Video spectral comparator Regula 4305DMH

The device is intended for advanced authenticity verification of passports, ID cards, travel documents, visa stamps and seals, including but not limited to entry permits, driving licenses, vehicle registration certificates and other vehicle related documents, banknotes, revenue and special stamps, securities and other documents with security features.

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The comparator is constructed as a single unit for desktop use in aluminum metal body. It is equipped with a built-in RFID reader. The device has a spacious working area over the object stage, clamps for fixing examined documents and a special shield protecting from harmful effects of ultraviolet radiation.

The device is operated via the front panel with control buttons or/and Regula Forensic Studio software. The control buttons are responsible for the activation of light sources and adjustment of camera parameters in different examination modes. The latter are displayed on the LCD display.

Video spectral comparator Regula 4305DMH is equipped with a torch and a modified 10x magnifier Regula 1003M with two white light sources. The front panel of the device has a port for connection of a UV bottom lighter, three available USB-2.0 ports — for additional external devices, such as a spectral luminescent magnifier Regula 4147 used in anti-Stokes examination, thermostage Regula 4168 or a magneto-optical visualizer Regula 4197.

Functionality

- Obtaining and processing of images
- Reading RFID tags
- Examinations on different levels
  - protection of the document basis  
    - paper opacity, watermarks, security fibers, planchetes, security threads, foil stamping, pole feature, all types of windows, transparent vanish coating, shadow images, etc.
  - printing methods  
    - intaglio: texts, guilloche frames, rosettes and vignettes, microprinting, latent images and moire patterns, signs for the visually impaired, blind embossing, colour shifting ink, including OVI with embossing and latent images, etc.
    - letterpress: serial numbers, texts, barcodes, etc.
    - offset printing: including Orlov and rainbow printing: texts, microprinting, moire patterns, background and anti-copy patterns, etc.
    - screen printing: security features with optically variable effects, etc.
    - see-through register
    - perforation
  - physicochemical protection  
    - anti-Stokes luminescence
    - UV luminescence with different wavelength
    - IR luminescence
  - complex security features:  
    - holographic images, OVD
    - retroreflective protection
    - security features with IR-metameric ink
    - special polymer coating of security laminates
    - laser engraving
- Additional examination of  
  - fragments of document images depending on the degree of absorption or reflection of IR light
  - document alterations such as erasure, etching etc.
  - traces of signature forgery
  - extraneous lines (do not originally belong to the examined object) that are performed with IR opaque inks
  - blurred, crossed out entries, texts and images
  - document mechanical defects such as cuts, tears, folds, etc.
- Optionally: detection of security elements with magnetic properties; including blurred and crossed out texts by Regula 4197

Application

- Border control and immigration services
- Customs authorities

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• Law-enforcement agencies
• Forensic laboratories
• Financial institutions
• Other agencies and organizations authorized to check documents

Delivery Set

• Torch
• Magnifier Regula 1003M
• Software Regula Forensic Studio for displaying video, device control, storing and processing of images
• UV bottom lighter
• Clamps for fixing examined documents
• Optionally:
  - PC
  - Case for device transportation

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<table>
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<tr>
<th>Light sources*</th>
<th>White incident 2 oblique 23 oblique for hologram examination external oblique coaxial bottom with adjustable intensity</th>
<th>Ultraviolet, nm incident 254 313 365 400 bottom (external) 365</th>
<th>infrared, nm incident 700 870 950 2 oblique 870 bottom with adjustable intensity 870</th>
<th>high-intensity incident, nm royal blue 450 blue 470 cyan 505 green 530 amber 590</th>
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* – all light sources are LEDs except ultraviolet 313, 254 nm

**Specifications**

<table>
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<tr>
<th>Video camera</th>
<th>video signal type and resolution</th>
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<td>magnification, times:</td>
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<tr>
<td></td>
<td>optical</td>
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<td></td>
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<td>2</td>
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<td>on-screen</td>
<td>100*</td>
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<td></td>
<td>maximum field of view, mm</td>
<td>202×113</td>
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<td>Video output parameter</td>
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<td></td>
<td>maximum resolution, pixels</td>
<td>1920×1080 (Full HD)</td>
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<tr>
<td></td>
<td>frame rate with maximum resolution, frame/sec</td>
<td>25</td>
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<tr>
<td></td>
<td>Connection interface</td>
<td>USB 3.0</td>
</tr>
</tbody>
</table>

* – all magnifications are approximate and based upon a 24 inch monitor

Camera filters:

- fixed with bandpass, nm — 420–1100
- automatically installed with threshold, nm:
  - IR low-pass — 700
  - IR high-pass — 600, 650, 700

RFID reader:

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• standards — ISO 14443: A and B types of RFID tags
• PC/SC-protocol support
• data exchange rate, Kbaud — 106, 212, 424, 848
• reading an RFID tag regardless of its position in the document
• anticollision: reading an RFID tag according to the MRZ

Maximum document size, mm — 210×300 (A4)

OS — Microsoft Windows XP (SP3), Windows Vista, Windows 7, Windows 8, Windows 10

ICAO MRZ reading for ID-1, ID-2, ID-3 documents — Yes

RFID reader (ISO 14443) — Yes (built-in)

1D and 2D Barcodes — Yes

QR — Yes

Hidden image (IPI) — Yes

Dimensions (length×width×height), mm — 380×260×420

Weight, kg — 10,5

Power supply, V — 12 ± 2

Power consumption, W — 60

Optionally: power supply through vehicle on-board system 12 V

PC requirements

• Minimum configuration:
  ◦ OS — Microsoft Windows 7 (Service Pack 1)
  ◦ processor — Intel® Core™ i5 3.0 GHz
  ◦ RAM, GB — 4
  ◦ minimum free disk space, GB — 1
  ◦ display resolution, pixels — 1600×1200
  ◦ connection interface — USB 3.0

• Recommended configuration:
  ◦ OS — Microsoft Windows 7 (Service Pack 1)
  ◦ processor — Intel® Core™ i7 3.4 GHz
  ◦ RAM, GB — 16
  ◦ minimum free disk space, GB — 1
  ◦ display resolution, pixels — 1920×1200 or higher
  ◦ connection interface — USB 3.0

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### 1. Spectral luminescent magnifier Regula 4147

**Light sources:**
- incident white
- 2 high-intensity infrared 980 nm: spot and flood

**Field of view, mm** — 11,1×8,1

**Sensor:**
- type — CMOS
- megapixels — 3,1:
  - resolution, ppi — 4700
  - frame size, pixels — 2048×1536
- dynamic range, dB — 61

Camera filters — IR high-pass with threshold, nm — 660

Connection interface — USB 2.0

Dimensions (length×width×height), mm, not more than — 94×62×52

Weight, kg, not more than — 0,2

Power supply voltage, V — 5

Power consumption, W, not more than — 12,5

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2. Thermostage Regula 4168

Functionality

- Examination of images and elements of banknotes and travel documents containing thermochromic ink at different temperatures.
- Examination of a composite security feature Feel®-ID developed by Giesecke & Devrient company. Feel®-ID is based on optically variable and thermochromic effect.

Temperature range, °C — +30...+80 with a step of 1 °C

Heated area (length×width), mm — 78×48

Dimensions (length×width×height), mm — 170×78×16

Weight, kg — 0,25

Power supply voltage: powered by the USB port of the video comparator, V — 5

Power consumption, W, max — 15

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3. Visualizer of magnetic properties Regula 4197

Functionality

- Examination of magnetic security features in banknotes and travel documents in the mode of live video
- Visualization of magnetically hard and magnetically soft materials
- Possibility to distinguish magnetic inks by residual magnetization
- Carrying out non-destructive examination of objects with “hard” magnetic properties
- Reading latent magnetic strokes and codes
- Examination of damaged documents: reading blurred and crossed out texts printed with magnetic ink
- Possibility to take magnetic ink intensity measurements in tesla (T)

Field of view, mm — 14×18

Spatial resolution of the optical input system, mkm:

- frame size 1024×1280 pixel — 14
- frame size 512×640 pixel — 28

Connection interface — USB

OS — Microsoft Windows XP (SP3), Windows Vista, Windows 7, Windows 8

Dimensions (length×width×height), mm — 59×113×50

Weight, kg — 0.49

Power supply voltage from a USB port, V — 5

Power consumption, W, max — 2.5

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Oblique white light 6x

Oblique IR light 6x
UV light 400 nm 1.3x

High-intensity incident azure light 1.4x
High-intensity incident green light 1.4x

Incident white light 1.1x

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Incident IR light 870 nm 1x

Coaxial white light 1x