High-resolution photospectral scanner
Regula 8850

Reading and authenticity verification of passports, ID cards, driving licenses, visas and other security documents.

Capturing high-quality images at a resolution of 1630 ppi.

Reading RFID tags.

The device is designed as a single desktop unit. It enables to capture high-resolution document images in white, infrared, ultraviolet, transmitted white and transmitted infrared light. The reader is equipped with a module for reading RFID tags. Device operation is controlled via Regula Document Reader SDK.

Functionality

- Capturing and processing images:
    - supported document formats:
        - ID-1
        - ID-2
        - ID-3
        - other documents with maximum size 187×125 mm (passport spread)
    - search and cropping of a document image from a general image
- The device enables examination of:
    - microprinting in white and IR light
    - security features (intaglio printing, laser engraving, etc.) in oblique IR and white light
    - OVD and holograms
    - security features in IR spectral ranges of 720, 860, 940 nm
    - security features (watermarks, microperforation, see-through register, etc.) in transmitted white and IR light 860 and 940 nm
    - security features in UV light 365 nm
    - retroreflective protection
    - IR luminescence
    - Anti-Stokes luminescence
- The MRZ detection and recognition
- Recognition and reading of 1D and 2D barcodes
- Automatic recognition of a document type
- Processing graphic fields
- OCR of the visual zone
- Reading RFID tags
- Analyzing and comparing text data
- Automatic authenticity verification of a document

Operation

1. The optical reader scans a document and captures document images in different illumination modes.
2. RFID tag data is read.
3. **Regula Document Reader SDK** processes the obtained data.
4. Verification results are ready for further use.

Application

- Border control services
- Aviation security services
- Law-enforcement agencies
- Immigration services
- Financial institutions
- Hotels
- Car rental and leasing companies
- Cellular companies
- Business centers security service
- Event-agencies
- Medical institutions
- Tourist agencies
- Ticket offices

- Visa support agencies and consulates
- Insurance companies
- Casino security service

Additional functions

- Multicolour LED indicator of the device status (red, green)

Delivery Set

- **Regula Document Reader SDK**
- USB cable for connecting the reader to a PC

- Maximum field of view, mm — 187.5×125
- Resolution:
    - 1170 ppi for the field of view of 187.5×125 mm
    - 1630 ppi for the field of view of 135×90 mm
- Video camera — 50.3 Mp
- Light sources:
    - incident white
    - oblique white (2 light sources)
    - oblique white for hologram examination (45 light sources)
    - IR, nm — 720±20, 860±20, 940±20
    - transmitted IR, nm — 860±20, 940±20
    - transmitted white
    - incident UV, nm — 365±3
    - high-intensity incident cyan, nm — 505±10
    - coaxial white
    - high-intensity convertible IR, nm — 800—1100

RFID reader

- Frequency — 13.56 MHz
- Supported standards — ISO 14443: type A and B
- Data exchange rate, Kbaud — 106, 212, 424, 848

Technical specifications

- Connection interface — USB 3.0
- Power supply — AC 100/240 V, 60/50 Hz, 5/2 A
- Weight, max, kg — 40
- Overall dimensions (length×width×height), mm — 540×480×480

Document reader software development kit (SDK)

SDK (**Full**) consists of three modules:

- Basic – supplied together with a device by default
- VizOCR – reading textual fields from a document page
- AAC – automatic authenticity control

VizOCR and AAC modules are optional and used to extend the functionality of Basic module.

Updates for SDK are provided regularly. Basic module has unlimited support. VizOCR and AAC are updated on subscription basis.

Functionality		Full SDK modules		
		Basic (supplied by default)	**VizOCR**	**AAC**
Document image capture and processing				
Document formats	- ID-1 (identity card) - ID-2 (passport card, visa) - ID-3 (passport) - other document formats up to 187.5×125 mm	+		
Scanning process	search and cropping of a document image from a received image	+		
Machine readable zone (MRZ)				
Supported MRZ formats	- in conformity with ICAO 9303: 44×2 30×3 36×2 - in conformity with ISO IEC 18013 (IDL): 30×1 - support of special MRZ data structure for documents of certain countries	+		
Features	- search for the MRZ along the whole document image - MRZ recognition in infrared and white light - control of check digits and data structure in conformity with the requirements of ICAO 9303 and BSI TR-03105 Part 5.1 - evaluation of MRZ quality specifications in conformity with ICAO 9303, ISO 7501, 1831, 1073-2 standards	+		
Barcodes				
Supported formats	1D: Codabar, Code39 (+extended), Code93, Code128, EAN-8, EAN-13, IATA 2 of 5 (Airline), Interleaved 2 of 5 (ITF), Matrix 2 of 5, STF (Industrial), UPC-A, UPC-E 2D: PDF417 2D on request: Aztec Code, QR Code, Datamatrix	+		
Authentication	barcode format check			+
Automatic document type recognition				
Order of document type recognition	Country→Type→Series		+	+
Features	receiving a document template from the SDK database containing the following information:		+	+

	- text and graphic fields position - availability of barcodes and security features - authenticity verification and its parameters - RFID-chip availability - a reference image from Information Reference Systems «Passport», «Autodocs», «Frontline Documents System» - processing of the received document images in compliance with the sample, including document image rotation by the angle given in the sample	+		
Graphic fields processing				
Types of graphic fields	- portrait of the document holder - signature - barcode - fingerprint, etc.	+		
Features	- cropping and displaying graphic fields as separate images in compliance with the sample of the corresponding document - automatic searching of faces on the document image and cropping the document holder portrait if the document type is not recognized - document image rotation according to the document holder portrait position	+		
OCR of the visual zone				
Recognition of character sets	- Central European and Eastern European Latin (1250) - Cyrillic (1251) - Western European Latin (1252) - Greek (1253) - Turkish (1254) - Baltic (1257) - other fonts of any size		+	
Features	- dictionary support (name, surname, address, country, etc.) - automatic text division into separate fields (e.g. dividing the address into postal code, country, state, etc.) - recognition of dates with complex formats - recognition of characters from different character sets in one line		+	
RFID SDK				
Supported RFID-chip standards	- ISO/IEC 14443-2 (type A and B) - ISO/IEC 14443-3 (MIFARE® Classic Protocol) - ISO/IEC 14443-4	+		
Data access modes	- Direct - BAC - EAC - PACE - SAC	+		
Authentication	- active (AA) - passive (PA) - chip (CA v1, CA v2) - terminal (TA v1, TA v2)	+		
Supported applications	- ePassport (DG1–DG16) - eID (DG1–DG21)	+		

	• eSign • eDL (DG1–DG14)			
Certificate management	• local storage • receiving certificates online through the program interface • Master List, CRL support	+		
Features	• reading RFID chips with extended length support • reading RFID chips in compliance with ICAO LDS 1.7, PKI 1.1 data formats • certified by BSI TR-03105 Part 5.1, BSI TR-03105 Part 5.2	+		
Analysis and comparison of text data				
Document areas for cross-checking of the readout data	• MRZ • VIZ • RFID-chip • barcode	+		
Verification	• validity of any dates • authenticity of names and surnames according to lists of wordstops • zero numbers of sample documents	+		
Adjustment of formats and measuring units to those used in the user OS	• date • weight • height, etc.	+		
Features	• complete or partial comparison of fields • calculated field support (age, etc.) • transliteration to Latin characters in compliance with ICAO 9303 standards for comparison with the MRZ	+		
Authenticity verification				

Operation available for any document	• checking luminescence (UV Dull Paper) of:
	  ○ the form
	  ○ the MRZ area
	  ○ the portrait area
	• checking the MRZ print contrast in compliance with ICAO 9303 (IR B900 Ink)
				+

Operations available after document type recognition	• checking image patterns in white, IR and UV light
	• checking luminescence of UV protection fibers
	• detection of false luminescence
	• checking photo embedding type: printing or attachment
	• checking IR Visibility of:
	  ○ elements of the form
	  ○ text data
	  ○ the photograph (main and additional)
	• detection of holograms (OVD), OVI
	• reading a luminescent text and comparing it with the data obtained from the MRZ and VIZ (OCR Security Text)
	• visualization of IPI (Invisible Personal Information)
	• checking retroreflective protection
	• checking barcode format
				+

Features	• checking operations are adjusted to documents with different degrees of wear and tear • the choice of checking operations depends on security			+

|				
	features available in a questioned document			
Additional SDK functions				
Image formats	• .BMP • .JPG • .JP2 • .PNG • .TIF • other image formats are possible on request	+		

Interoperability	• comparison modules:
	  ○ fingerprint images from RFID chip and externalfingerprint scanner
	  ○ face images from document data page and/or RFID chip
	• Information Reference Systems «Passport», «Autodocs», «Frontline Documents System»
		*		

OS compatibility	• Microsoft Windows XP (SP3), Windows 7 (x86, x64), Windows 8, Windows 10	+		
Drivers	• Microsoft certified	+		
Features	• simultaneous optical scanning and RFID chip reading • firmware upgrade via USB interface (automatic upgrade after installing new SDK version) • multilingual interface	+		
Software updates				
SDK	• twice a year	*		
Document template database	• monthly	*		

* – on request / individual agreement

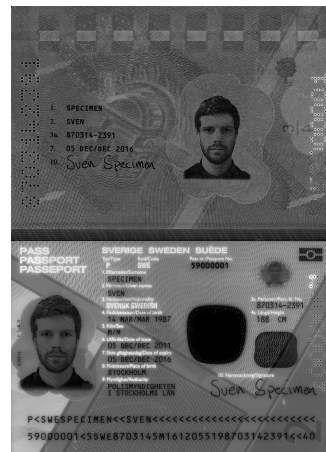# Spread of a Swedish passport

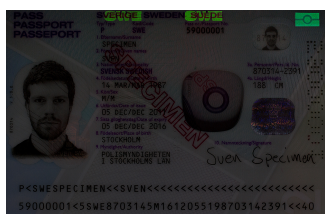Incident white light
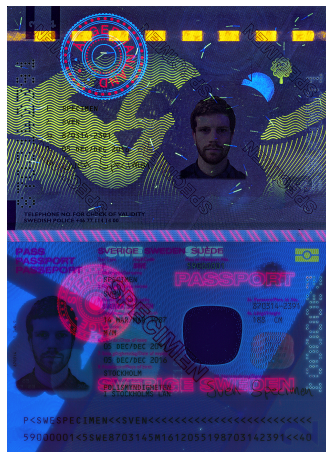
Incident UV (365 nm) light
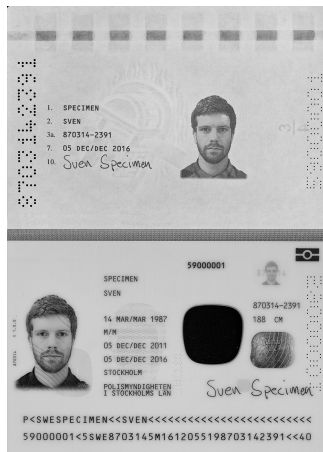
Incident IR (860 nm) light

High-intensity incident cyan (505 nm) light

High-intensity convertible IR (980 nm) light
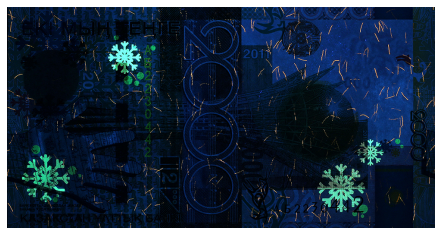

Transmitted white light

Oblique white light

Hologram examination

2000 Kazakhstani Tenge, 2011

Incident white light

Incident UV (365 nm) light

High-intensity incident cyan (505 nm) light

Incident IR (720 nm) light

Incident IR (860 nm) light

Incident IR (940 nm) light

Transmitted white light

Transmitted IR (860 nm) light