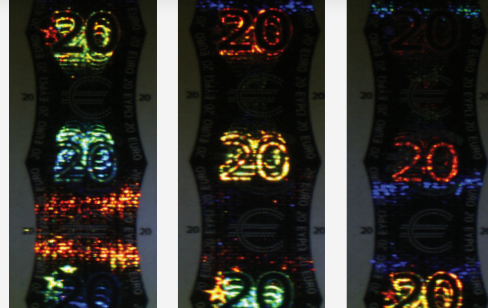- Stand-alone item or to incorporate within an intranet

Document Imaging Examples
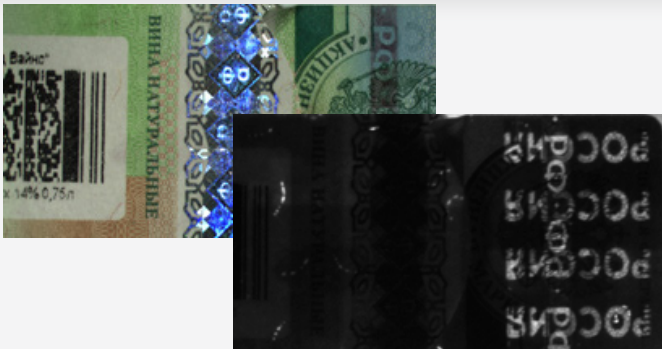
Superior discrimination capabilites

Examination of Watermarks

Examination of counterfeit $10 US bill missing watermark feature, compared to authentic bill.
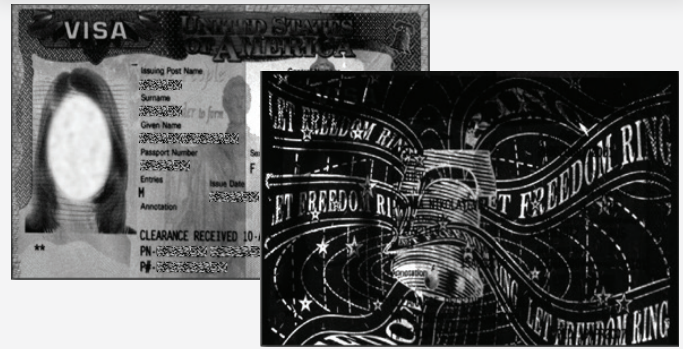

Verification of OVD Features

Authentication of currency by examination of OVD features in €20 bill for using multi-angled LED lights.
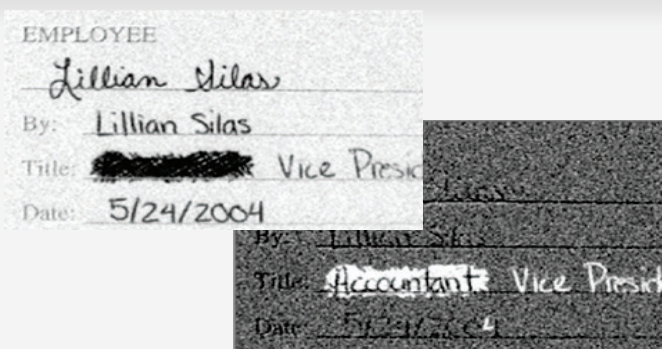

Examination of Luminescent Security Features

Authentication of tax stamps by examination of security fibers and writing using UV lighting.
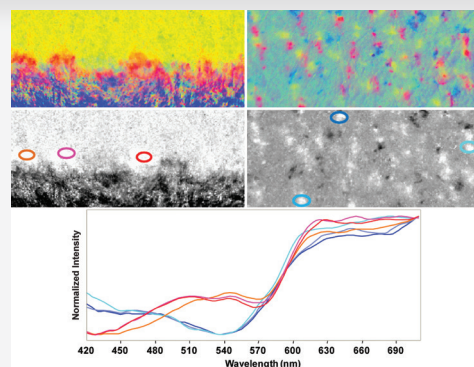

Authentication of ID Documents

Examination of luminescent security printing on ID documents.

Uncovering Obliterated Information

Examination of obliterated writing of black on black sample using hyperspectral imaging.

Comparison of Chemical & Physical Properties

Comparison of printed inkjet samples using hyperspectral imaging to group documents by source.

HSI Examiner™ 200 QD Software

An easy-to-use platform designed specifically for document examiners

Software Features

The HSI Examiner™ software provides powerful image processing, measurement and comparison tools that make it easy for users to examine and review data. This helps to reduce the time that is often spent preforming additional image adjustments that are typically needed after image processing.

Workspace Management:
- Multiple Image Display - View multiple images at once for easy comparison
- Automatic Audit Trail - Captures all instrument and software processing steps
- Pre-program and Save - Automatically recall a set of standard or operator defined instrument settings
- Undo and Redo Button - Revert or advance to a more current state
- Export - Save images in BMP, PNG, JPEG, GIF and HSI format
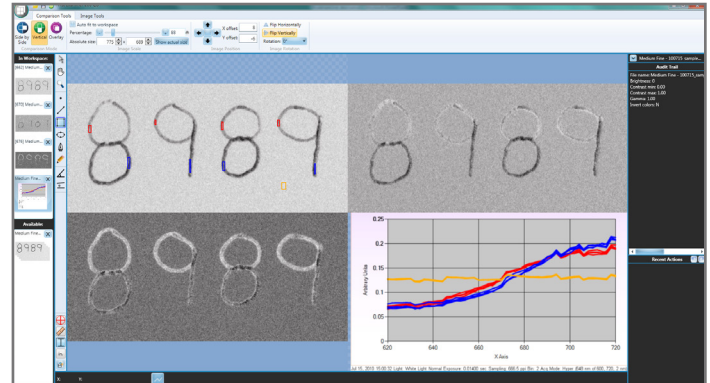- Video - Create movie files in MP4 and WMV format

Image Enhancement:
- Normalization - Removes pixel to pixel sample variations in any data set
- Principal Component Analysis - Identifies commonalities and differences in spectral data
- Flat-field Correction - Removes instrument response (light spatial, instrument spatial and spectral)
- Contrast - Auto and manual contrast capabilities with intensity histogram display
- Adjustments - Control the brightness and gamma levels and invert the colors of an image
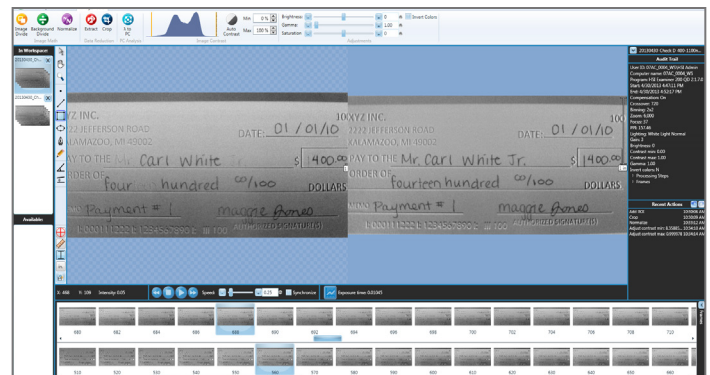
Image Measurement:
Our region-of-interest (ROI) tools give you complete control to examine the features in a questioned document.
- Line - Measure the distance between two points
- Polygon - Measure the area within a user defined box including free forms
- Circle - Measure the radius of a circle from three points
- Plot - Measure spectra from the ROIs of any hyperspectral data set
- Angle Determination - Measure the angle between two user defined lines
- Automatic Spatial Calibration - Spatial measurements based on actual zoom and sample height

Region of Interest and Spectral Plotting Tools

Compelling Image Comparision Features

Image Comparison:
- Side-by-side and Vertical - Compare digital or hyperspectral images, including spectral comparison of multiple hyperspectral images
- Overlay - Easily change image opacity from 0% to 100%
- Strobe - Toggle between layered images
- Orientation - Shift, flip and digitally zoom images
- Rotation - Turn images up to 90 degrees, clockwise or counterclockwise
- Digital Zoom - Apply scale to entire image

Language Globalization:
HSI Examiner™ software is available in the following languages:
- Arabic
- Chinese
- English
- Portuguese
- Spanish

HSI Examiner™ 200 QD Specifications

Technical product specifications

Imaging Systems

Spectral Imaging System:

Front Illuminated CCD Sensor
- 1.4 megapixel (1360 x 1024 pixels)
- 14-bit dynamic range
- Enhanced NIR quantum efficiency mode
- On-chip binning to improve low-light-sensitivity
- Cooled CCD for reduced noise in long-exposure fluorescence experiments

Hyperspectral Imaging:
- Wavelength range 400-1100 nm
- Tuning increments to 1 nm
- 4-10 nm band pass (7 nm average)

Broadband Luminescence Imaging:

Imaging Filters
- 8 HP filters with thresholds at 400, 450, 500, 550, 600, 650, 700 and 750 nm, 2 SP at 700 and 750 nm

RGB Imaging System:

- 3.1 megapixel (2048 x 1526 pixels)
- 8-bit RGB color

Optical Lens System:

- Motorized zoom optical magnification: $0.05\times$ to $0.62\times$
- Spectral imaging individual pixel sampling: 10.4 μm/pixel @ $0.62\times$
- Field of view: 6.4 x 4.9 inch to 0.5 x 0.4 inch (163 mm x 124 mm to 13 mm x 10 mm)

Illumination Systems

Broadband White Light Illumination:

- 150 total Watt quartz-tungsten halogen source
- Enhanced NIR emission

Ultraviolet Illumination Sources

- UV-A (368 nm)
- UV-B (306 nm)
- UV-C (253 nm)

Oblique Illumination Sources

- Independent left and right quartz-tungsten halogen sources
- Height, pitch and yaw adjustments

Transmitted Illumination Source

- Broad-area light
- Spotlight

LED Lighting for Illumination of Optical Variable Devices

- LEDs in horizontal (left-right) and vertical (front-back) arrays
- White light LEDs
- 365 nm UV LEDs
- LEDs are equidistant from sample center

Tunable Excitation Light Source

- 250 Watt quartz-tungsten halogen source
- Independent long and short pass filters

Low Pass Filter Threshold, nm

High Pass Filter Threshold, nm	450	500	550	600	650	700	750
400	50	100	150	200	250	300	350
450		50	100	150	200	250	300
500			50	100	150	200	250
550				50	100	150	200
600					50	100	150
650						50	100
700							50

Computer System

- Core 2 quad Q9300 / 2.5 GHz processor
- 8 GByte RAM
- 320 GByte hard drive or higher
- DVD±RW (±R DL) / DVD-RAM
- Gigabit ethernet
- Windows 7 Pro
- 30 inch high resolution LCD monitor
- ChemImage's HSI Examiner™ QD software – latest release

Facility Requirements

Power Requirements

- Voltage: 115V/220V
- Frequency: 50/60 Hz
- Required power: 1500 VA

Instrument Dimensions*

- 33 inch (W) $\times$ 27 inch (D) $\times$ 27 inch (H)

* Instrument dimensions represent the size of the HSI Examiner™ 200 QD instrument including clearance for air flow.

HSI Examiner™ 200 QD

Warranty & Training

HSI Examiner 200 QD Warranty	
System Warranty	• One year unlimited software, parts and labor • Software upgrades included • Warranty period commences when installation is complete • One preventative maintenance visit included
HSI Examiner 200 QD Training	
System Training	• Up to three days on-site training at time of installation • One year unlimited telephone support after training

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