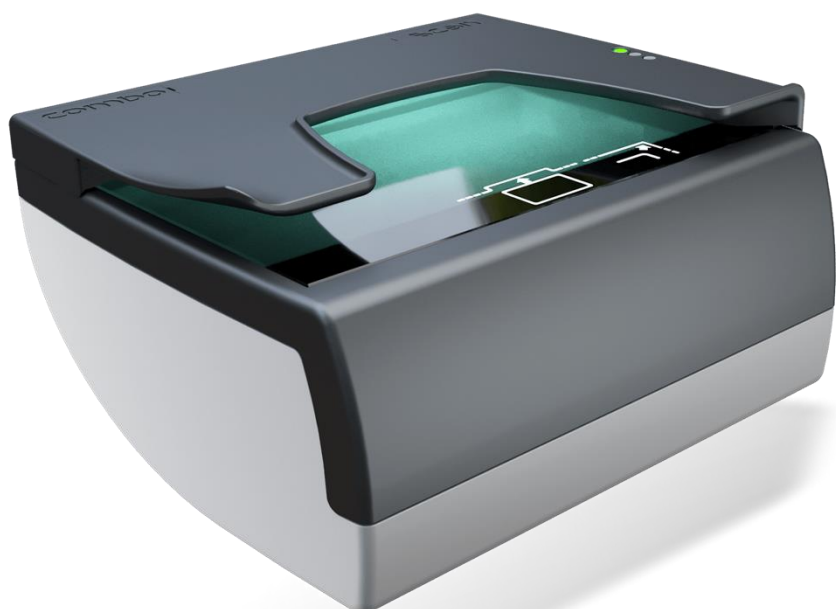


ADAPTIVE RECOGNITION



# Combo Scan User Manual



This manual contains instructions on accessing the device, system settings and setup guidelines, as well as usage and maintenance.

# COMBO SCAN

## USER MANUAL

Passport Reader Software Package v. 2.1.11.1

Document version: 14.11.2024.

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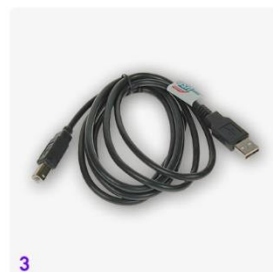
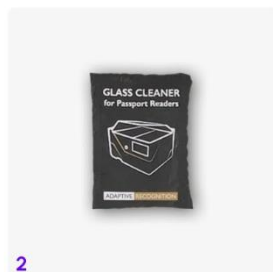
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# I. QUICKSTART GUIDE OF COMBO SCAN

## 1. WHAT'S IN THE BOX

- 1 Combo Scan ID Reader
- 2 Glass Cleaner Wet Wipe
- 3 USB 2.0 (A-B) Cable (1.8 m)



## 2. HOW TO GET STARTED

1. Connect the **USB cable** to the scanner (USB-B) and to the PC (USB-A).
2. The reader powers on automatically once power is supplied.
3. Then, the device starts booting, which may take a few minutes. The status LEDs installed on the left of the cover will indicate the current status of the process. For more information on it, see the [LED Statuses of the Combo Scan Device](#) chapter.
4. Install our latest **Passport Reader Software Package** on Windows or Linux. The Software Package is available from our [portal](#). For more information on it, see [Software Installation](#) chapter.

### Note

In case of **installation rollback**, reinstall the Passport Reader Software Package **as admin**. For more information on the installation process, see [Software Installation](#) chapter.

5. The **default PR OCR** engine is embedded to the **Passport Reader Software MSI**, there are no other tasks to perform. However, in case of purchasing **VIZ OCR** or **VIZ AUTH OCR engine**, download the required [VIZ OCR](#) or [VIZ AUTH OCR](#) engine from the ADAPTIVE RECOGNITION website and perform the installation. For more information on it, see [VIZ OCR and VIZ AUTH OCR Engine Management](#) chapter.

6. The **default license** valid for the basic software functions is **pre-installed** on the device. In this case the license is up to date, thus there are no other tasks to perform. However, **license upload is required**, when:
- Purchasing **VIZ OCR** or **VIZ AUTH OCR** engine,
  - Purchasing **Autofill** application,
  - Purchasing **license update**,
  - Purchasing other **additional software**,
  - The ordered software license was **supplied separately**.

For more information on license upload, see [License Management](#) chapter.

7. **Operating the device** according to application areas:

7.1. **For end-user, or testing the software setup:**

- [Full Page Reader](#) application (**default operation mode**) (included in the PR Software Package)
- [Authentication Checker](#) application (included in the PR Software Package)

7.2. **For quick integration:**

- [Autofill](#) application (sold separately)

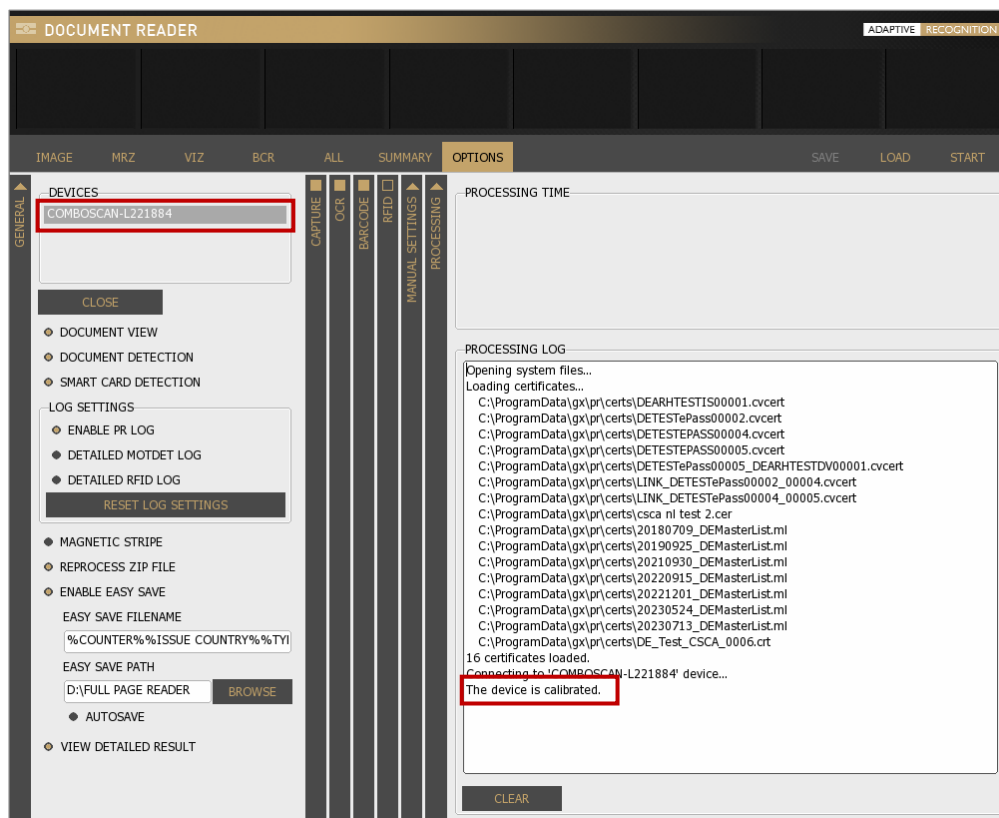
7.3. **For solution developer:**

- API
- Twain
- [NetAPI](#)

8. Check if the **setup was successful**:

In case of the default application, **Full Page Reader (FPR)**, the steps are the following:

- If in the opened FPR application the device is **displayed in the DEVICES list** and it is **highlighted in grey** as well as in the **PROCESSING LOG** field "The device is calibrated." message appears, then the reader is **connected and ready to use**.



### Note

If a **device is connected** to the computer, but it is **not displayed** in the **DEVICES** list, then try to **change the USB port and/or USB cable**. If the issue is not resolved after these changes, **reinstall** the Passport Reader Software Package **as admin**. For more information on the installation process, see [Software Installation](#) chapter.

- After the device is connected successfully, **place a document on the scanning surface** of the reader. The device starts the scanning process automatically.

- After the scanning process is finished, the **extracted data can be examined** in the application.

The screenshot displays the 'DOCUMENT READER' application interface. At the top, there are several thumbnail images of the scanned document under different lighting conditions: 'White', 'Infra', 'OVD', 'Clean OVD', and 'REFID'. Below these is a navigation bar with tabs for 'IMAGE', 'MRZ', 'VIZ', 'BCR', 'RFID', 'ALL', 'SUMMARY' (selected), 'OPTIONS', 'SAVE', 'LOAD', and 'START'. The main content area is divided into three sections: 'PERSONAL DATA', 'DOCUMENT DATA', and 'STATUS'. To the right, there is a 'VISUAL DATA' section showing two images of the person's face and a signature strip.

PERSONAL DATA	
NAME	MÉSZÁROS BRIGITTA ERZSÉBET
BIRTH DATE	1979-08-15
NATIONALITY	Hungary
SEX	N0/F
AGE	45

DOCUMENT DATA	
DOCUMENT TYPE	Hungary ID card - front, 2016 (379)
DOCUMENT NUMBER	000312AE
ISSUE COUNTRY	Hungary
EXPIRY DATE	2022-01-04

STATUS	
TERMINAL AUTHENTICATION	NO CERTIFICATE AVAILABLE
DG3	FAILED TO READ
SELECT APPLICATION	PASSED
CHIP AUTHENTICATION	PASSED
SECURITY PAPER CHECK	PASSED (900)
AUTH41	PASSED (1000)
AUTH43	PASSED (980)
AUTH2	PASSED (950)
SECURITY PATTERN COMPOSITE	PASSED (976)

The 'VISUAL DATA' section shows two side-by-side images of the person's face. Below these images is a signature strip with the text 'Adriana signature' and two handwritten signatures: 'Mészáros Brigitta Erzsébet'.

### Note

For more information on **Combo Scan** device and its operation, see the following chapters of this manual.



## II. INTRODUCTION

Combo Scan is a compact, fast and fully automated **ID** and **passport** scanner designed for data entry applications. Its accuracy and efficiency are combined with ease of use: the scanning process automatically starts when the document is placed on the reader glass surface. The high-resolution images are captured under LED based **visible white**, **IR** and/or **UV** (available in type L models) illuminations. The **OVD** visualization, **Reflection Removal (RR)** and **Adaptive Light Control** technology aid OCR and verification processes. The device reads **barcode** data and **RFID** chip information (available in type R) as well. Maintenance-free operation is ensured by the no moving parts design. The scanner operates on a single USB, no external power supply is required.

The following models are available:

- **Combo Scan**: USB base model
- **Combo Scan L**: USB base model with UV illumination
- **Combo Scan R**: USB device with built-in RFID module

For more information on the technical specifications of the Combo Scan device, click on this [link](#) to access a comprehensive tech datasheet.



## III. DEVICE OVERVIEW

### 1. PACKAGE CONTENTS

- Combo Scan ID and passport scanner device
- USB cable
- 1 pc of glass cleaning wipe

1 Combo Scan ID Reader

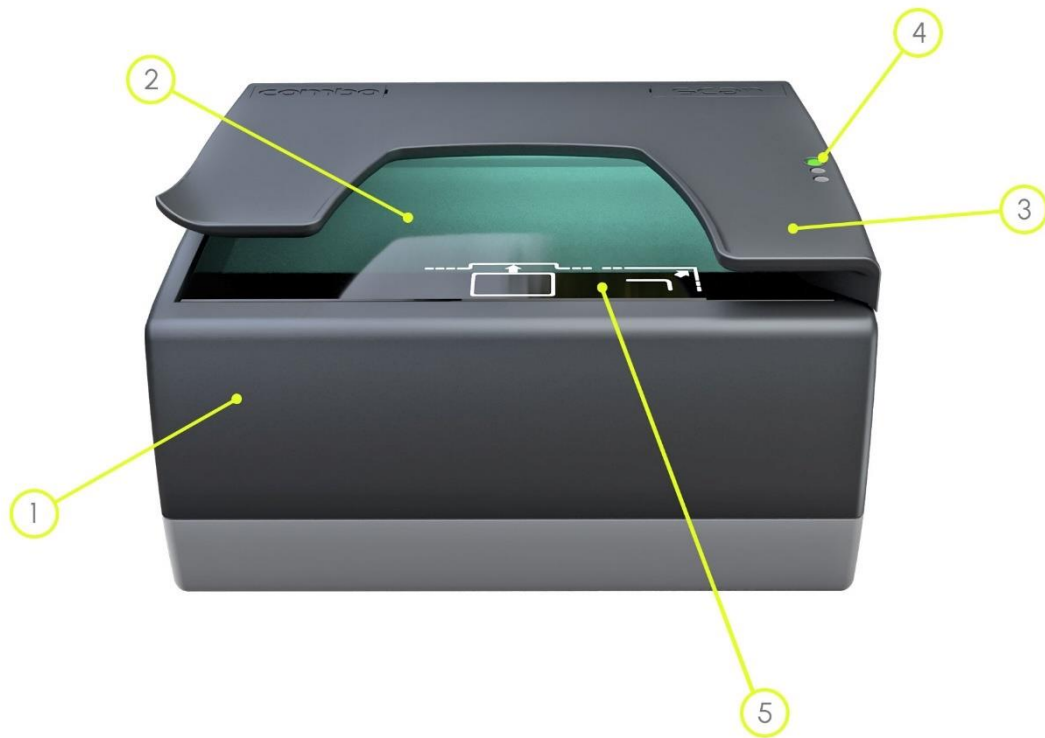
2 Glass Cleaner Wet Wipe

3 USB 2.0 (A-B) Cable (1.8 m)



## 2. PARTS AND COMPONENTS

The device is produced in a **plastic body** (1). The **object-plate** (2) is protected from the external light-striking by the **cover** (3). The **status LEDs** (4), indicating the various states of the device, are installed on the left of the cover. The **pictograms** (5) on the glass surface are indicating the correct positioning of the documents.



The **Kensington® security slot (6)** and the **USB socket (7)** are located on the back of the device.



## IV. HARDWARE SETUP

In this section instructions and recommendations concerning the hardware integration are described, which are the following:

- The device should be on a stable surface, placed horizontally. Do not install the device to an unsteady place. The device has rubber footing, which ensure a solid grip.
- Do not throw or drop the device.
- Avoid bright, alternating lights, which can interfere with image capture. For example, do not illuminate the scanner surface with a lamp, especially when scanning ID-1 size documents.
- Avoid heavy dust in the ambience of the device. The devices are to be used indoors, in an office environment only (SOHO).
- It is recommended to maintain the device in certain intervals. Wipe the dust and grease off the glass with the wipe provided with the reader, see [Maintenance](#) appendix with its subchapters.
- The most efficient way to place the documents on the scanning surface is to put the **ID1 size** cards in the middle of the scanning surface. For more information, see [Correct Document Placement](#) chapter.
- You should avoid wearing rings and nail extensions. Avoid placing grainy documents on the surface of the reader. Pay attention to prevent getting grains of sand or other materials inside the device.



## V. SAFETY

### ! Important!

#### **Equipment modifications:**

This equipment must be installed and used according with the instructions given in its documentation. This equipment contains no serviceable components. Unauthorized equipment changes or modifications cause warranty to void.

### ! Important!

The device should not be operated with its object-plate exposed to direct sunlight.

### ! Important!

Do not look directly into the UV-A and INFRA lights during scanning process. They may cause damage to the eye.

### ! Important!

Do not use abrasive cleaners or solvents when cleaning the device. These may scratch the glass or damage the plastic.

## VI. INSTALLATION

Combo Scan models are USB devices and they can be used with the Full Page Reader or Authentication Checker applications as well as our SDK.

### Note

For more information on the Full Page Reader or Authentication Checker application, see the [Full Page Reader Application](#) or the [Authentication Checker Application](#) chapters.

## 1. SYSTEM REQUIREMENTS

Recommended minimum system requirements:

- Intel Pentium 2 GHz CPU or higher (or equivalent x86 compatible CPU),
- 1 GB RAM or more (depending on application),
- 32 or 64-bit Microsoft Windows 7/8.1/10/11/Vista operating system or Linux operating system (kernel version 3.2),
- Integrated USB 2.0 port (on motherboard).

### Note

The speed of image processing highly depends on the type of hardware used. In general, the shorter recognition time is needed, the more powerful machine you are advised to use.

### Note

In case of an **authentication engine**, the recommended system requirements are the following:

- 64-bit system,
- 4+ GB RAM.

### Note

In case of purchasing **VIZ OCR engine**, it is strongly recommended to use 64-bit operating systems.

## 2. HARDWARE INSTALLATION

Follow the next steps to connect the device to the PC:

1. Connect the device to one of the **USB 2.0 or 3.0 ports** of the PC with the **supplied USB cable**.

### Note

It is strongly recommended to use the USB ports of the motherboard. When connecting the USB cable to the front panel USB port, use shielded cable between the motherboard and the USB panels.

2. The reader **powers on automatically** once power is supplied.

### Note

Once the device is connected, the status LEDs flash, then the green LED will stay on.

### Note

If the device is used with a laptop, please make sure that the output voltage of the USB ports is not less than 5V. For this reason, it is highly recommended that you use the laptop on AC power (with the power cord connected).

Supported operating systems:

- **Windows:** 11, 10, 8.1, 8, 7, Vista (32/64 bit, WHQL certified), 32/64-bit Server 2008 R2 and Server 2003
- **Linux:** Ubuntu, Debian, OpenSUSE, CentOS



### 3. SOFTWARE INSTALLATION

In order to operate the Combo Scan device, the ADAPTIVE RECOGNITION driver package is necessary.

The Passport Reader software package is available in the following ways:

- Check the automatic notification email which was sent on the day of the dispatch and use the link to download the latest passport reader software.
- Alternatively, check our portal (<https://adaptiverecognition.com/doc/id-scanners-readers/passport-reader-software/#software/>) to access our software modules.

The **Passport Reader Software Package** includes the following components:

- Drivers for Passport Reader devices and AFS510 Fingerprint Scanner devices
- Software Development Kit for C/C++, Visual Basic, Delphi, C#, VB.NET and Java programming languages:
  - Interface files
  - Sample programs
  - Manual in HTML and CHM format
- Full Page Reader Application
- Authentication Checker Application
- Passport Reader utility programs (License Manager, PRDTool)
- NetAPI SDK (from PR Software Package 2.1.11.1)

#### Note

Silent installation can also be performed. There is an example below, the actual command may differ.

For example:

```
msiexec.exe /i pr-2.1.11.2-x64.msi /qn  
ADDLOCAL="certificates,gxsddriver,drivers,prddriver,fxmcsusbdriver,  
omnikeydriver,arhftdidriver,gx,pr,fullpagereader,apps,authchecker,  
pcsc,tools,fpdemo,license_tools,ocr,prdt,prwebsrv,qtgx,VCRedist8,  
VCRedist8Policyx64,VCRedist10,VCRedist14"
```

### 3.1. INSTALLATION ON WINDOWS OPERATING SYSTEMS

 **Important!**

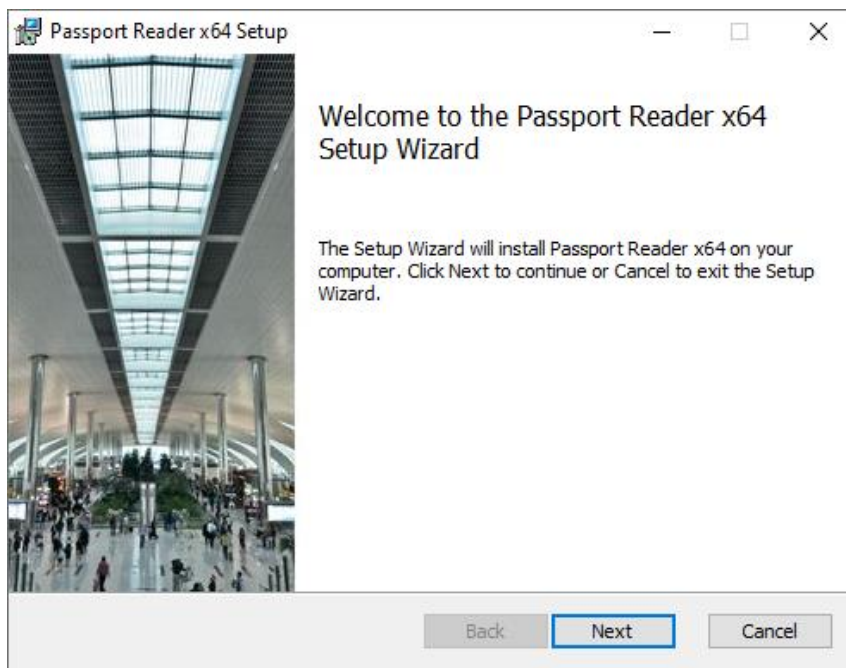
Administrator rights are needed for installation.

 **Important!**

Upon installation of the 32-bit version to a 64-bit PC, the 64-bit device drivers are installed automatically. For 32-bit application development on 64-bit PCs, install the 32-bit version of the Passport Reader software as well.

1. Before installing the Passport Reader software, all previous versions of the software must be uninstalled from the system. This process differs depending on the version that is currently installed on the system.
  - For versions 2.1.5-26W or earlier, go to **Start Menu / Programs / GX / UNINSTALL** and run – **FULL UNINSTALL** – as well as **Start menu / Programs / GX / 32 bit version / – FULL UNINSTALL** – if applicable.
  - For versions 2.1.6 or later, go to **Control Panel / Add/Remove Programs** and remove all versions of the Passport Reader software.
2. Once all previous versions of the software have been uninstalled, restart the computer.
3. Next, locate the downloaded software package and run **pr-2.1.x-x86.msi** (in case of 32-bit operating systems) or **pr-2.1.x-x64.msi** (in case of 64-bit operating systems).

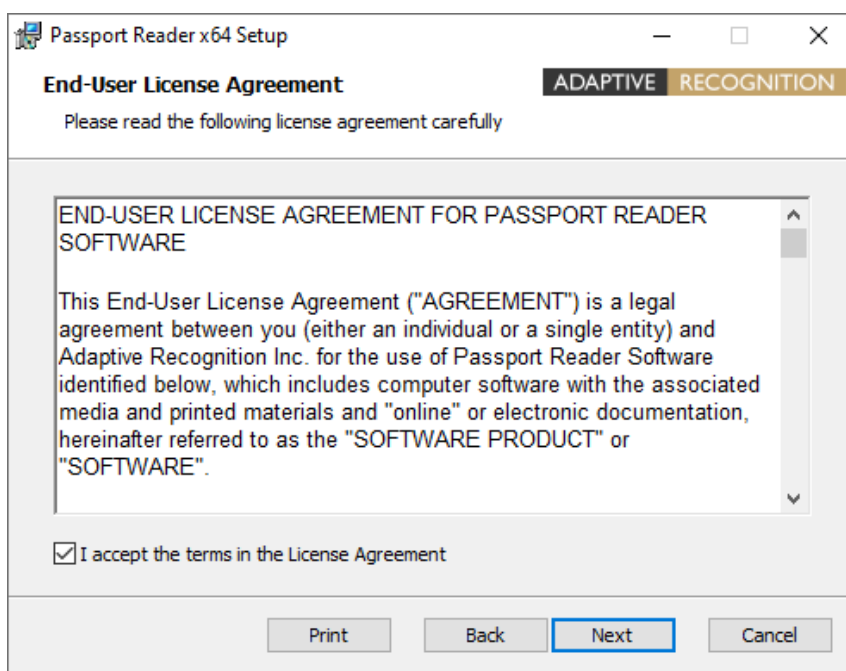
4. The installation starts with the following window:



Welcome Page of Passport Reader x64 setup

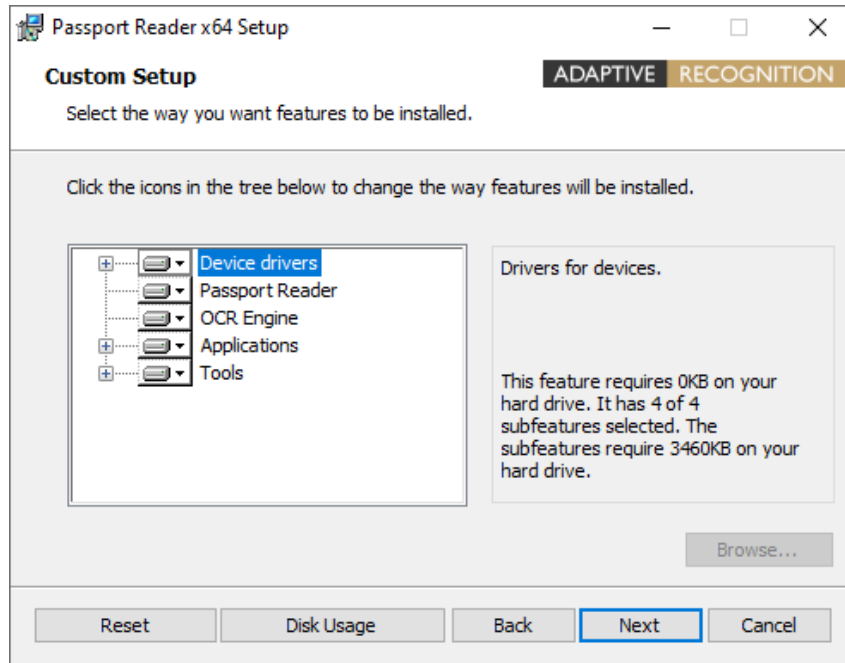
5. Click **[Next]** to launch installation.

6. Accept the EULA (by ticking the checkbox) and start the custom installation process by clicking on **[Next]**.



End-User License Agreement (EULA)

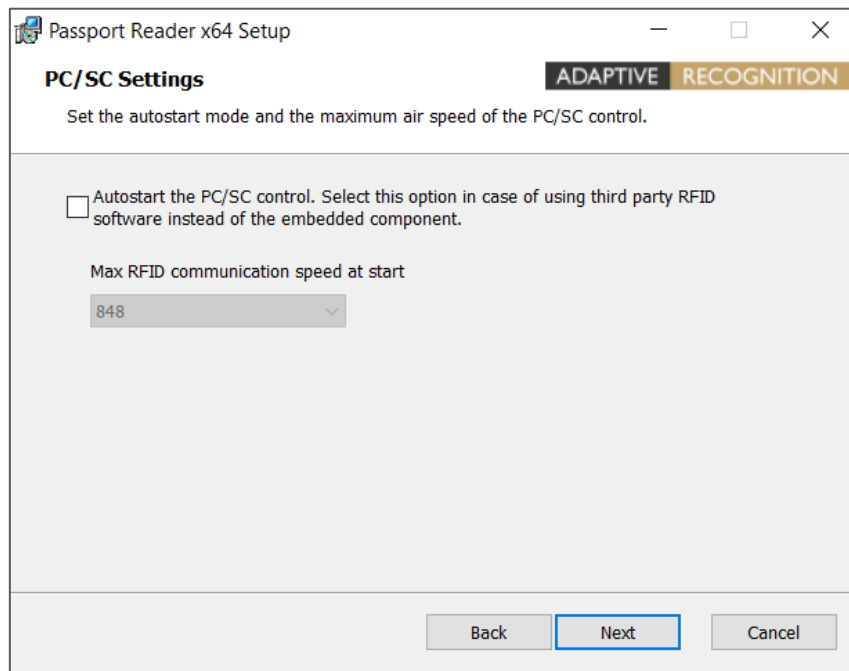
7. In the **Custom Setup** window, select the modules you wish to install on the PC. Installing the **Device Drivers** and the **Passport Reader** modules are necessary for device operation, the installation of all other modules is optional.



Custom Setup

**Note**

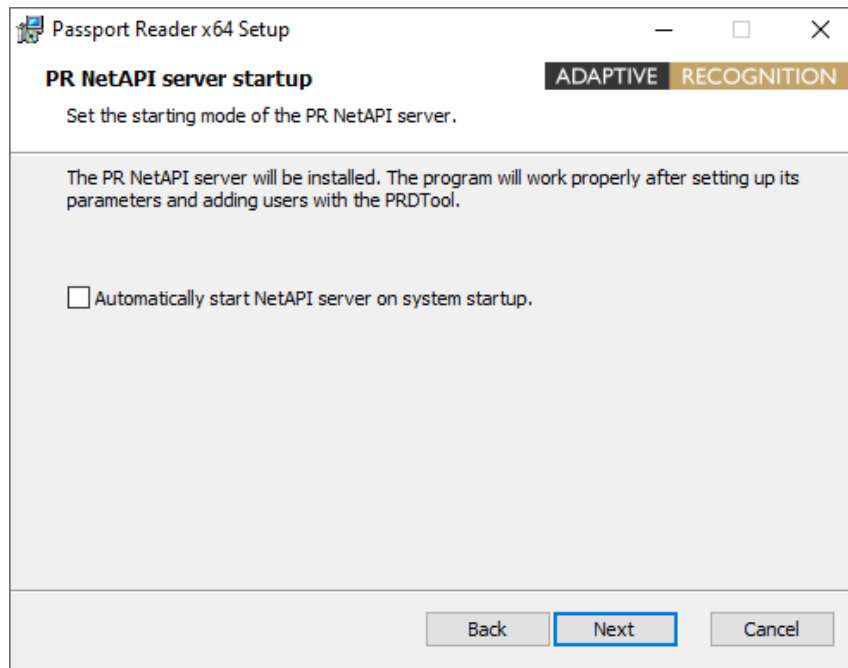
SDK and Documentation are available in the "sdk" folder of the PR Software Package.



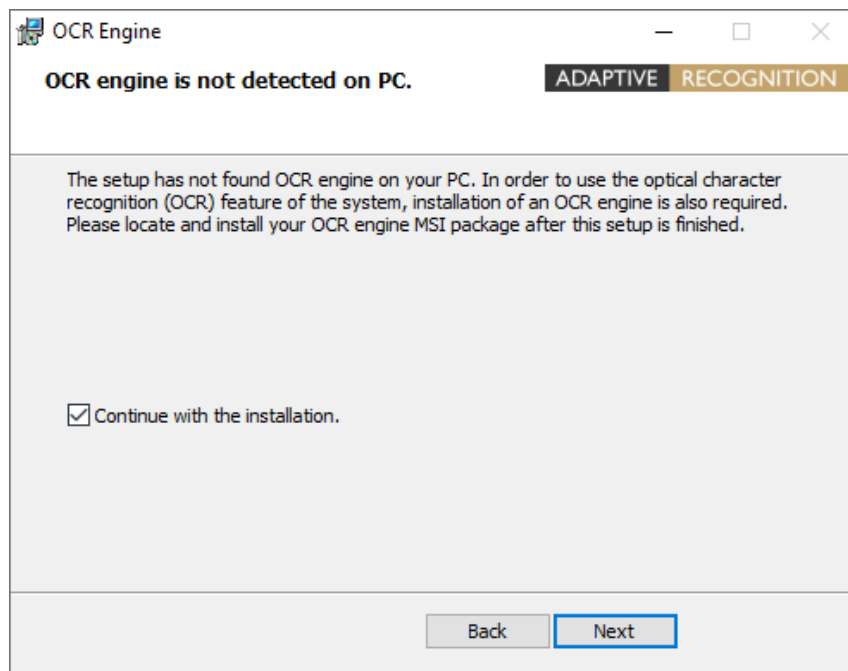
PCSC Settings

**! Important!**

Please select the **Autostart** option only if you intend to use your document reader device via the PC/SC interface. This setting can also be modified after the installation is finished. For more information, please see the [PC/SC](#) section.

**Important!**

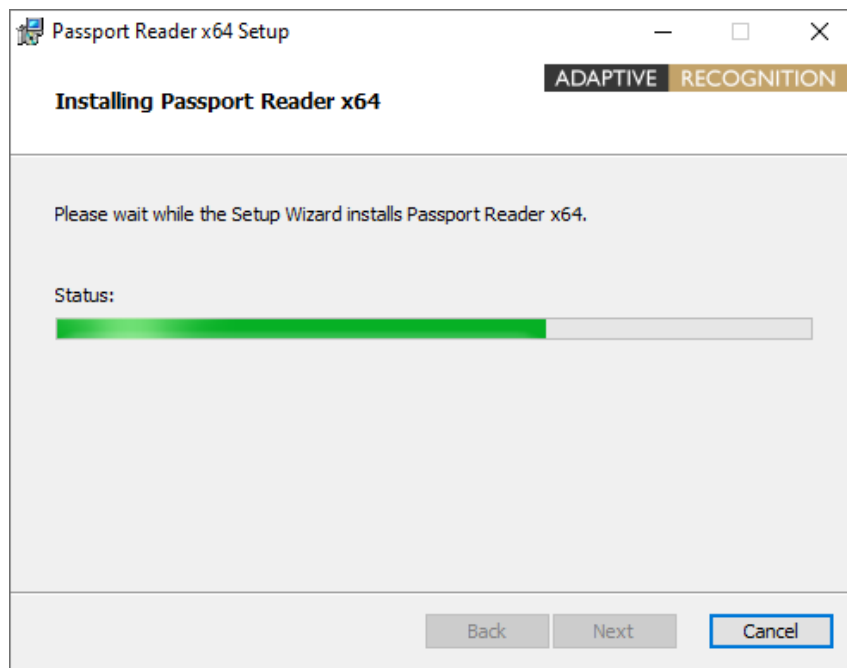
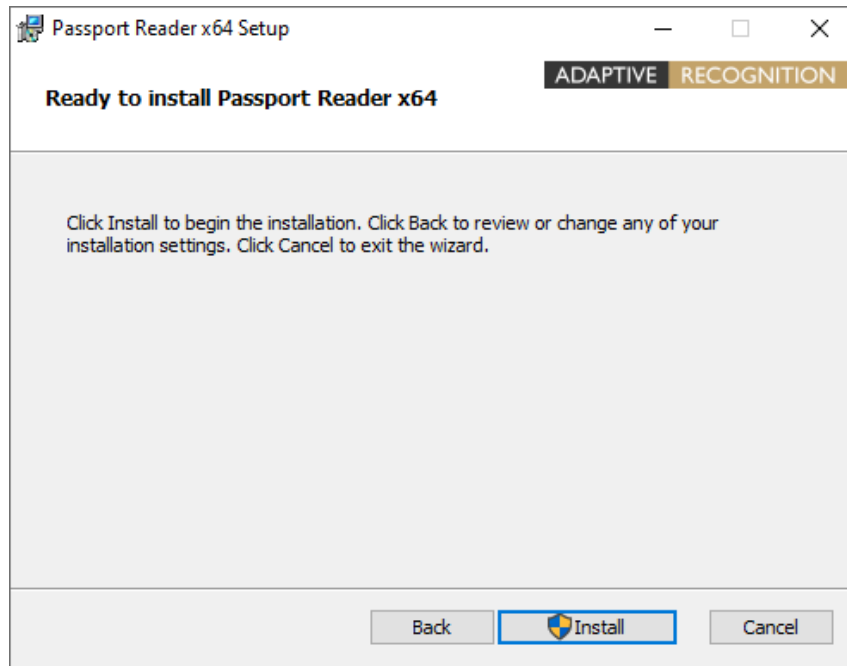
Please select the **Automatically start NetAPI server on system startup** option only if you intend to use your document reader device in NAI mode. In this mode the device is used with the Passport Reader Network API. This setting can also be modified after the installation is finished. For more information, please see the [NetAPI](#) section.

**! Important!**

If the PR Software Package version is **below 2.1.11**, then in order to use the OCR functionality of your document reader device, please also install the **procr-2.0.x.xx.msi** package located in the **win** folder of the Passport Reader install package, after current installation is finished.

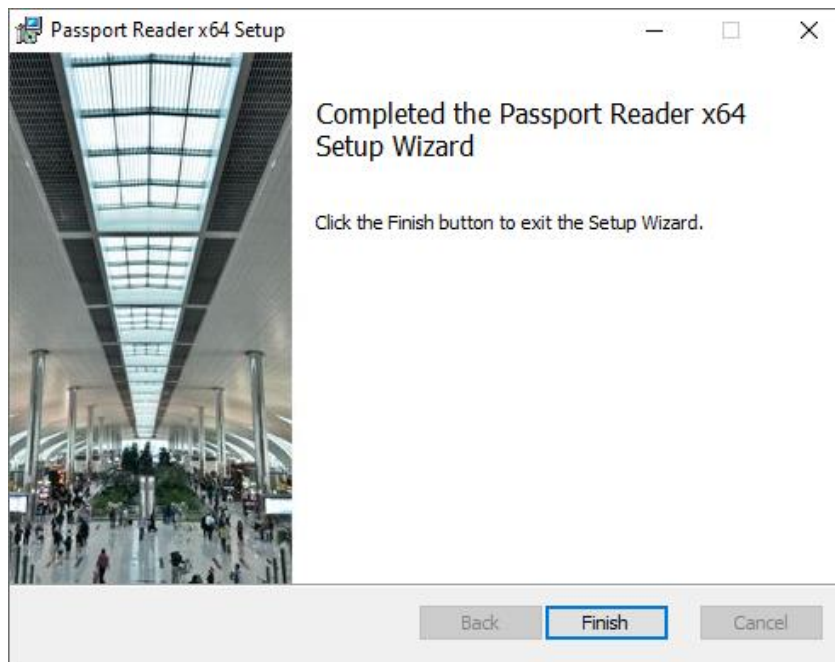
In the case of **version 2.1.11**, the OCR engine is embedded to the Passport Reader Software MSI. Therefore, when performing the software installation, the OCR engine is also installed.

8. Clicking on **[Install]** will begin installation.

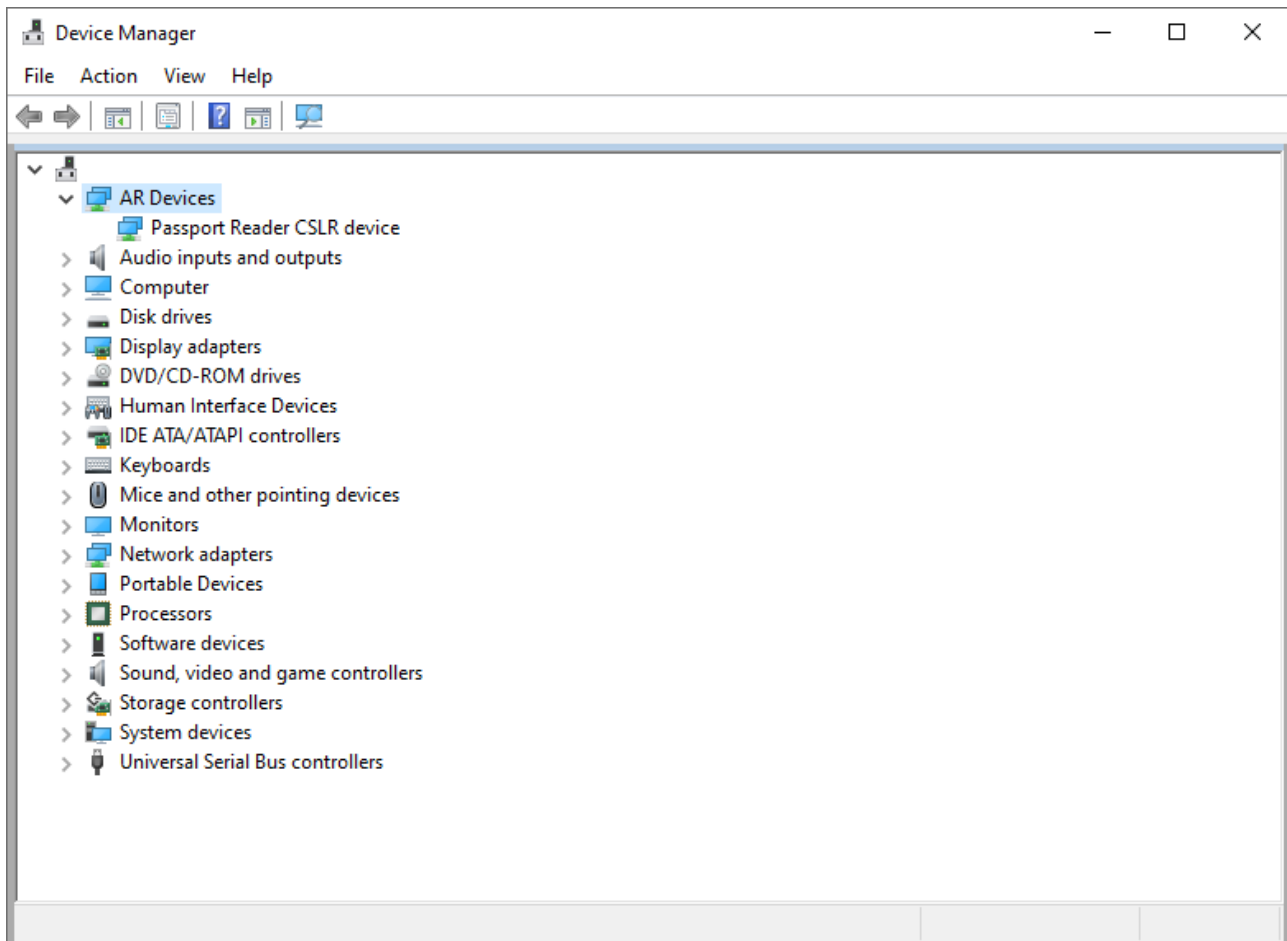




9. Click **[Finish]** to complete the installation.



10. After the installation has finished, open the **Device Manager**. If the installation was successful, a group named **AR Devices** together with one of the following devices should be listed:
- **Passport Reader CSLR device** (Combo Scan)
  - **Passport Reader CSMR device** (Combo Scan R)



## 3.2. INSTALLATION ON LINUX OPERATING SYSTEM

### Note

Please read through this manual carefully!

The Passport Reader is a travel document reader and analyzer system by AdaptiveRecognition Inc., which bases on the GX system and provides for software developers an easy-to-program interface through its Application Programming Interface.

### 3.2.1. BEFORE YOU INSTALL THE PACKAGES

The system was built under Ubuntu 20.04 and has been tested on:

- Ubuntu 22.04 LTS
- Ubuntu 20.04 LTS
- Fedora 36
- Debian 8

### Note

Please read the license agreement before installing the packages.

For the installation you need "GNU Make", "GNU C/C++" compiler and the corresponding GLIBC. The kernel headers and configuration files must be installed as well.

### 3.2.2. CONTENTS OF THE INSTALL PACKAGE

#### GX

gx-7.2.x-x.tar.gz

GX system

#### Passport Reader

pr-2.1.x-x.tar.gz

Passport Reader system

prd-2.1.x-x.tar.gz

PRDDRV driver for Passport Reader devices

procr-2.x.x-x.tar.gz

OCR engine

fxmusb-7.x.x-x.tar.gz

USB Neural Network Controller devices

licutils-7.x.x-x.tar.gz

License Manager

pr-fullpagereader-2.x.x-x.tar.gz

Full Page Reader application

pr-authenticationchecker-2.x.x-x.tar.gz

Authentication Checker application

pr-certificates-x.tar.gz

German master list certificate collection

pr-udev-2.x.x-x.tar.gz

Scripts and udev rules for automatic driver loading



### 3.2.3. THE INSTALLATION PROCEDURE

#### 1. Unpack and copy all files into your system:

- `use_install.sh`

#### Dependencies:

Please install the following libraries with your distribution package manager or manually (these libraries are apart from services):

- SDL (A library for portable low-level access to a video framebuffer, audio output, mouse, and keyboard)
- SDL ttf (A library that enables using TrueType fonts in your SDL applications)
- SDL net
- SDL gfx (`libSDL-gfx1.2-4` if the `libSDL1.2-5` is available only then make a symbolic link in the `/usr/lib/x86_64-linux-gnu` folder with the following command  
`ln -s libSDL_gfx.so.15 libSDL_gfx.so.13`)
- SDL image
- FreeType (TrueType font rendering library)
- `libpcsclite1`
- `pcscd`
- Qt

GX: none

Passport Reader: GX

## 2. Compile kernel modules:

- Download a kernel source from <https://github.com/torvalds/linux> and unpack into `/usr/src` directory.

If you have an older GX version in the kernel tree, please remove it manually by using the script `_uninstall.sh`.

You can use the kernel source package of your distribution (e.g., Ubuntu 10.04 → `linux-kernel-headers`).

- Or make sure that the kernel config files are installed.

Check the `/lib/modules/$(KERNEL_VERSION)/build` directory.

- Compile the AdaptiveRecognition Inc. drivers:

Compile the drivers with "make" command in the following order:

- `/usr/src/gx/kernel/gxsd`
- `/usr/src/gx/kernel/prddrv`
- `/usr/src/gx/kernel/fxmc_usb`

### Note

If you get a "No rule to make target..." error message by typing "make":  
If the output of "uname -i" is "unknown" and your system is either i386 or x86\_64:  
Make a symbolic link to e.g., `b_prddrv.o` by typing:

```
ln -s b_prddrv.o.x86_64 b_prddrv.o
```

according to your system.

## 3. Install new kernel modules:

For **PRDDRV**:

```
/sbin/insmod /usr/src/gx/kernel/gxsd/gxsd.ko  
/sbin/insmod /usr/src/gx/kernel/prddrv/prddrv.ko
```

## 4. Automatic driver loading is enabled by the pr-udev module.

This module enables the automatic installation of the driver modules upon connecting the reader to the PC. As a result, there is no need to start the driver manually.

### Note

If this feature is unnecessary, then the user should remove the `98-ar.rules` from the `/etc/udev/rules.d` directory.

### 3.2.4. AFTER INSTALLATION

Once installation is complete, you can find the manual for the GX and PR systems under `/usr/share/doc/gx`. The header files can be found in the SDK, the library files in `/usr/lib64/gx`.

The basic GX library is in `/usr/lib64 (libgxsd.so.7)`. The file containing the property data is `/var/gx/gxsd.dat`.

After the kernel modules were started, you can check the state of the running drivers under `/proc/gx`.

### 3.2.5. INSTALLATION OF ANOTHER ENGINE

The engine comes in a `.tar.gz` file. Type the following command to start the installation:

```
tar xvfz engine.tar.gz -C /
```

### 3.2.6. UNINSTALLATION

If you want to uninstall the AdaptiveRecognition Inc. files simply type:

```
_uninstall.sh.
```

## 4. AUTHENTICATION CHECKER APPLICATION

ADAPTIVE RECOGNITION provides its Authentication Checker application included in the 2.1.9 and above Passport Reader (PR) software packages.

This software offers full-spectrum ID document authentication with a range of security checks and visualization features. After each scanning, the software informs the user about the authenticity of the scanned document in a comprehensive way, with 4 views on one display.

The app works with fixed values to facilitate its use.

It provides:

- images scanned by different illumination sources (white, infra, UV)
- OCR mode to reach MRZ and VIZ data
- optical and RFID authentications as well as comparison of their results

The main emphasis is on the authentications to maximize the result of the examination.

This chapter is going to show you the functions of the app and the methods of the use.

The structure of this section is the following:

- First, the app overview and its accessing will be discussed.
- Next, a closer look will be taken at the Dashboard of the application.
- Finally, the user will be guided through the Sections of the application.



## 4.1. REQUIREMENTS

- An ADAPTIVE RECOGNITION scanner connected to your PC
- ADAPTIVE RECOGNITION Passport Reader Software version 2.1.10.2 or later
- PC: min. 2GB RAM, full HD display resolution (1920 x 1080)
- OS: 32/64-bit Windows 7/8/8.1/10/11 or Linux

### Note

To make the most of the ADAPTIVE RECOGNITION document reader device and the application, it is recommended to use the VIZ AUTH engine on 64-bit operating systems.

## 4.2. START AUTHENTICATION CHECKER

### Windows

After installing ADAPTIVE RECOGNITION software package on your computer, you will be able to open Authentication Checker from **Windows Start menu > Adaptive Recognition > (Passport Reader) > Authentication Checker x86** or **x64** (based on your computer architecture and previous installation).

### Linux

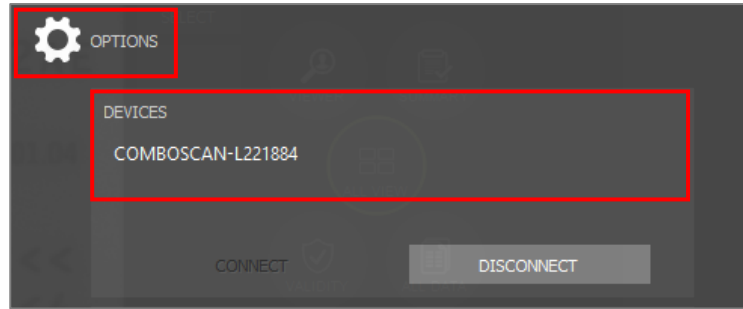
Depending on your distribution, you can open command terminal and insert: **AuthenticationChecker** or use dashboard search bar: **Linux Start menu > Applications > Adaptive Recognition Apps > Authentication Checker 64-bit version** (based on your computer architecture and previous installation).



### 4.3. CONNECTION

In order to scan with any ADAPTIVE RECOGNITION reader device, you have to make sure that there is an available reader connected to your computer and it is turned on.

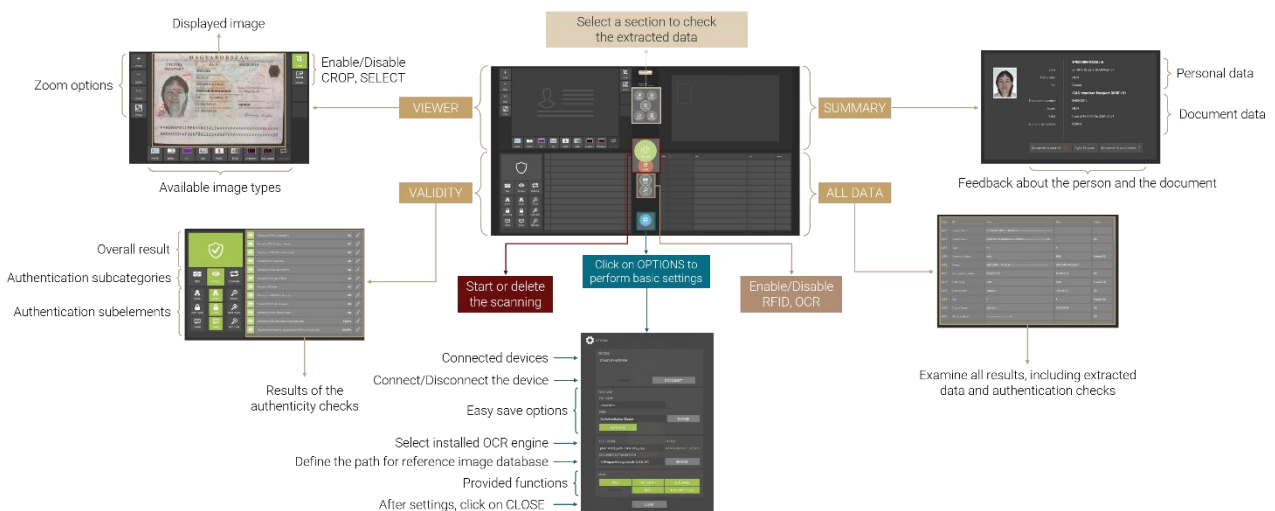
You can check the **DEVICES** list in the **OPTIONS** menu.



**Note**  
By default, the app is connecting automatically to the document reader.

**Note**  
If the device is connected properly, the **SCAN** button turns green. If the connection is unsuccessful, the **SCAN** button remains grey.

### 4.4. OVERVIEW



## 4.5. DASHBOARD

You can direct the operation of the program, change views, start or delete a scanning as well as perform some basic settings.

### Note

In **ALL VIEW** mode the Dashboard is located in the middle of the opened window, while in the selected view (**VIEWER**, **VALIDITY**, **SUMMARY**, **ALL DATA**) on the right side of the window.

### ALL VIEW

Use the **ALL VIEW** button to check all results (**VIEWER**, **VALIDITY**, **SUMMARY**, **ALL DATA**) on one display.

### VIEWER

Select **VIEWER** to examine the scanned images under several illuminations on full screen.

### VALIDITY

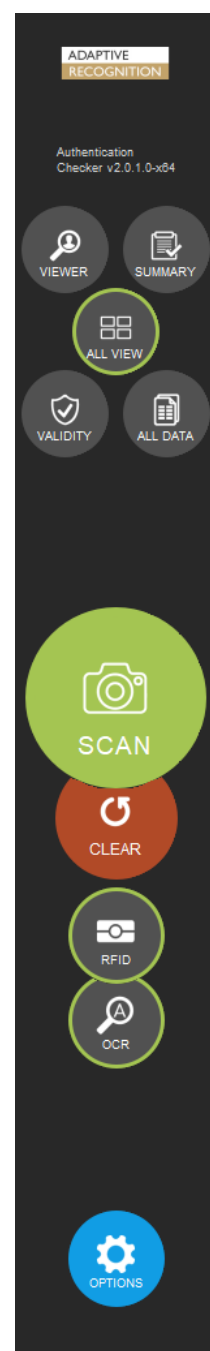
Select **VALIDITY** to view the results of the authenticity checks, including optical checks, digital data verification and comparison checks on full screen.

### SUMMARY

Select **SUMMARY** to look at the selection of the extracted personal and document data on full screen.

### ALL DATA

Select **ALL DATA** to examine all results, including extracted data and authentication checks on full screen.



## SCAN

Click on the **[SCAN]** button to start the scanning process, if the **AUTO DETECTION** mode is not selected. The status signal around the **SCAN** button indicates the progression of the scanning process.

### Note

**AUTO DETECTION** mode is switched on by default, thereby the scanning will start automatically.

## CLEAR

Use the **[CLEAR]** button to delete the extracted data of the previously scanned document.

## RFID

Click on the **[RFID]** button to enable/disable [RFID](#) reading.

### Note

The green outline around the button indicates that the function is turned on.

### Note

The [MRZ](#) reading is part of the [OCR](#), but since it is needed for RFID reading in the most cases of the documents, the **RFID** and **OCR** buttons impact the enabling of MRZ reading. To turn on/off MRZ reading separately, click on **OPTIONS** and enable/disable **MRZ** by clicking on it at the [TASKS](#).

## OCR

Click on the **[OCR]** button to enable/disable optical character recognition.

### Note

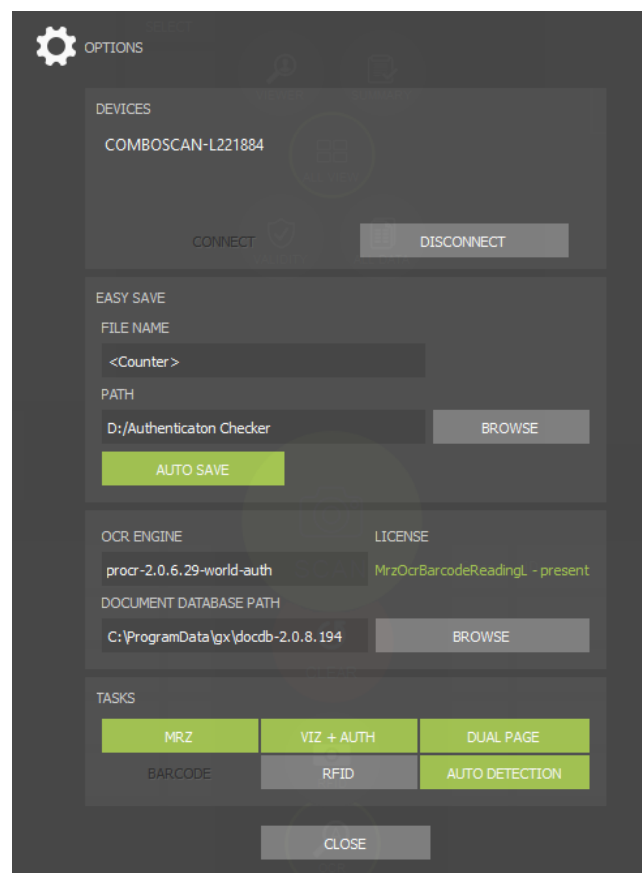
The green outline around the button indicates that the function is turned on.

### Note

The MRZ reading is part of the OCR, but since it is needed for RFID reading in the most cases of the documents, the **RFID** and **OCR** buttons impact the enabling of MRZ reading. To turn on/off MRZ reading separately, click on **OPTIONS** and enable/disable **MRZ** by clicking on it at the **TASKS**.

## OPTIONS

Click on the **[OPTIONS]** button to perform some fundamental settings, customize the scanning process.



#### 4.5.1. OPTIONS

##### 1. DEVICES

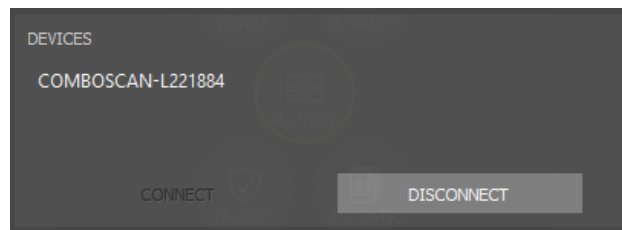
You can see the list of the document scanners connected to your computer.

###### Note

By opening the app, the device is connected automatically.

###### Note

You can work with only one device at a time.



## 2. EASY SAVE

The **EASY SAVE** can make frequent document saving simpler. Turn **AUTOSAVE** on and set the **FILE NAME** and **PATH** to save the results of all scanning process automatically. After that, the software creates the filename automatically based on the configured template, then saves the .zip to the path specified.

### Note

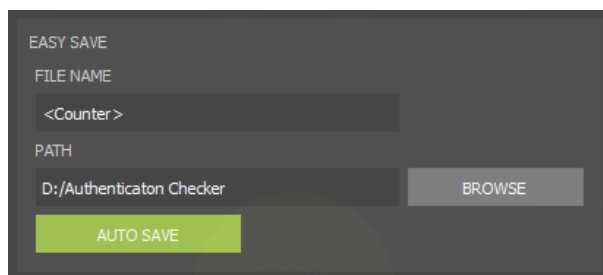
When using **EASY SAVE**, determine the filename syntax and path before first scanning. This option will save every scanning into the same path.

### Important!

If the **AUTOSAVE** is not turned on, the saving process is skipped.

### Note

If you want to save encrypted files which can only be decoded in ADAPTIVE RECOGNITION's network, then, when saving the file select **.ecz** extension. For more information on encrypted autosave, see the [Encrypted Autosave in Authentication Checker](#) chapter.



EASY SAVE

FILE NAME  
<Counter>

PATH  
D:/Authenticaton Checker

BROWSE

AUTO SAVE

### 3. OCR ENGINE

The optical character recognition process of each document is performed by the **OCR ENGINE**. Select between **installed OCR engines on your computer**, if you have several installed engines. A dropdown list shows your available engine(s). With a left-click you can select your appropriate one. After selection, the software displays a status message about the required engine-license and its availability.

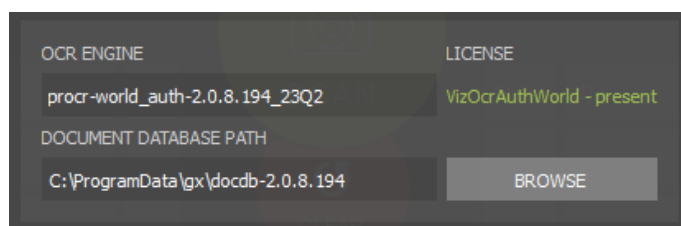
The **DOCUMENT DATABASE PATH** is set by default as you install [VIZ](#) OCR+Auth engine to your computer. The purpose of this function is to allow visual comparison of the authenticated document sections with images stored in a reference database. If the document database is not set or installed, the authentication feature still operates and its results are returned.

#### Note

The non-default settings of the **OCR ENGINE** and **DOCUMENT DATABASE PATH** are not saved. If you close and reopen the app, the default settings will be valid again.

#### Note

For availability and more information on OCR engines and software licenses, please contact your ADAPTIVE RECOGNITION sales representative.





#### 4. TASKS

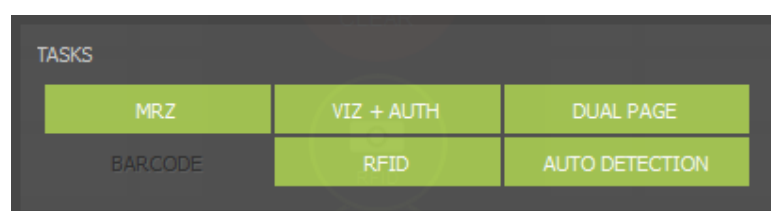
Select between the provided functions: **MRZ**, **VIZ+AUTH**, **DUAL PAGE**, **RFID** reading and **AUTO DETECTION**.

- **MRZ**: Select this task to get the data of the Machine Readable Zone.
- **VIZ+AUTH**: Enable this task to read document-specific data and verify the optical authentications from the Visual Inspection Zone of different national documents.
- **DUAL PAGE**: Enable this task to read double paged documents automatically. When this function is enabled, after scanning the front side of the document, the application asks the user if the back side of the document is needed. In case of clicking on the **[OK]** button, Authentication Checker waits 10 seconds for the second side of the document.

#### Note

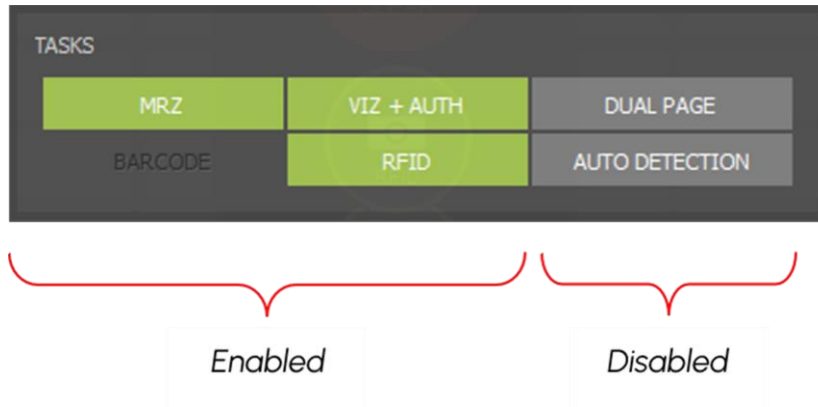
**DUAL PAGE** function only operates automatically, on the condition of the document being recognized by the **VIZ OCR engine**. For more information on VIZ OCR engine, see [ADAPTIVE RECOGNITION website](#).

- **RFID**: Choose this task to read the data from the document's built-in RFID chip.
- **AUTO DETECTION**: Enable/Disable the automatic document presence detection mode (motion detection). This feature senses documents placed on the scanner glass surface. Whenever a document is present, the software captures images of the document.



 Note

Click on the button of the given task to enable (green background) or disable (grey background) it.

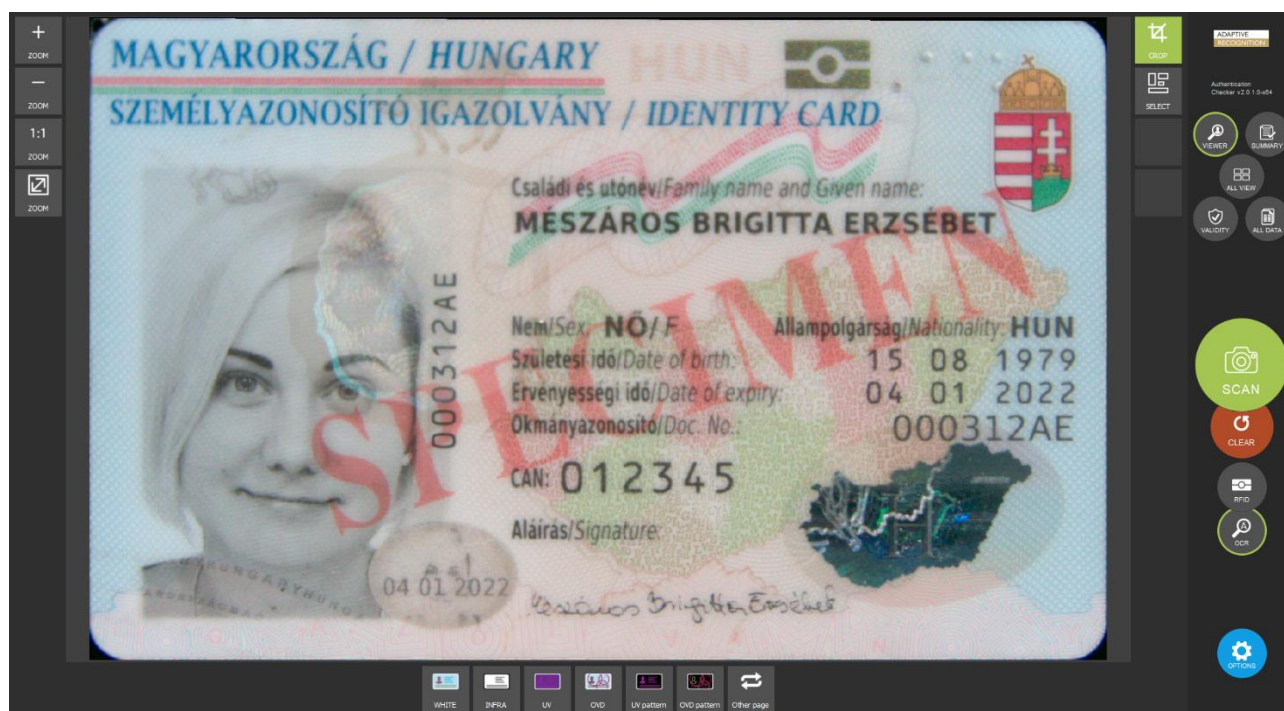
 Note

After performing settings, close the window with the **[CLOSE]** button to start document reading.

## 4.6. SECTIONS

### 4.6.1. VIEWER

In the **VIEWER** section the scanned and/or selected images are displayed. Observe the images under various illuminations, zoom in/out, crop and fit the image to screen as well as perform manual security feature checks.



#### 1. ZOOM OPTIONS

- **Zoom in (+)**
- **Zoom out (-)**
- **1:1 Zoom:** shows scanned image in actual size
- **Fit Zoom:** fits scanned image to screen

#### Note

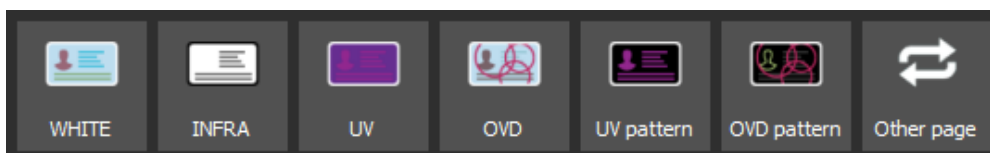
- You can zoom in by left-clicking inside the image and dragging your mouse over the area you wish to enlarge.
- You can use the scroll to zoom in and out.
- To return to the original (fit) view, double-click in the picture.
- When the image is zoomed in, drag the document with the right mouse button to observe the entire document.



## 4. IMAGE TYPES

## Note

The number of image types depends on the capabilities of the given scanner.



- **WHITE:** visible white illumination (with reflection removal)

Enable/Disable **WHITE** illumination by right-clicking on its button.

An image scanned in white light is a simple photo of the document – as it can be seen by the human eye. It is usable for human inspection and for examination of background pattern or face photo.



- **INFRA**: B900 infrared illumination

Enable/Disable **INFRA** illumination by right-clicking on its button.

In this illumination, the background patterns are not visible, so optical recognition algorithms provide better results.





- OVD

Enable/Disable [OVD](#) illumination by right-clicking on its button.

The Passport Reader system is capable of visualizing and removing simple holograms and most types of [OVI](#) patterns. Holograms can be observed by viewing the **OVD** image or the **OVD pattern (clean OVD)** image. In the case of the latter one, just the hologram can be seen from the document.



OVD



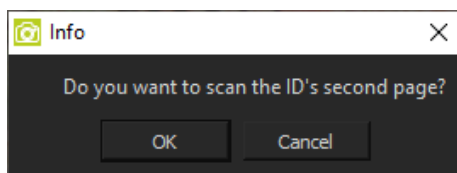
OVD pattern



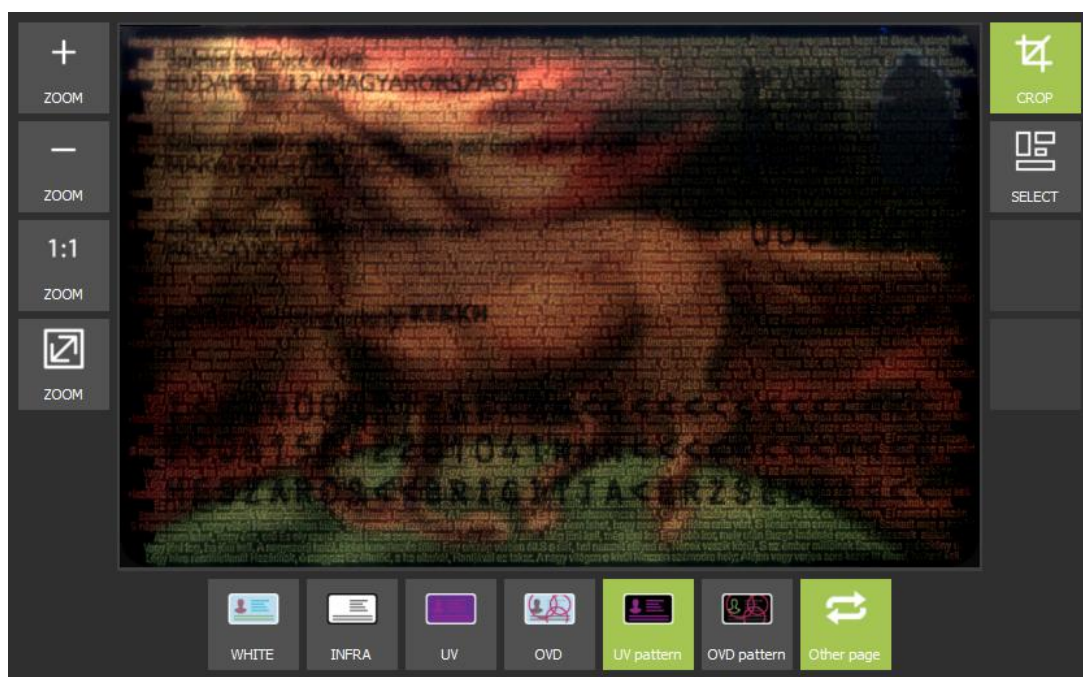
- **Other page**

Enable/Disable **Other page** by left-clicking on its button.

Select this option to check the back side of the read double paged documents. When the **DUAL PAGE** function is enabled, after scanning the front side of the document, the application asks the user if the back side of the document is needed. In case of clicking on the **[OK]** button, Authentication Checker waits 10 seconds for the second side of the document.



When the scanning of both sides is finished, enable the **Other page** option and select the illumination source (e.g., white, infra, UV, OVD, UV pattern, OVD pattern) under which the back side of the scanned document is to be checked.



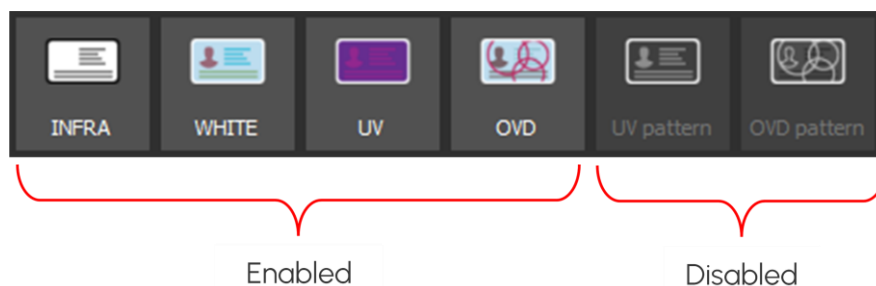
**Note**

**DUAL PAGE** function only operates automatically, on the condition of the document being recognized by the VIZ OCR engine. For more information on VIZ OCR engine, see [ADAPTIVE RECOGNITION website](http://www.adaptiverecognition.com).

In the **VIEWER** section two image types can be examined alternately. Select one of the required image types by clicking on its icon, then click on the other and continue clicking on it as long as it is necessary. Thereby the two selected images will alternate. This way both lights can be observed without diverting the attention of the operator or moving the mouse.

**Note**

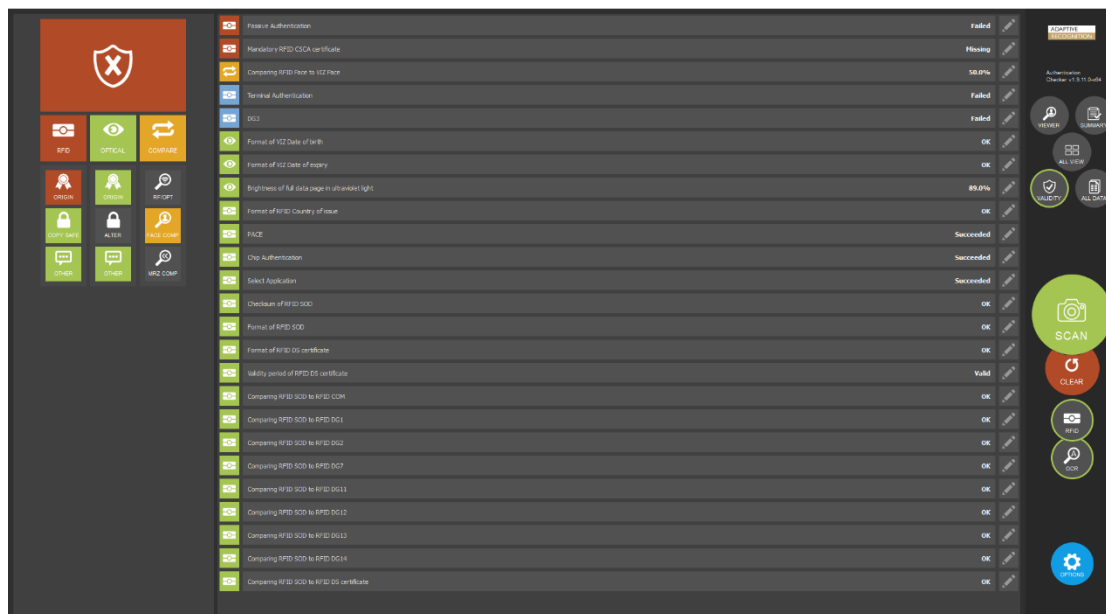
Use the right mouse click to enable/disable the several illuminations of the application. When disabled, the icon is grey. When enabled, the icon is colored.

**Note**

If you click on the **ALL VIEW** button, you will get back to the divided view.

### 4.6.2. VALIDITY

In the **VALIDITY** section the results of the authenticity checks are displayed, including digital data verification (**RFID**), optical (**OPTICAL**) and comparison checks (**COMPARE**).



#### 1. OVERALL RESULT

<b>GENUINE</b>	<b>WARNING</b>	<b>FAILED</b>
This document has been found genuine. See confidence rates in the chart.	Questionable authentication results or reading failures. See details in the chart. Manual inspection is recommended.	Unsatisfactory authentication results or reading failure of key data. In-depth manual inspection is recommended.

**Note**  
If you click on the symbol, you will get the results of every extracted data in the chart.

**Note**  
Some tests are not executed by the Passport Reader System, but by this program. The results of these tests currently do not count into the overall result and do not appear in this panel. They only appear in the **SUMMARY** section.

## 2. AUTHENTICATION CATEGORIES

- **RFID:** authentications in relation to e-documents (performing various access control functions and checking data integrity/genuineness of the chip)
- **OPTICAL:** security checks of optical security features, including ink, paper material, pattern matching using various illuminations, etc.
- **COMPARE:** printed vs. digital data comparison checks (including MRZ and face photo)

### Note

If you click on one of the categories, you will get exclusively its results in the chart.

## 3. AUTHENTICATION ELEMENTS

Each category has 3 elements:

### RFID

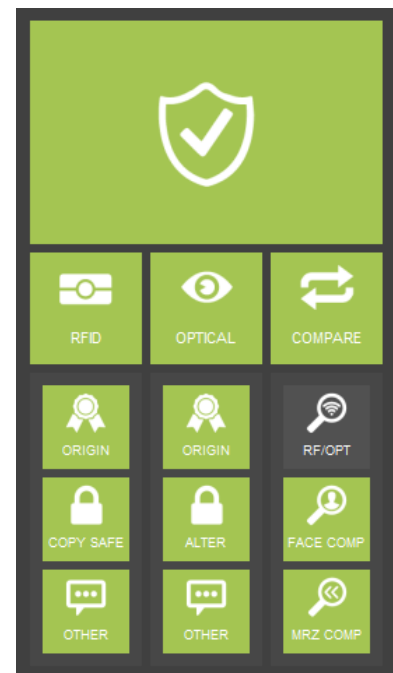
- **ORIGINALITY:** Checks if the data on the RF chip of the electronic document is authentic and unforged
- **COPY SAFE:** Uncovers cloned RF chips
- **OTHER:** Checks which do not belong to the previous two elements

### OPTICAL

- **ORIGINALITY:** Checks if the physical document is authentic
- **ALTERATION:** Checks if the document data has been tampered with
- **OTHER:** Checks which do not belong to the previous two elements

### COMPARE

- **RF/OPT:** –
- **FACE COMPARISON:** Compares the VIZ face (the printed face photo on the document) to the RFID face (stored in the chip)
- **MRZ COMPARISON:** Compares MRZ (on the document) to RFID MRZ (stored in the chip)



### Note

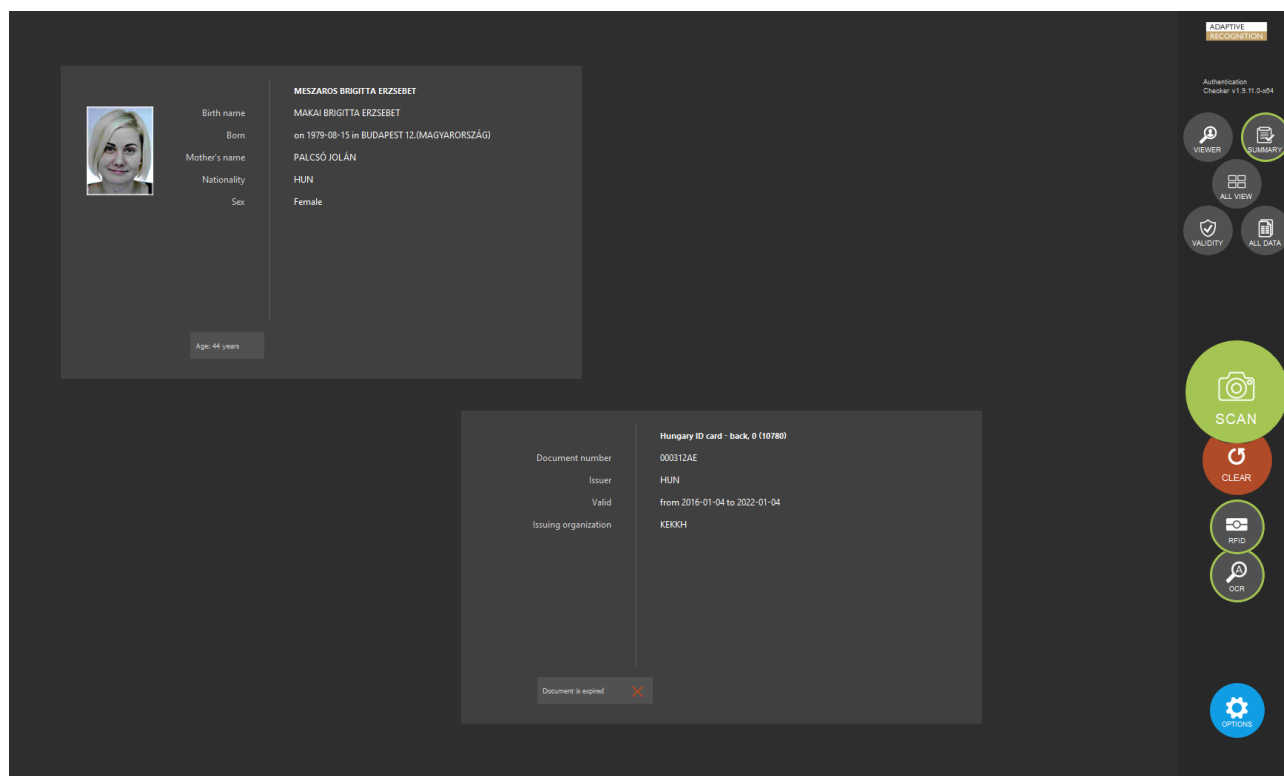
If you click on one of the elements, you will get exclusively its results in the chart.





### 4.6.3. SUMMARY

In the **SUMMARY** section, selection of the essential personal and document data is displayed. The scanned data is displayed in two separate windows depending on the data type (personal or document data).



**SUMMARY** section summarizes the result of the scanning process.

It displays:

- essential personal information: name, birth name, date of birth, nationality, sex, face photo
- essential document information: document type, document number, document issuer country, document validity, issuing organization
- feedback:
  - document is expired/document is not expired/document with a close expiry date
  - age
  - document is a specimen
  - unknown document

#### Note

If you click on the **ALL VIEW** button, you will get back to the divided view.







## 4.7. CERTIFICATES

For successful authentication, the reader needs digital certificates from the document issuer authorities. This software contains these certificates for currently used passports, but in order to support the latest documents, the certificates should be updated from time to time.

### Hint

The Passport Reader software package is implemented with German Master List that includes [CSCA](#) certificates of hundreds of documents.

You may download and use the latest version of this master list from <https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/ElekAusweise/CSCA/GermanMasterList.html>



## 5. FULL PAGE READER APPLICATION

ADAPTIVE RECOGNITION provides its Full Page Reader (FPR) application included in the Passport Reader (PR) software package. Full Page Reader application is able to fully exploit the ADAPTIVE RECOGNITION document reader devices' capabilities on user level.

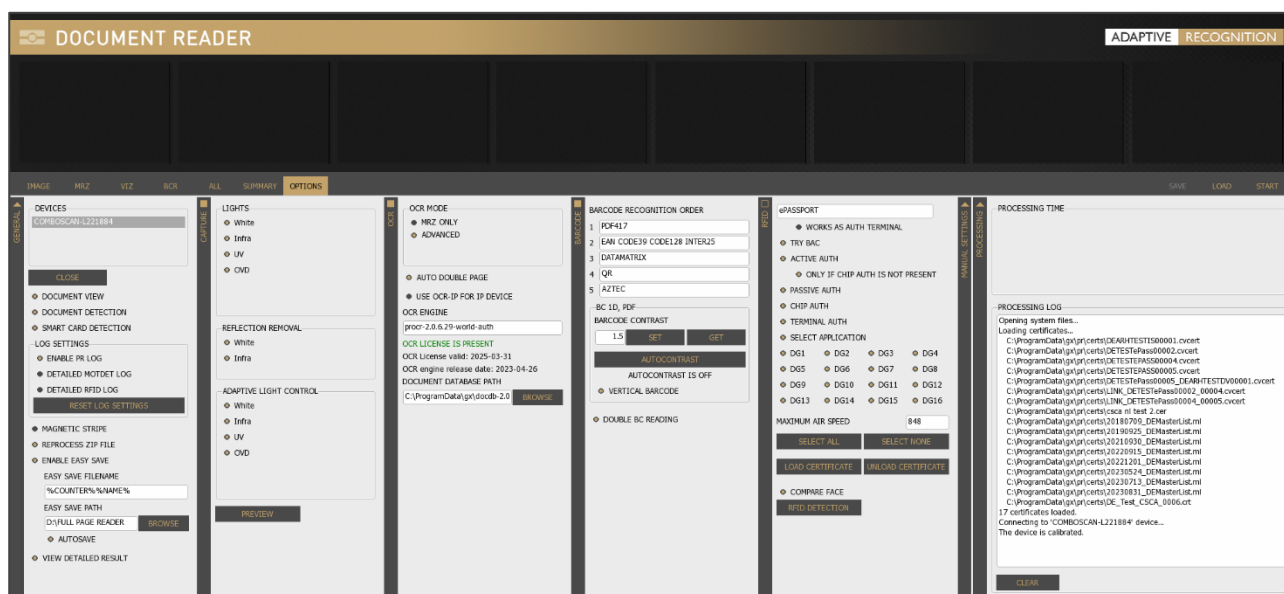
It provides:

- images scanned by different illumination sources (white, infra, UV)
- OCR mode to reach MRZ, VIZ data and read different barcode types
- optical and RFID authentications

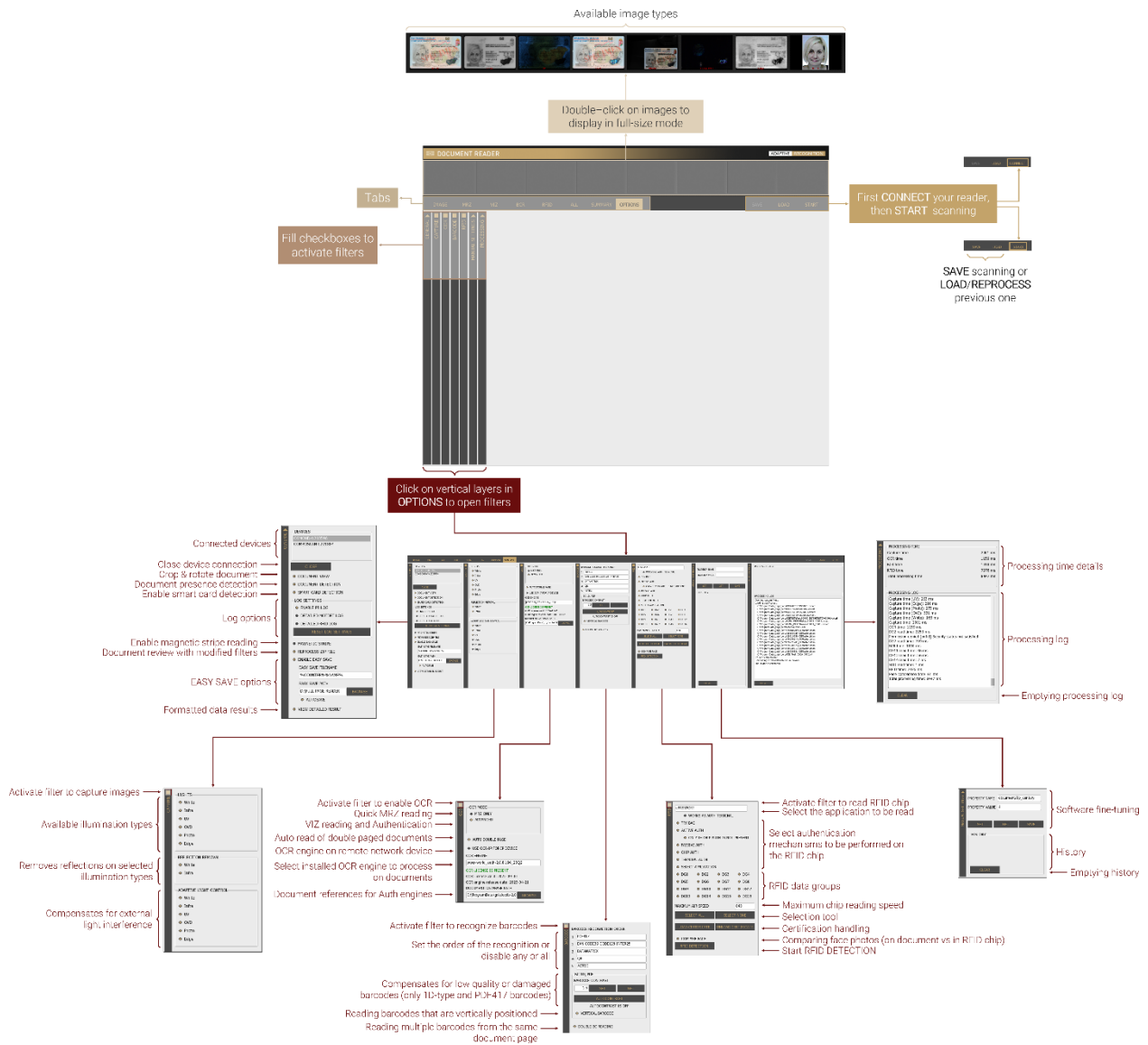
This chapter is going to show you the functions of the app and the methods of the use.

The structure of this section is the following:

- First, the device overview and its accessing will be discussed.
- Next, a closer look will be taken at the tabs of the application.
- Then, the user will be guided through the settings of the Options tab menu.
- Finally, a list of frequently asked questions is expounded.



### 5.1. OVERVIEW



## 5.2. REQUIREMENTS

- ADAPTIVE RECOGNITION ID/Passport Reader device(s) connected to the PC
- PC: minimum 2 GHz CPU and 1GB RAM
- OS: 32/64-bit Windows XP/Vista/7/8/8.1/10/11 or Linux

### Note

To make the most of the ADAPTIVE RECOGNITION document reader device and the application, it is recommended to use the VIZ AUTH engine on 64-bit operating systems.

## 5.3. START FULL PAGE READER

- **Windows**

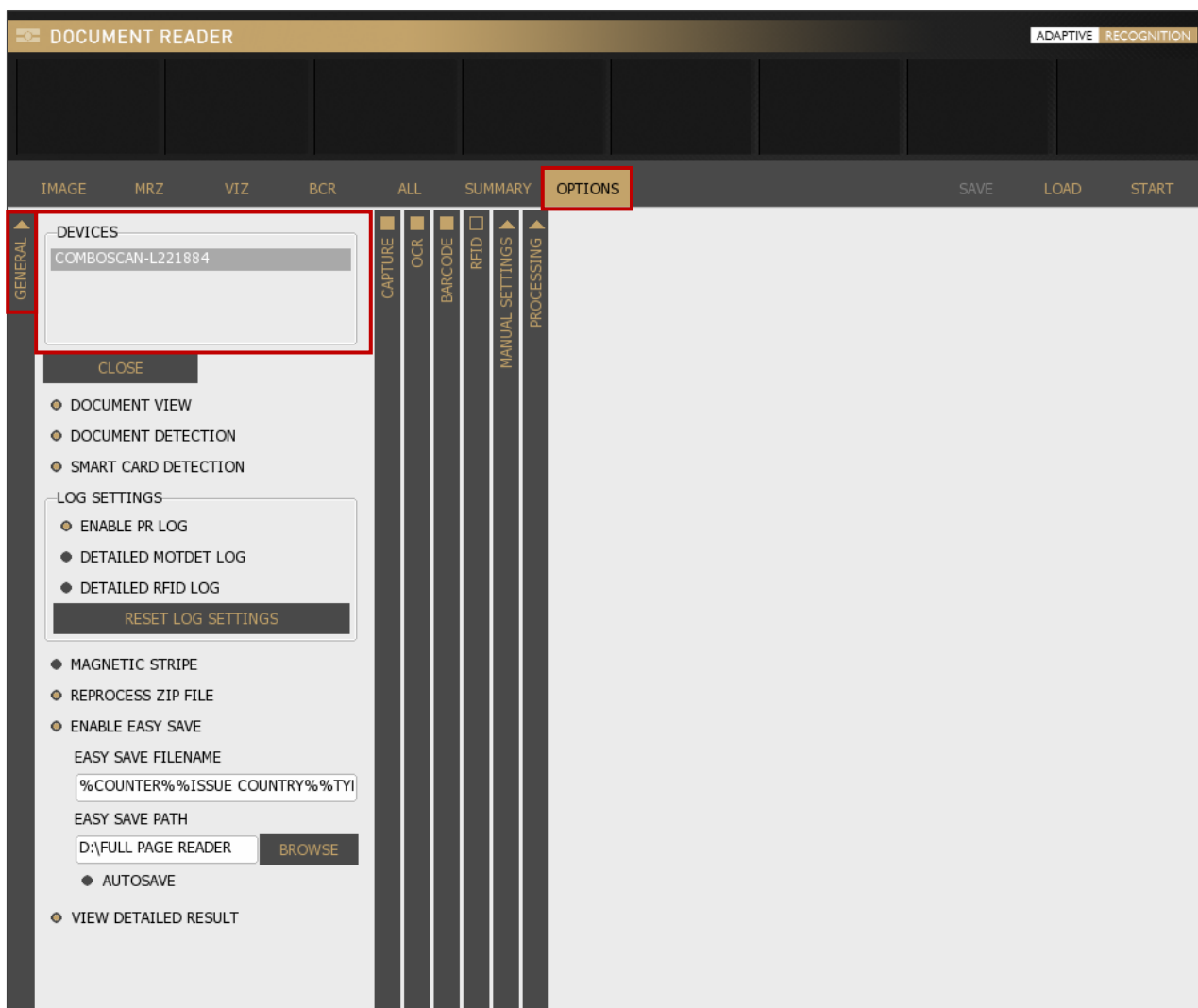
After installing ADAPTIVE RECOGNITION software package on your computer, you will be able to open Full Page Reader from **Windows Start menu > Adaptive Recognition > (Passport Reader) > Full Page Reader x86 or x64** (based on your computer architecture and previous installation).

- **Linux**

Depending on your distribution, you can open command terminal and insert: **FullPageReader** or use dashboard search bar: **Linux Start menu > Applications > Adaptive Recognition Apps > Full Page Reader 64-bit version** (based on your computer architecture and previous installation).

## 5.4. CONNECTION

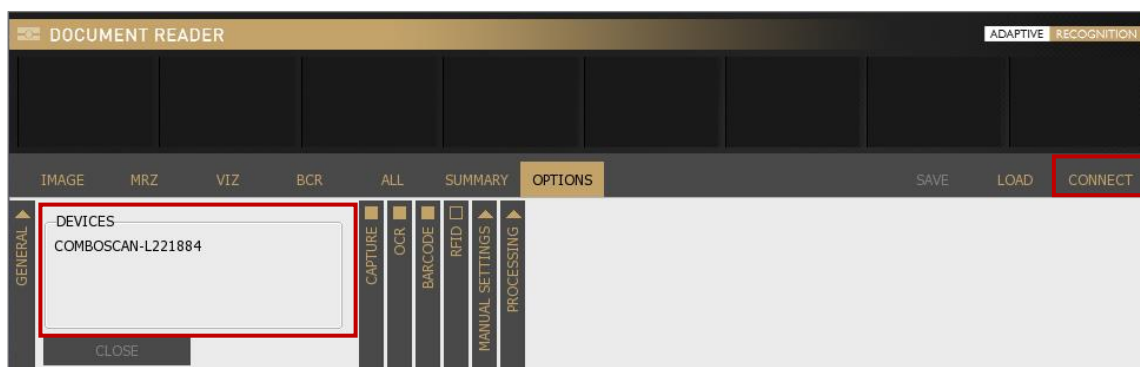
In order to scan with any ADAPTIVE RECOGNITION reader device, you have to make sure that there is an available reader connected to your computer and it is turned on. You can check the **DEVICES** list in the **OPTIONS** tab at **GENERAL** layer.



### Note

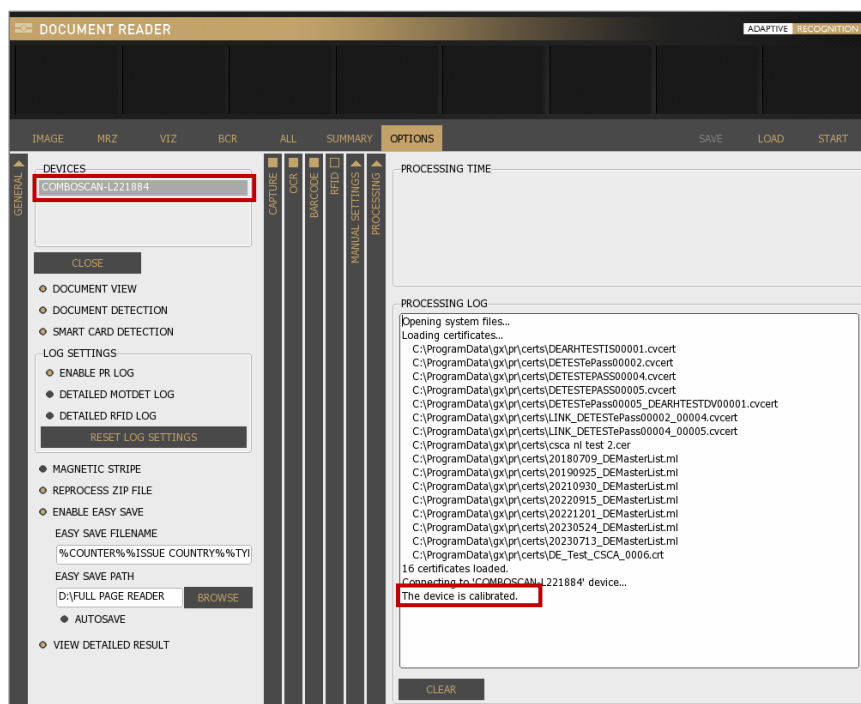
If a device is connected to the computer, but it is not displayed in the **DEVICES** list, then try to change the USB port and/or USB cable. If the issue is not resolved after these changes, reinstall the Passport Reader Software Package as admin. For more information on the installation process, see [Software Installation](#) chapter.

Connect your device by clicking on **[CONNECT]** or clicking on the selected reader in the **DEVICES** list.



Readers hold a factory default calibration file. Reading this file from the device for the first time may take some time, which consequently slows down the system startup. In order to save time, the file is automatically copied to the local file system on the first attempt of using the device to speed up communication. In this case "**Reading calibration file...**" message appears in the **PROCESSING LOG** field.

If your reader is displayed in the **DEVICES** list highlighted in grey and in the **PROCESSING LOG** field you get the "**The device is calibrated.**" message, your reader is connected and ready to use.



### Note

The Product Name contains the following information: the device name, configuration (components) and serial number (without 1<sup>st</sup> digit).

E.g., COMBOSCAN-R164050

## 5.5. TABS



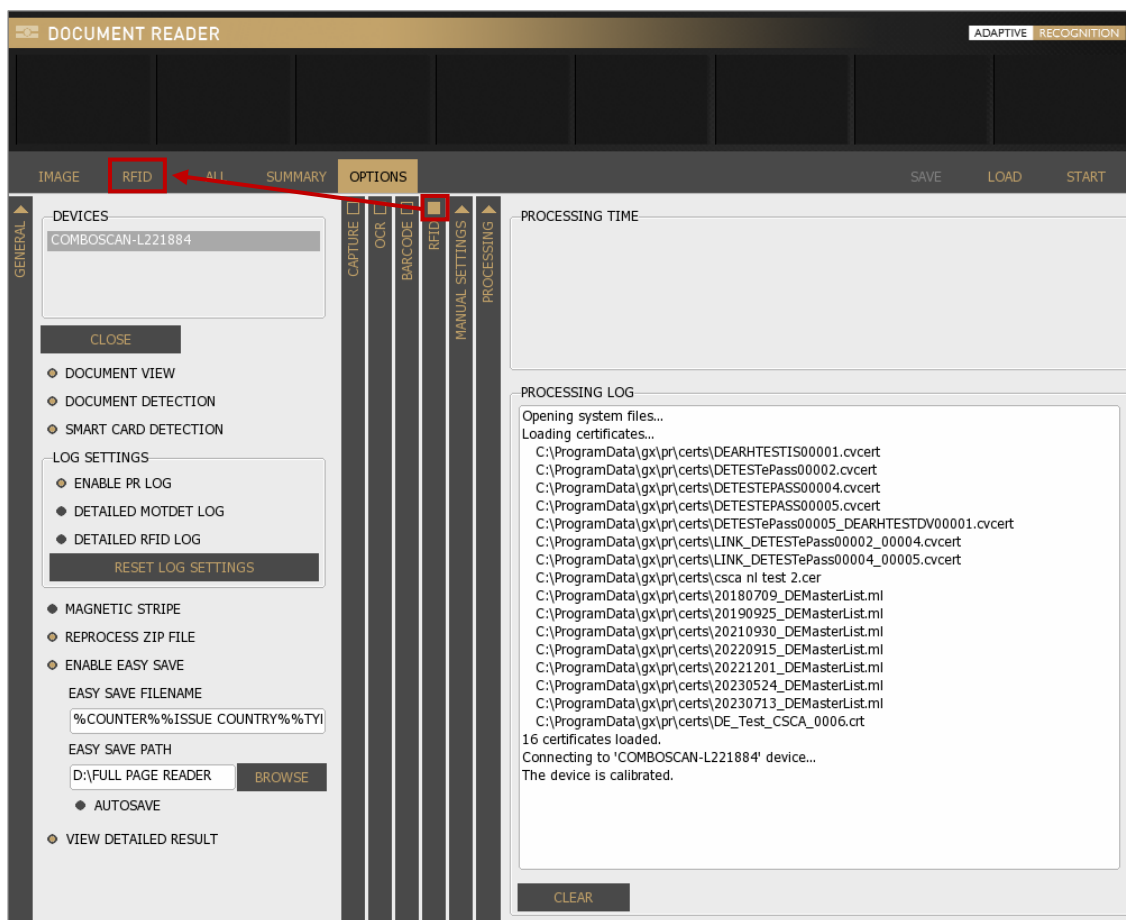
Enable/Disable any of the checkboxes on vertical layers (columns) in the **OPTIONS** tab. These checkboxes switch on/off software functions like image capturing, [OCR](#), barcode and [RFID](#) reading. By switching on functions, you will make visible the corresponding tab menu and related data as well.

### Note

These columns can open and close like a vertical accordion menu.

### Example

Enable RFID reading by filling in the checkbox on the vertical grey layer in the **OPTIONS** tab. This also enables the **RFID** tab to display RFID data after a successful reading process.





## 5.5.1. IMAGE

### 1. IMAGE

On the **IMAGE** layer, the scanned and/or selected images are displayed. Navigate among images by clicking on the thumbnail view on top or double clicking on the ones at details of the document field. Zoom in by left-clicking inside the image and dragging your mouse over the area you wish to enlarge.

#### Note

All images (even the ones at details of the document fields) can be zoomed out by double-clicking.

The screenshot displays the 'DOCUMENT READER' interface. At the top, there are thumbnails for 'White', 'Infr', 'OVD', and 'Clean OVD'. Below the thumbnails is a navigation bar with tabs: 'IMAGE', 'MRZ', 'VIZ', 'BCR', 'ALL', 'SUMMARY', 'OPTIONS', 'SAVE', 'LOAD', and 'START'. The main area shows a scanned Hungarian Identity Card with the following details:

**MAGYARORSZÁG / HUNGARY**  
**SZEMÉLYAZONOSÍTÓ IGAZOLVÁNY / IDENTITY CARD**

Családi és utóneve / Family name and Given name: **MÉSZÁROS BRIGITTA ERZSÉBET**

Nem / Sex: **NO / F**      Állampolgárság / Nationality: **HUN**

Születési idő / Date of birth: **15 08 1979**

Érvényességi idő / Date of expiry: **04 01 2022**

Okmányazonosító / Doc. No.: **000312AE**

CAN: **012345**

Aláírás / Signature: *Resztáros Brigitta Erzsébet*

On the right side, there is a 'DETAILS' panel with the following information:

INFO  
 LIGHT: White  
 FORMAT: BGR  
 DIMENSION: 1686 X 1063  
 RESOLUTION: 500 DPI

Below the details panel, there are several buttons: 'SMOOTH IMAGE', 'ROTATE LEFT', 'ROTATE RIGHT', 'SAVE IMAGE', 'COPY IMAGE', 'VIEW LAYERS', 'VIEW FRAMES', 'VIEW LATENT IMAGE', and 'READ FIELD'.

## 2. DETAILS

### INFO

Light or field ID, format, dimension and resolution information about the selected image are displayed.

### SMOOTH IMAGE

Use linear filtering for zooming by estimating intermediate points among end points automatically. This results a smooth image to display.

### ROTATE LEFT/RIGHT

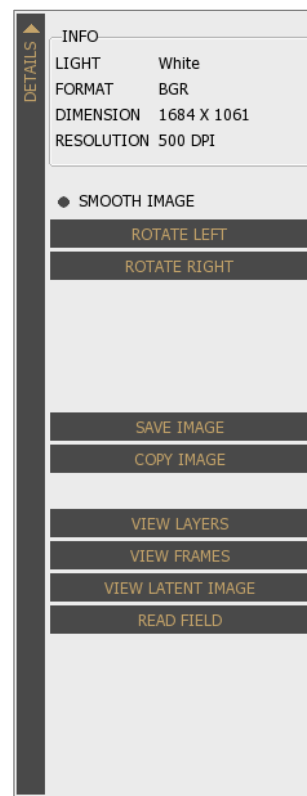
Rotate the image by pressing **[ROTATE LEFT]** or **[ROTATE RIGTH]** button. You can rotate the image by 90 degrees in one direction with one click.

### SAVE IMAGE

Save the scanned image to your system by clicking on the **[SAVE IMAGE]** button.

### COPY IMAGE

Copy the selected image to clipboard by clicking on the **[COPY IMAGE]** button.



#### Note

The **COPY IMAGE** function is available only for Windows OS.

### VIEW LAYERS

By selecting between UV (**VIEW UV FLASHLIGHT**) and **OVD** flashlights (**VIEW OVD FLASHLIGHT**) on the right, you can check the document under these two illumination types separately. If you do not choose from these flashlights, you can grab the corner/edge of a given layer (except for infra) to optically remove each and every layer from the image of the scanned ID document by left-click. Check slider view too by holding-right-click.

**Note**

After optically removing the UV or OVD layer, the order of the remaining optically removable layers is fix following a natural order.



### VIEW FRAMES

This function displays a frame of the selected reading field. **MRZ**, **VIZ**, **BARCODE** and **ERROR FRAMES** can be displayed around the original location of the data. Select the frame you wish to display from the available options.



## VIEW LATENT IMAGE

**Important!**

**VIEW LATENT IMAGE** function works well on high-resolution images (e.g., images scanned by Osmond devices).

It displays the JURA IPI security feature. IPI is encrypted information in the face photo part of the document (passport or ID) that can be made visible either by special lenses or ADAPTIVE RECOGNITION document reader devices.

**Note**

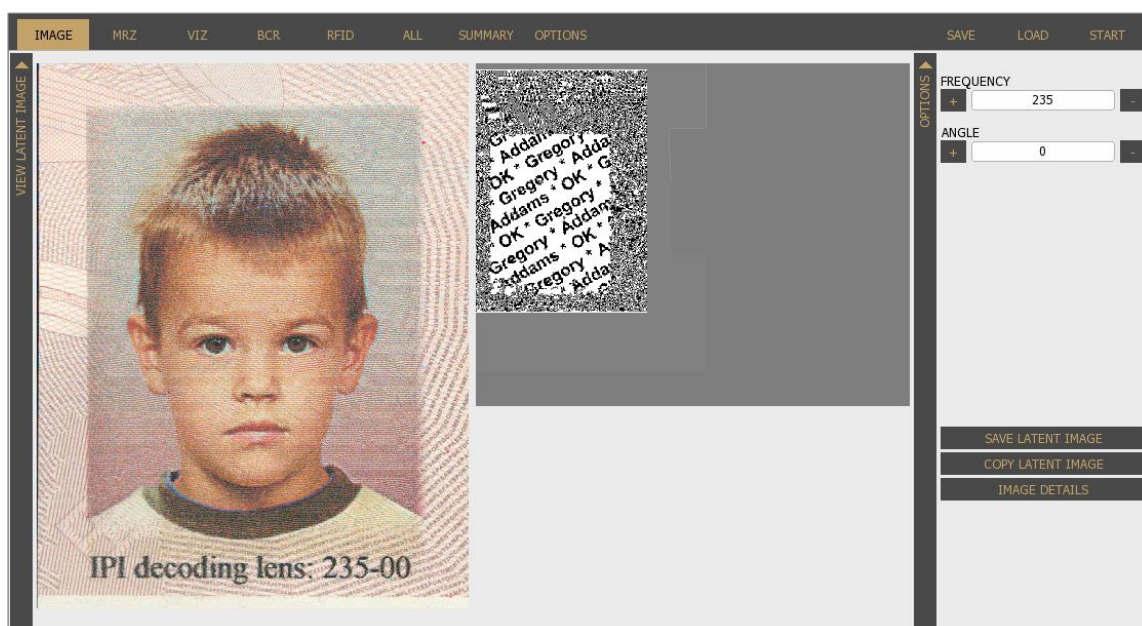
To check the JURA IPI security feature, enable **Photo** camera on **CAPTURE** layer in the **OPTIONS** tab and click on the **Photo** image from the thumbnail images.

The **Photo** light is only available for **Osmond USB models** manufactured from December 2022.

**Note**

You need to specify the **FREQUENCY** and **ANGLE** values to make this security feature visible. These values can vary by documents.

Specify these values by filling out the corresponding fields.



## READ FIELD

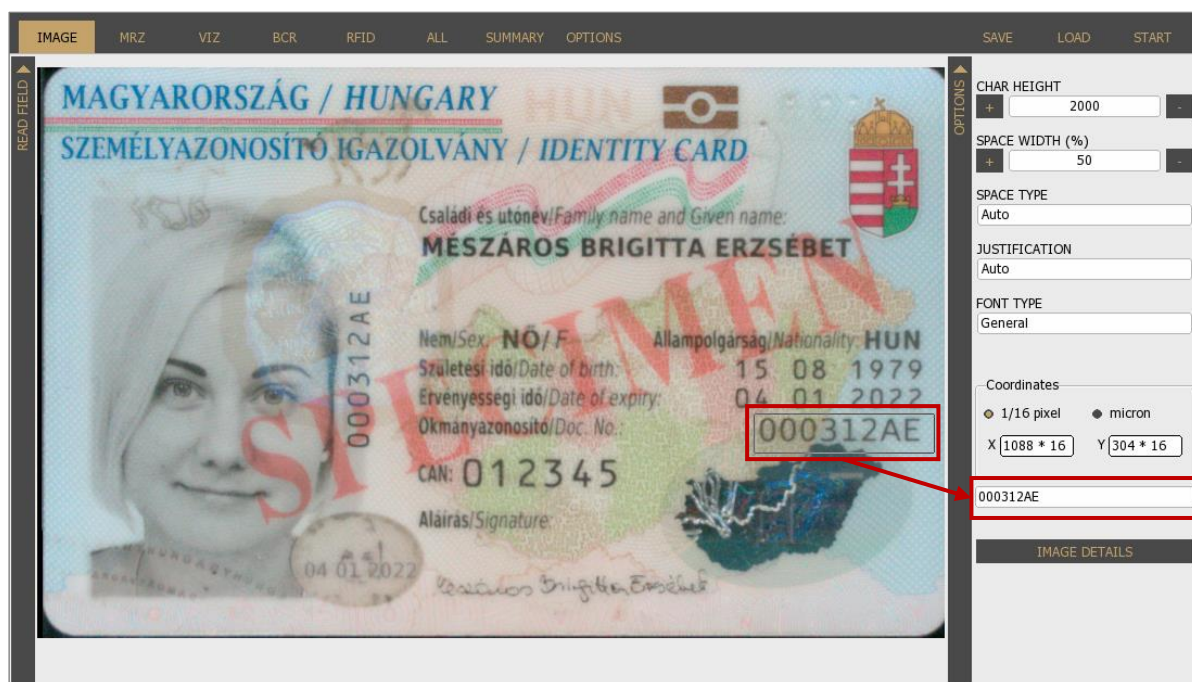
## Note

This function is only available with engines 2.0.6.xx.

The **READ FIELD** function is equivalent to manual OCR. It can be used on **White** and **Infrared** images. Draw a rectangle around any text or barcode and its content will be displayed in the field at the bottom-right corner of the window. Adjust height/width properties to optimize recognition rate.

## Note

It is suitable for trying out the manual OCR.  
This function has limited ability (only recognizes a few fonts).



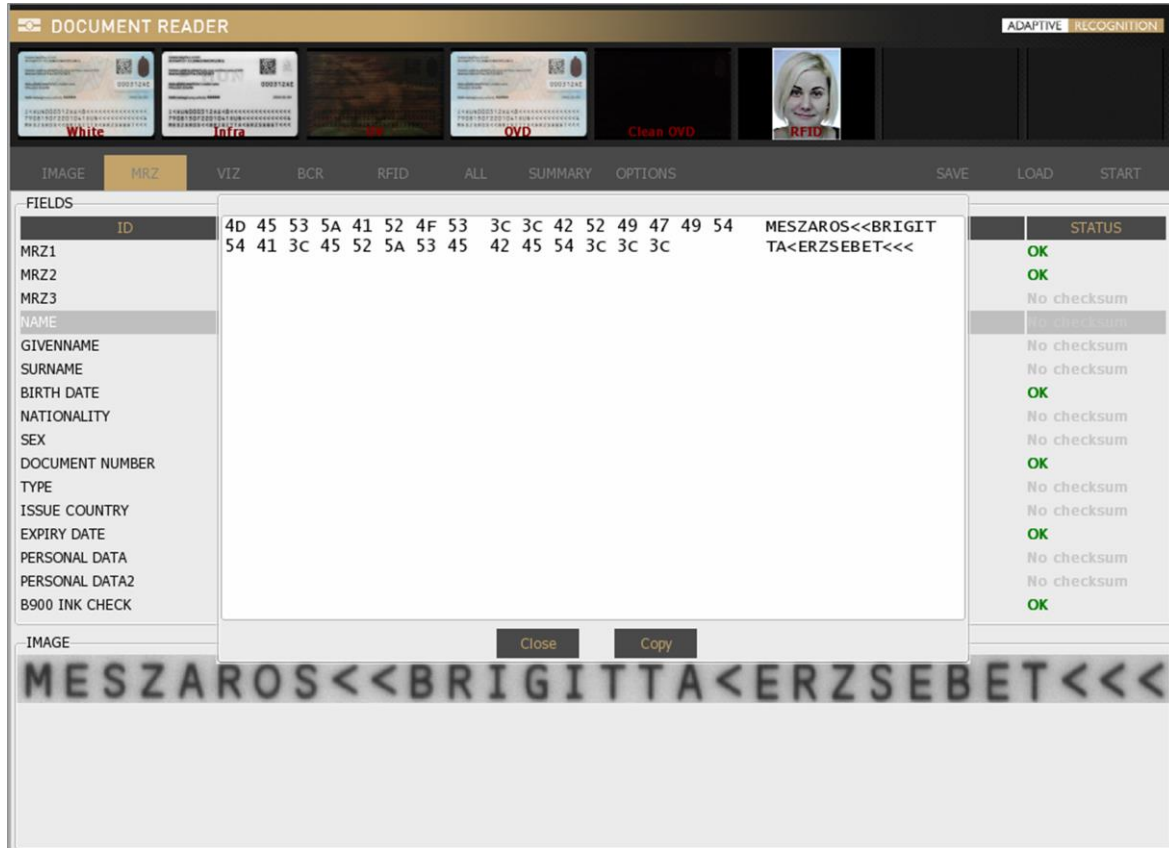
## Note

In order to go back to the **DETAILS** layer, please click on the **IMAGE DETAILS** button.



Note

The extracted MRZ [data fields](#) can be copied to clipboard. Clipboard copy function can be activated by right clicking on any data line and in the pop-up window clicking on the **[Copy]** button.



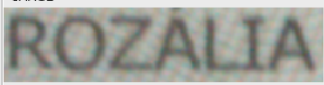
### 5.5.3. VIZ

Displays processed VIZ data and a photo of each field.

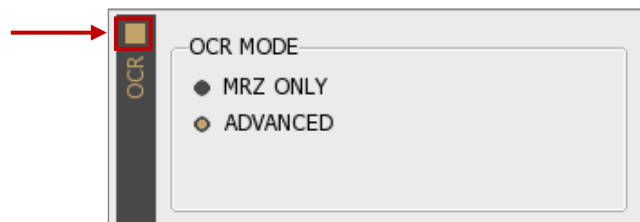
**Note**

The results of the authentication will be displayed in **VIZ** tab. The VIZ and AUTH results will be displayed only if you have special engine, that supports the scanned document.

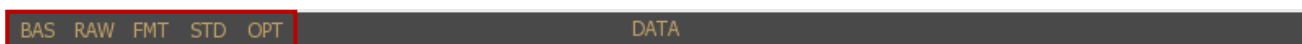
FIELDS		STATUS
ID	BAS RAW FMT STD OPT	DATA
GIVENNAME	ROZALIA	No checksum
SURNAME	SPECIMEN	No checksum
MAIDEN NAME	SPECIMEN ROZÁLIA	No checksum
BIRTH DATE	22 FEB/FEB 78	No checksum
BIRTH PLACE	BUDAPEST07	No checksum
NATIONALITY	MAGYAR/HUNGARIAN	No checksum
SEX	N/F	No checksum
DOCUMENT NUMBER	BH0002014	No checksum
TYPE		No checksum
ISSUE COUNTRY	HUN	No checksum
ISSUE DATE	01 JAN/JAN 15	No checksum
EXPIRY DATE	01 JAN/JAN 20	No checksum
ISSUE ORG	KEKKH	No checksum
DOCUMENT TYPE	PP	No checksum
DOCUMENT PAGE	D	No checksum
DOCUMENT SUBTYPE	2012	No checksum
FACE		No checksum

To see this tab, fill in OCR checkbox on the **OPTIONS / OCR** layer and select **ADVANCED** filter therefore MRZ and VIZ tabs are enabled.



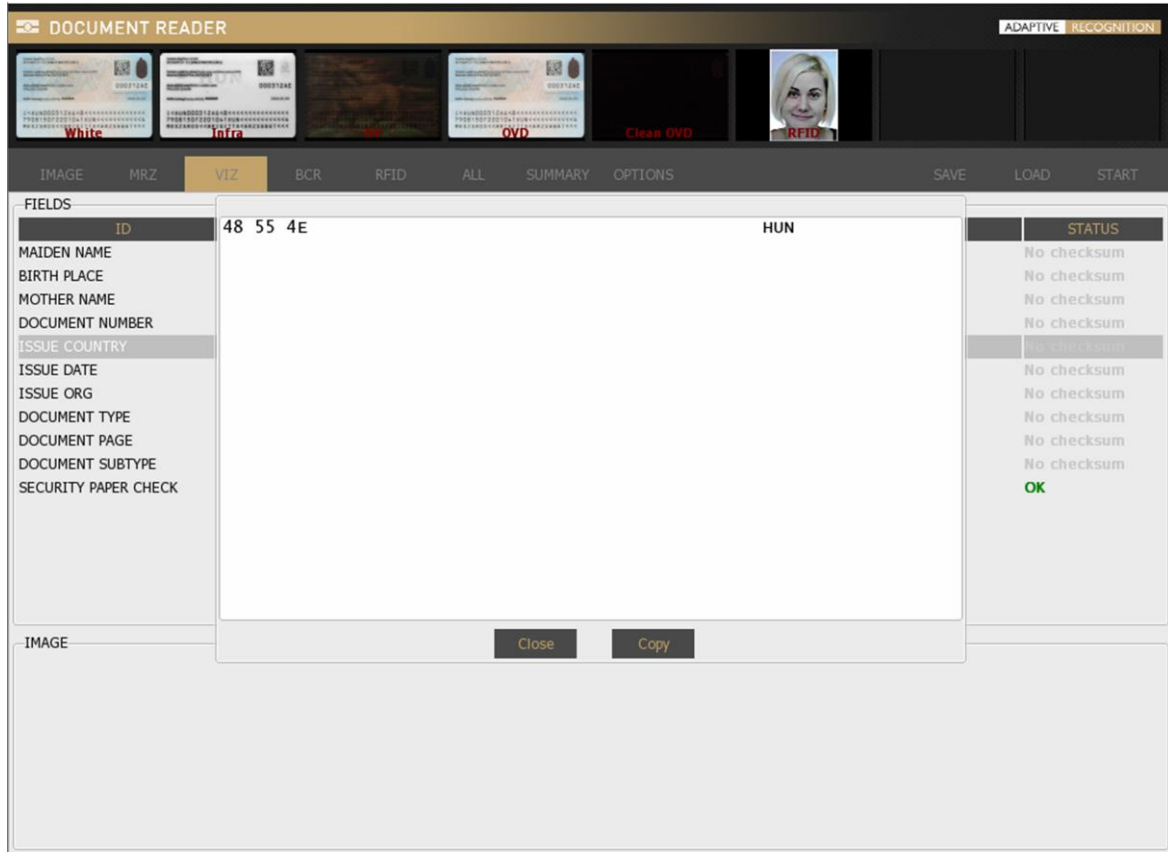
Select [VIEW DETAILED RESULT](#) filter to review formatted data. Choose format in the header of the **DATA** column.





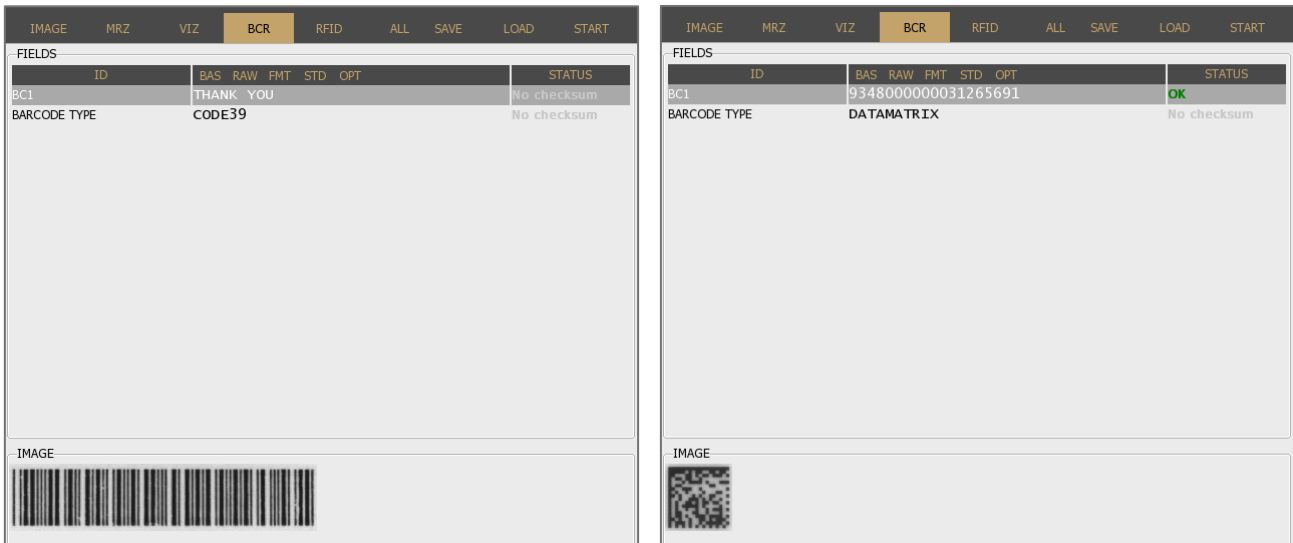
Note

The extracted VIZ [data fields](#) can be copied to clipboard. Clipboard copy function can be activated by right clicking on any data line and in the pop-up window clicking on the **[Copy]** button.

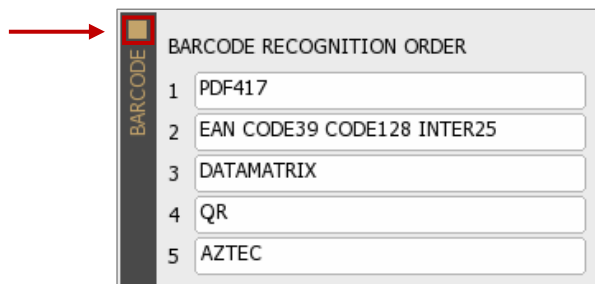


### 5.5.4. BCR

[BCR](#) displays barcode data and a photo of the barcode itself.



To see this option, enable barcode recognition on **OPTIONS / BARCODE** layer by filling in the checkbox on the vertical layer.

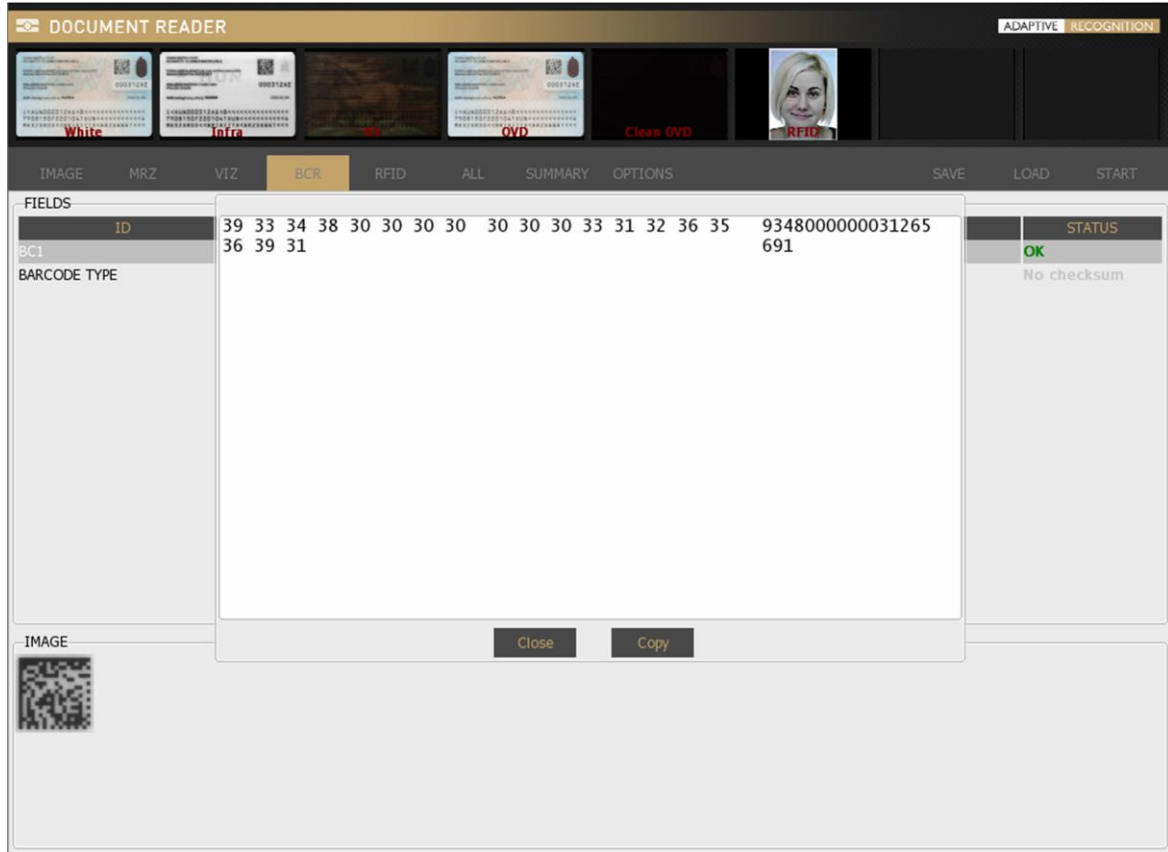


**Note**

For more information on customizing the barcode settings, see [Barcode](#) chapter.

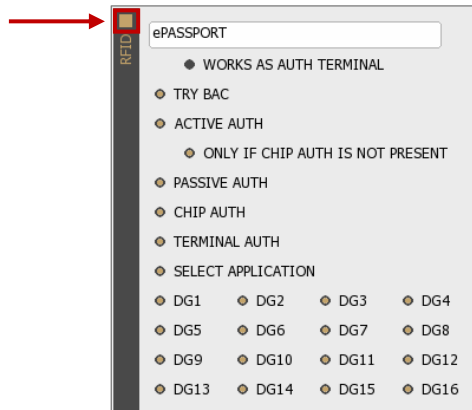
Note

The extracted barcode [data fields](#) can be copied to clipboard. Clipboard copy function can be activated by right clicking on any data line and in the pop-up window clicking on the **[Copy]** button.



### 5.5.5. RFID

Displays RFID chip data. To see this option, enable RFID reading in **OPTIONS** by filling in the checkbox of the **RFID** vertical layer.



FILES			FIELDS							
NAME	BYTE SIZE	READ TIME	ID	BAS	RAW	FMT	STD	OPT	DATA	STATUS
ECARD INFO	0 Bytes	0 ms	SERIAL NUMBER	08519923						No checksum
COM	28 Bytes	1 ms	CARD TYPE	ISO 14443-4/A						No checksum
DG1	95 Bytes	740 ms	CARD CAP	ATS: 0C 78 F7 B1 02 80 31 B9 73 84 21 60						No checksum
DG2	12604 Bytes	3029 ms								
DG3	0 Bytes	148 ms								
DG7	6414 Bytes	921 ms								
DG11	254 Bytes	251 ms								
DG12	14 Bytes	169 ms								
DG13	23 Bytes	170 ms								
DG14	395 Bytes	1 ms								
SOD	2264 Bytes	1 ms								

BAC PACE COM DG1 DG2 DG3 DG4 DG5 DG6 DG7 DG8 DG9 DG10 DG11 DG12 DG13 DG14 DG15 DG16 CVCA SOD Chip Auth Passive Auth Active Auth Terminal Auth

**Note**  
 RFID function turns off automatically, if there is no RFID reader module built in the device.





Note

The extracted [data fields](#) displayed in the **ALL** tab can be copied to clipboard. Clipboard copy function can be activated by right clicking on any data line and in the pop-up window clicking on the **[Copy]** button.

The screenshot shows the 'DOCUMENT READER' software interface with the 'ADAPTIVE RECOGNITION' logo. At the top, there are icons for different scanning methods: White, Infra, UV, OVD, Clean OVD, and RFID. Below these are tabs for 'IMAGE', 'MRZ', 'VIZ', 'BCR', 'RFID', 'ALL' (selected), 'SUMMARY', and 'OPTIONS'. There are also buttons for 'SAVE', 'LOAD', and 'START'.

The main area displays a table of extracted data fields:

FIELDS	Value	STATUS
ID	30 30 30 33 31 32 41 45 000312AE	No checksum
MRZ SURNAME		OK
MRZ BIRTH DATE		No checksum
MRZ NATIONALITY		No checksum
MRZ SEX		No checksum
MRZ DOCUMENT NUMBER		OK
MRZ TYPE		No checksum
MRZ ISSUE COUNTRY		No checksum
MRZ EXPIRY DATE		OK
MRZ PERSONAL DATA		No checksum
MRZ PERSONAL DATA2		No checksum
MRZ B900 INK CHECK		OK
VIZ MAIDEN NAME		No checksum
VIZ BIRTH PLACE		No checksum
VIZ MOTHER NAME		No checksum
VIZ DOCUMENT NUMBER		No checksum
VIZ ISSUE COUNTRY		No checksum

A pop-up window is open over the 'ID' field, showing the value '000312AE' and a 'Copy' button. Below the table, there is an 'IMAGE' section showing a zoomed-in view of the MRZ characters '000312AE'.

### 5.5.7. SUMMARY

Brief summary of the personal data, document data and the results of the security crosschecks.

[Face compare](#) result is also displayed in the **SUMMARY** tab.

**DOCUMENT READER** ADAPTIVE RECOGNITION

IMAGE MRZ VIZ BCR RFID ALL **SUMMARY** OPTIONS SAVE LOAD START

**PERSONAL DATA**

GIVEN NAME	BRIGITTA ERZSEBET
SURNAME	MESZAROS
MAIDEN NAME	MAKAI BRIGITTA ERZSÉBET
BIRTH DATE	1979-08-15
BIRTH PLACE	BUDAPEST 12. (MAGYARORSZÁG)
MOTHER NAME	PALCSÓ JOLÁN
NATIONALITY	Hungary
SEX	Female

**DOCUMENT DATA**

DOCUMENT TYPE	Hungary ID card - back, 2016 (3772)
DOCUMENT NUMBER	000312AE
TYPE	I
ISSUE COUNTRY	Hungary
ISSUE DATE	2016-01-04
EXPIRY DATE	2022-01-04
ISSUE ORG	XEKKH

**STATUS**

TERMINAL AUTHENTICATION	NO CERTIFICATE AVAILABLE
DG3	FAILED TO READ
MRZ-DG1 COMPARISON	PASSED
SELECT APPLICATION	PASSED
CHIP AUTHENTICATION	PASSED
MRZ	PASSED
B900 INK CHECK	PASSED (1000)
SECURITY PAPER CHECK	PASSED (950)
BC1	PASSED

**VISUAL DATA**

*Handwritten signature: Meszaros Brigitta Erzsébet*

### 5.5.8. OPTIONS

Customize application properties, lights, logs and much more on the **OPTIONS** tab. For more details, please check the [OPTIONS](#) chapter.



### 5.5.9. SAVE

After a reading process, you have the option to save the given document. By default, the software compresses all available images and corresponding data into one **ZIP**, **PDF**, **XML**, **CSV** or **ECZ** file that can be saved to a custom location.

#### Note

The application is able to save encrypted ZIP (ECZ) file. Such files can be decrypted if the appropriate private key is available. Not recommended for personal use. For more information on encrypted save, see the [Encrypted Saving](#) chapter.

### 5.5.10. LOAD

Load scanned documents, including images illuminated by various light sources, as well as corresponding data.

#### Note

This functionality is supported only for **.zip files** that have been saved earlier by ADAPTIVE RECOGNITION passport reader software.

### 5.5.11. CONNECT/START

Use the **[CONNECT]** button to access the selected document reader device or click on **[START]** to begin the scanning process after the device is connected successfully.

#### Note

When reading contact chip card, click on **[START]** to begin the scanning process.

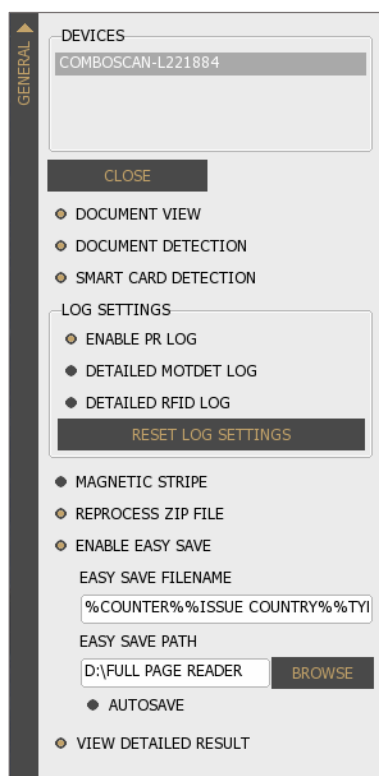
## 5.6. OPTIONS

### 5.6.1. GENERAL

#### DEVICES

OPTIONS > GENERAL > DEVICES

You can see the list of document scanners connected to your computer.



#### Note

You can work with only one device at a time. Also, you can navigate across devices by clicking on the chosen one.

#### DOCUMENT VIEW

OPTIONS > GENERAL > DOCUMENT VIEW

It crops and rotates documents into upright position.

#### Note

Automatic document rotation is performed properly if the **DOCUMENT VIEW** mode and **ADVANCED OCR MODE** are both selected before the starting of the scanning process.

## DOCUMENT DETECTION

OPTIONS > GENERAL > DOCUMENT DETECTION

Enable/Disable the automatic document presence detection mode (motion detection). This feature senses documents placed on the scanner glass surface. Whenever a document is present, the software scans images of the document, as configured in **OPTIONS / CAPTURE**.

## SMART CARD DETECTION

OPTIONS > GENERAL > SMART CARD DETECTION

Devices equipped with smart card reader can execute automatic detection of smart cards when they are inserted into the smart card reader by enabling the **SMART CARD DETECTION** option.

### Note

**SMART CARD DETECTION** is not performed when RFID reading is disabled.

## LOG SETTINGS

OPTIONS > GENERAL > LOG SETTINGS

The Full Page Reader application is equipped with a configurable logging feature to support any troubleshooting activities with ADAPTIVE RECOGNITION support team. By enabling different log options, you can include various events of the passport reader software in the log files.

### Note

Enabling detailed RFID logging is increasing processing time.

- **ENABLE PR LOG:** Enable/Disable logging
- **DETAILED MOTDET LOG:** Enable/Disable detailed logs for motion detection
- **DETAILED RFID LOG:** Enable/Disable detailed logs for RFID communication

### Hint

Your log file is located at:

Windows: c:\ProgramData\gx\pr\pr.log

Linux: ~/tmp/pr.log

## REPROCESS ZIP FILE

OPTIONS > GENERAL > REPROCESS ZIP FILE

When loading **.zip** files saved earlier, the program either process them again with your current software version (**REPROCESS ZIP FILE** is enabled) or displays the original saved data (**REPROCESS ZIP FILE** is disabled). This option enables to perform OCR process and optical authentications using the current FPR application setup.

## ENABLE EASY SAVE

OPTIONS > GENERAL > ENABLE EASY SAVE

The easy save option is designed to make frequent document saving simpler. Just select **ENABLE EASY SAVE**, then set the **filename** and **path**. Afterwards there is no need to browse path and specify filename when saving **.zip** files: the software creates the filename automatically based on the configured template, then saves the **.zip** to the path specified.

ENABLE EASY SAVE  
 EASY SAVE FILENAME  
  
 EASY SAVE PATH  
   
 AUTOSAVE

### Note

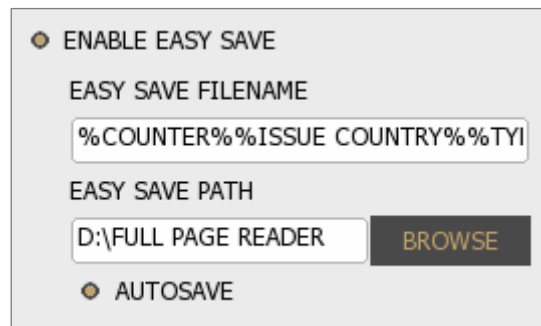
If the **filename** contains the extension, the program saves in the corresponding format (zip, pdf, xml, csv or ecz).

ENABLE EASY SAVE  
 EASY SAVE FILENAME  
  
 EASY SAVE PATH  
   
 AUTOSAVE

If you turn **AUTOSAVE** on, results of all scanning process will be saved automatically. By using this option, there is no need to click on the **[SAVE]** button anymore.

**Note**

When using easy save, determine the filename syntax and path before first scanning. This option will save every scanning into the same path.



ENABLE EASY SAVE

EASY SAVE FILENAME

%COUNTER%%ISSUE COUNTRY%%TYI

EASY SAVE PATH

D:\FULL PAGE READER **BROWSE**

AUTOSAVE

Through easy save the ZIP files cannot only be saved to the local file system, but they can be sent to remote systems through **ftp, ftps, http, https, smtp** protocols. To use this option, the matching URL must be typed to the path (e.g., [ftps://ftp.myserver.com/shares](ftp://ftp.myserver.com/shares)). Afterwards the user settings can be entered by pressing the settings button.

**Note**

The given password is not saved in the computer, you have to type it after every program launch.

**Note**

If you want to save encrypted files which can only be decoded in ADAPTIVE RECOGNITION's network, then, when saving the file select **.ecz** extension. For more information on encrypted autosave, see the [Encrypted Autosave in Full Page Reader](#) chapter.



- **White**

OPTIONS > CAPTURE > LIGHTS > WHITE

Enable **White** illumination by filling in the checkbox.

An image scanned in white light is a simple photo of the document – as it can be seen by the human eye. It is usable for human inspection and for examination of background pattern or face photo.



- **Infra**

OPTIONS > CAPTURE > LIGHTS > INFRA

Enable **Infra** illumination by filling in the checkbox.

The [ICAO 9303](#) document specifies that for reading text and barcodes, images shall be scanned in infrared light (wavelength: 900 nm). In this illumination, the background patterns are not visible, so optical recognition algorithms provide better results.



- **UV**

OPTIONS > CAPTURE > LIGHTS > UV

Note

Check if available on your ID/Passport Reader model.

Enable **UV** illumination by filling in the checkbox.

Images scanned in ultraviolet illumination can be used to check authenticity features (graphics and text printed with special fluorescent ink) which are only visible under UV light.



- **OVD**

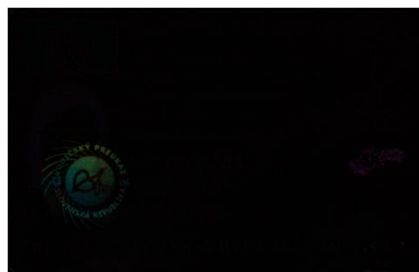
OPTIONS > CAPTURE > LIGHTS > OVD

Enable **OVD** illumination by filling in the checkbox.

The Passport Reader system is capable of visualizing and removing simple holograms and most types of **OVI** patterns. Holograms can be observed by viewing the **OVD** image or the **clean OVD** image. In the case of the latter one, just the hologram can be seen from the document.



OVD



Clean OVD



## 2. REFLECTION REMOVAL (RR)

### OPTIONS > CAPTURE > REFLECTION REMOVAL

Improve OCR processing by eliminating glare on the scanned image of the document. By enabling **RR**, the device takes two pictures of the document from two different angles.

#### Note

Using **RR** is increasing total processing time, because the device takes more pictures.

- **White**

### OPTIONS > CAPTURE > REFLECTION REMOVAL > WHITE

Enable **RR** on white images by filling in the checkbox.



- **Infra**

### OPTIONS > CAPTURE > REFLECTION REMOVAL > INFRA

Enable **RR** on infra images by filling in the checkbox.



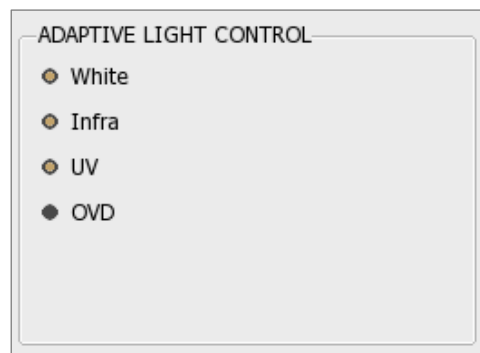
### 3. ADAPTIVE LIGHT CONTROL

OPTIONS > CAPTURE > ADAPTIVE LIGHT CONTROL

ADAPTIVE RECOGNITION's **ADAPTIVE LIGHT CONTROL** feature compensates for external light interference and make routine operation independent of the environment. In order to use this feature, fill in the checkbox(es) you wish to apply before starting the illumination process.

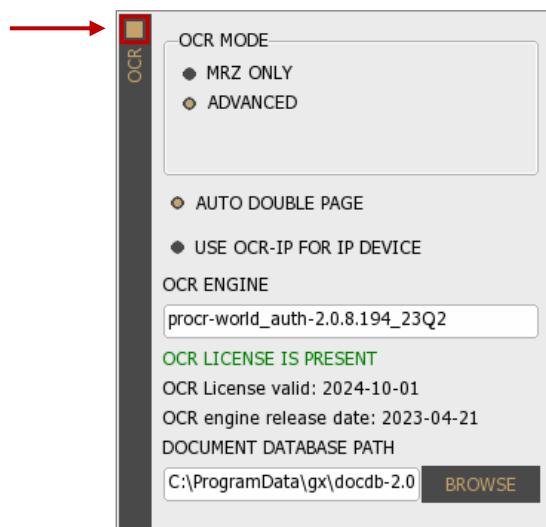
#### Note

Using **ADAPTIVE LIGHT CONTROL** is increasing total processing time, because the device takes more pictures.



### 5.6.3. OCR

Enable **OCR** process by filling in the checkbox on top-left corner of the layer.



#### 1. OCR MODE

OPTIONS > OCR > OCR MODE

Select between two OCR modes to configure the OCR tasks to be performed.

- **MRZ ONLY**

OPTIONS > OCR > OCR MODE > MRZ ONLY

Select **MRZ ONLY** mode to get the data of the MRZ field from any ICAO-9303 standard document. When using this filter, no other OCR-related task is performed in order to ensure the fastest processing time. This option does not return any data from the Visual Inspection Zone (VIZ).

- **ADVANCED**

OPTIONS > OCR > OCR MODE > ADVANCED

Select **ADVANCED** mode to enable (if you have installed before) VIZ (or VIZ+AUTH) engine besides MRZ to read document-specific data from the Visual Inspection Zone of different national documents. When using the device in **ADVANCED** mode, the following OCR-related functionalities are performed automatically:

- UV dull paper check (if the device has a built-in UV illumination source)
- B900 ink check
- Automatic document cropping and rotation
- Face photo cropping and face comparison

**Note**

**ADVANCED** mode is increasing processing time.

PROCESSING LOG	
***** Processing number 5 *****	
Capture time (UV):	1247 ms
Capture time (OVD):	608 ms
Capture time (White):	84 ms
Capture time:	2166 ms
OCR time:	1027 ms
Total processing time:	3426 ms
***** Processing number 6 *****	
Capture time (UV):	1268 ms
Capture time (OVD):	555 ms
Capture time (White):	93 ms
Capture time:	2110 ms
OCR time:	55 ms
Total processing time:	2362 ms

ADVANCED mode

MRZ ONLY mode

## 2. AUTO DOUBLE PAGE

OPTIONS > OCR > AUTO DOUBLE PAGE

Enable **AUTO DOUBLE PAGE** to read double paged documents automatically. When this option is enabled, after scanning the front side of the document, the application asks the user if the back side of the document is needed. In case of clicking on the **[Yes]** button, FPR waits 10 seconds for the second side of the document.

The screenshot shows the 'DOCUMENT READER' application interface. At the top, there are icons for different scanning modes: White, Infra, UV, OVD, and Clean OVD. Below these is a navigation bar with 'IMAGE', 'MRZ', 'VIZ', 'BCR', 'ALL', 'SUMMARY', 'OPTIONS', 'SAVE', 'LOAD', and 'START'. The 'OPTIONS' menu is open, showing 'OCR MODE' with 'MRZ ONLY' and 'ADVANCED' options. The 'AUTO DOUBLE PAGE' option is also selected. A dialog box is overlaid on the screen asking 'Do you want to scan page BACK?' with 'Yes' and 'No' buttons. Other settings like 'SE OCR-IP FOR IP DEVICE', 'ENGINE', 'LICENSE IS PRESENT', and 'DOCUMENT DATABASE PATH' are visible in the background.

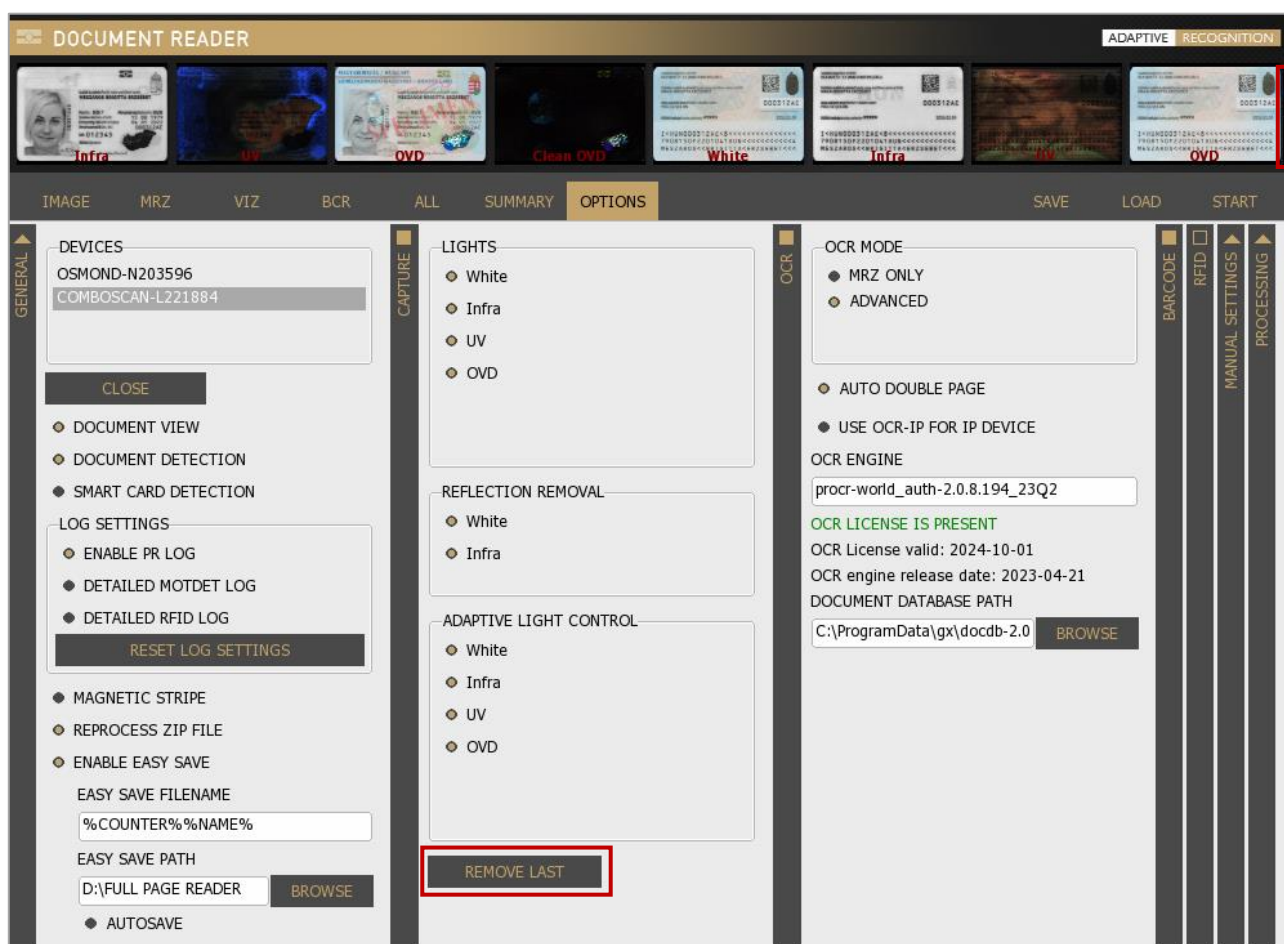
When the scanning of both sides is finished, use the blue colored left and right arrows to navigate among the scanned images.

### Note

Left and right arrows are displayed, when more than 8 images are scanned from a document.

### Note

The images from the last scanning can be removed by clicking on the **[REMOVE LAST]** button located at **CAPTURE** layer.



### Note

**AUTO DOUBLE PAGE** function only operates automatically, on the condition of the document being recognized by the VIZ OCR engine. For more information on VIZ OCR engine, see [ADAPTIVE RECOGNITION website](#).

### 3. USE OCR-IP FOR IP DEVICE

OPTIONS > OCR > USE OCR-IP FOR IP DEVICE

When enabling **USE OCR-IP FOR IP DEVICE** option, for performing OCR, the FPR application uses the OCR engine that can be found on the remote network device.

#### Note

The "**procr-ip**" engine can be selected from the **OCR ENGINE** list, but if selected the document reading will **not be performed with local USB devices**. Therefore, in case of a locally run prwebsrv, do not select the "**procr-ip**" engine from the **OCR ENGINE** list.

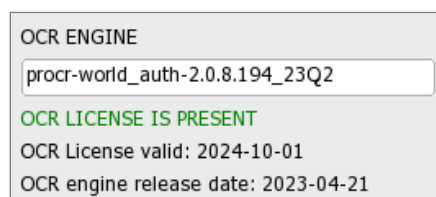
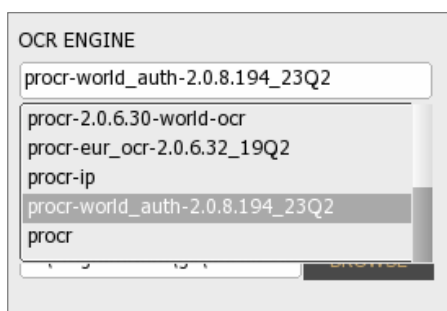
### 4. OCR ENGINE

OPTIONS > OCR > OCR ENGINE

The Optical Character Recognition process of each document is performed by the **OCR ENGINE**. The default package contains the PR OCR engine, which reads the MRZ field from any ICAO 9303 standard document.

In some cases, OCR engines are trained for specific documents in order to provide additional information for authentication and/or VIZ reading (e.g., on ID type). Using such engines involves changing the PR OCR engine.

Select among **installed OCR engines on your computer**, if you have several installed engines. A dropdown list shows your available engine(s). With a left-click you can select your appropriate one. After selection, the software displays a status message about the availability as well as validity and release date of the given engine license.



#### Note

In the case of getting the "**NO OCR ENGINE INSTALLED**" message, please install your OCR engine package.

The passport reader software package and OCR engine are protected by software license. You need valid license to use **PR Software features** (Image capturing, RFID reading), as well as for performing **MRZ OCR+Barcode Reading**. Optionally, you also need license to use any specific OCR engine trained to perform **VIZ reading and Authentication** of certain documents. Licenses are stored on the document scanner device.

The green status message (displayed under OCR engine) indicates valid license.

Possible error messages in processing log, referring to licenses:

- (3:ERRO) [prapi] > (cmd:2008006f) (1012) - Hardware key does not work properly [prapi] (license).

→ It is referring to the **missing PR software license**.

Please, contact your ADAPTIVE RECOGNITION sales representative to ask for license update.

- (3:ERRO) [prdoc] > Ocr read: FAILED: Hardware key does not work properly [gxmodule].

→ It is referring to the **missing VIZ OCR and/or MRZ OCR+Barcode Reading license**.

Please, contact your ADAPTIVE RECOGNITION sales representative to update your licenses.

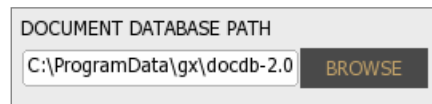
#### Note

For availability and more information on OCR engines and software licenses, please contact your ADAPTIVE RECOGNITION sales representative.

## 5. DOCUMENT DATABASE PATH

### OPTIONS > OCR > DOCUMENT DATABASE PATH

Define the path for reference image database for authentication purposes. The reference images are displayed in the **AUTH** check fields at **VIZ** tab. This path is set by default as you install VIZ OCR+AUTH engine to your computer. The purpose of this function is to allow visual comparison of authenticated document sections with images stored in a reference database. If document database is not set or installed, the authentication feature still operates and its results are returned.



The values of the AUTH fields are in thousandths.

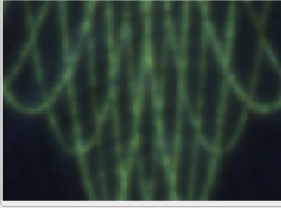
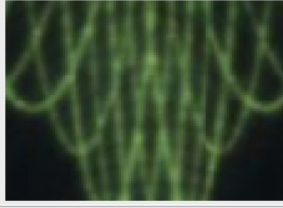
The limits are the following:

- 0-329: **ERROR**
- 330-659: **WARNING**
- 660-1000: **OK**

#### Note

These limits are ADAPTIVE RECOGNITION standard values.



IMAGE		MRZ	VIZ	BCR	RFID	ALL	SUMMARY	OPTIONS	SAVE	LOAD	START	
FIELDS												
ID	BAS	RAW	FMT	STD	OPT	DATA			STATUS			
EXPIRY DATE	01	JAN	JAN	20					No checksum			
ISSUE ORG	KEKKH										No checksum	
DOCUMENT TYPE	PP										No checksum	
DOCUMENT PAGE	D										No checksum	
DOCUMENT SUBTYPE	2012										No checksum	
FACE											No checksum	
SIGNATURE											No checksum	
SECURITY PATTERN COMPOSITI	895										OK	
AUTH1	890										OK	
AUTH2	910										OK	
AUTH3	800										OK	
AUTH4	730										OK	
AUTH5	940										OK	
AUTH41	1000										OK	
AUTH42	1000										OK	
SECURITY PAPER CHECK	950										OK	
IMAGE												
												

Scanned image

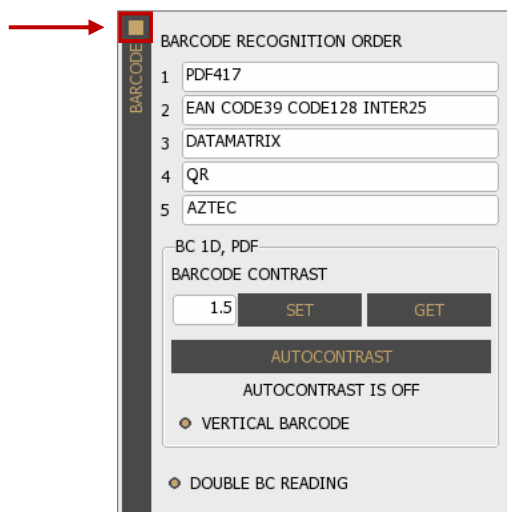
Reference image

**Hint**  
 By double clicking on the corresponding AUTH field, the accurate place of the image fragment will be shown in the complete image.



### 5.6.4. BARCODE

Enable **BARCODE** recognition by filling in the checkbox on top left corner of the layer.



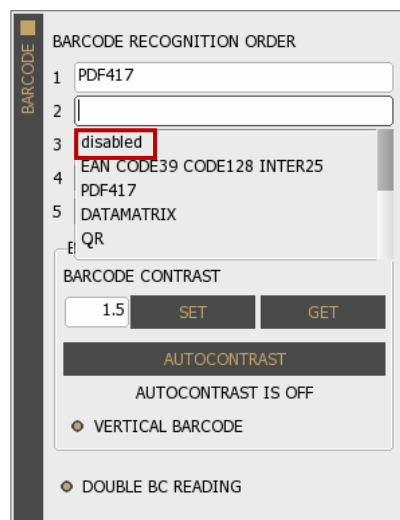
#### Note

If you do not need barcode recognition, disable this option to speed up processing.

### 1. BARCODE RECOGNITION ORDER

OPTIONS > BARCODE > BARCODE RECOGNITION ORDER

Set the order of tries in recognizing barcodes. Different types of barcodes are available to read. You can select your appropriate ones from the dropdown lists. Use **disabled** value for not needed types.



#### Note

Unnecessary barcode detection increases processing time. Select only necessary/possible types.

## 2. BARCODE CONTRAST

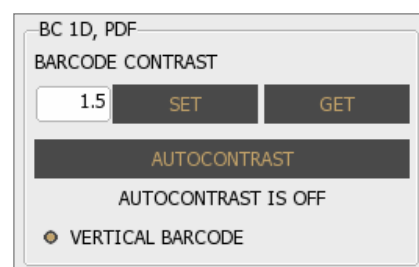
OPTIONS > BARCODE > BARCODE CONTRAST

### Note

The following properties affect only ID-type ([EAN](#), [CODE39](#), [CODE128](#), [INTER25](#)) and [PDF417](#) barcodes.

Set **BARCODE CONTRAST** to improve the accuracy of reading of low quality or damaged barcodes.

- Possible values: **0.3 – 7.0**
- Default value: **1.5**
- Recommended value: **1.2**
- Autocontrast values: **-1, -2** and **-3**



### Hint

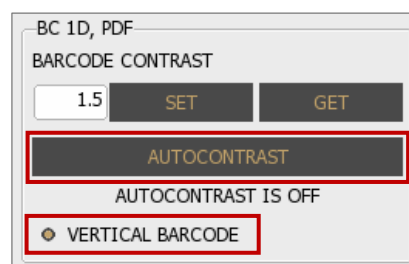
By clicking on the **[GET]** button, you will get the current value.

### Note

For more information on **BARCODE CONTRAST**, please contact [ADAPTIVE RECOGNITION support team](#).

## AUTOCONTRAST

It is recommended to use instead of manual settings. To utilize this function, click on the button. During operation the automation may turn off, thus the current status of the function is displayed below the **AUTOCONTRAST** button.



## VERTICAL BARCODE

Enable/Disable recognition of barcodes that are positioned on the document in vertical orientation.

### Note

Enable this function to maximize the efficiency of barcode reading.

### 3. DOUBLE BC READING

OPTIONS > BARCODE > DOUBLE BC READING

Enable the **DOUBLE BC READING** function in order to scan multiple barcodes from the same document page in a single scanning attempt.

BARCODE

**BARCODE RECOGNITION ORDER**

- 1 PDF417
- 2 EAN CODE39 CODE128 INTER25
- 3 DATAMATRIX
- 4 QR
- 5 AZTEC

BC 1D, PDF


**BARCODE CONTRAST**

**AUTOCONTRAST**

AUTOCONTRAST IS OFF

VERTICAL BARCODE

**DOUBLE BC READING**

IMAGE	MRZ	VIZ	BCR	RFID	ALL	SUMMARY	OPTIONS	SAVE	LOAD	START
<b>FIELDS</b>										
ID	BAS	RAW	FMT	STD	OPT	DATA				STATUS
BC1	9348000000015369758									OK
BC1 (2)	9348000000031265691									OK
BARCODE TYPE	DATAMATRIX									No checksum
BARCODE TYPE (2)	DATAMATRIX									No checksum
<b>IMAGE</b>										
										

### 5.6.5. RFID

View the **RFID** layer in the **OPTIONS** tab to customize the parameters of RFID chip reading: authentications to perform and data groups to read.

RFID Authentication is a process that validates claimed identity of a participant in an electronic transaction. RFID chips may support different types of authentication methods.

#### Note

In the case of **contact chip reading**, the extracted data is displayed in the **RFID** tab.

IMAGE	MRZ	VIZ	BCR	RFID	ALL	SUMMARY	OPTIONS	SAVE	LOAD	START
FILES			FIELDS							
NAME	BYTE SIZE	READ TIME	ID	BAS	RAW	FMT	STD	OPT	DATA	STATUS
ECARD INFO	0 Bytes	0 ms	SERIAL NUMBER	084AB093						No checksum
COM	27 Bytes	0 ms	CARD TYPE	ISO 14443-4/A						No checksum
DG1	93 Bytes	754 ms	CARD CAP	ATS: 09 78 F7 D4 02 80 82 90 00						No checksum
DG2	17017 Bytes	3708 ms								
DG3	0 Bytes	52 ms								
DG7	5421 Bytes	735 ms								
DG11	243 Bytes	90 ms								
DG12	23 Bytes	51 ms								
DG14	745 Bytes	0 ms								
SOD	1890 Bytes	0 ms								

#### 1. ePassport / eID

OPTIONS > RFID > ePassport / eID

Select the application to be read which can be eID or ePassport.

#### 2. TRY BAC

OPTIONS > RFID > TRY BAC

Enable/Disable **TRY BAC** authentication.

**TRY BAC** forces the Basic Access Control ([BAC](#)) in case of appropriate and also inappropriate messages received by the document. The protocol for Basic Access Control is specified by ICAO. When performing Basic Access Control, the terminal authenticates the user by confirming they have physical access to the [MRTD](#)'s data page. Such confirmation is done by requesting MRZ data (document number, birth date and expiry date) from user to start the BAC process.

**RFID** ePASSPORT

- WORKS AS AUTH TERMINAL
- TRY BAC
- ACTIVE AUTH
  - ONLY IF CHIP AUTH IS NOT PRESENT
- PASSIVE AUTH
- CHIP AUTH
- TERMINAL AUTH
- SELECT APPLICATION
  - DG1    DG2    DG3    DG4
  - DG5    DG6    DG7    DG8
  - DG9    DG10    DG11    DG12
  - DG13    DG14    DG15    DG16
- MAXIMUM AIR SPEED
- 
- 
- COMPARE FACE
-

### 3. ACTIVE AUTH

#### OPTIONS > RFID > ACTIVE AUTH

Enable/Disable **ACTIVE AUTHENTICATION**.

Active Authentication protects against chip cloning by verifying if DG15 is not a copy. It is basically a two-way interaction between the reader and the document that involves communication with the non-accessible memory of the chip. AA result is valid only after the Passive Authentication has been executed successfully.

### 4. PASSIVE AUTH

#### OPTIONS > RFID > PASSIVE AUTH

Enable/Disable **PASSIVE AUTHENTICATION**.

Passive Authentication is used to check if the data on the RF chip of the electronic document is authentic and unforged.

The authentication process includes two main steps:

- Authenticating the [SOD](#)
- Verifying the hashes of each DG file by comparing them to the hashes stored in SOD

For authenticating the SOD, the [CSCA](#) certificate of the document is required. Such certificate should be downloaded from the website of the document issuing authority, from ICAO PKD or via other trustworthy source. Once downloaded, it should be copied to: **C:\ProgramData\gx\pr\certs** (Windows) or **/var/gx/pr/certs** (Linux) or loaded manually with the **[LOAD CERTIFICATE]** button.

Supported certificate formats:

- .cer
- .crt
- .crl
- .cvcert
- .der
- .ldif
- .ml
- .pem

#### Note

The corresponding private key must have the same name as the cvcert it belongs to, only with pkcs8 extension.

 Hint

The Passport Reader software package is implemented with German Master List that includes CSCA certificates of hundreds of documents.

You may download and use the latest version of this Master List from <https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/ElekAusweise/CSCA/GermanMasterList.html>

## 5. CHIP AUTH

### OPTIONS > RFID > CHIP AUTH

Enable/Disable **CHIP AUTHENTICATION**.

Chip Authentication is used to uncover cloned RF chips: it is a more advanced alternative to Active Authentication. Similarly to AA, CA also involves communication with the secure memory of the chip. CA is obligatory in EU passports.

## 6. TERMINAL AUTH

### OPTIONS > RFID > TERMINAL AUTH

Enable/Disable **TERMINAL AUTHENTICATION**.

TA is designed to provide additional protection to sensitive data (fingerprint (DG3) and iris (DG4)) stored in the RFID chip. Without performing TA, the passport denies access to such biometric information as TA requires the inspection system to prove that it is authorized to access the sensitive information within the RFID chip.

TA consists of two major phases:

1. Building the certificate chain of public keys
2. Verifying if the terminal has the private key using the certificate chain

In order to perform both phases, the DV public and IS public certificates as well as the IS private key are required. These files can be loaded in the same way as PA certificates ([see above](#)). If all certificates are loaded, TA is performed automatically by the FPR and the sensitive data is displayed in the **RFID** and **SUMMARY** tabs.

 Note

FPR is only able to perform TA if the private key is available and loadable in file format.

## 7. SELECT APPLICATION

OPTIONS > RFID > SELECT APPLICATION

Enable/Disable **SELECT APPLICATION** function. If it is selected, the Passport Reader software automatically selects a supported application on the RFID chip: ePassport, eID, eDL or IDL.

## 8. DG1-16

OPTIONS > RFID > DG1-16

Enable/Disable document's RFID data groups to read.

Some of the data groups need to have certificate to access its data. Required certificates can be obtained from the authority of the local national government.

## 9. MAXIMUM AIR SPEED

OPTIONS > RFID > MAXIMUM AIR SPEED

Set the maximum baud-rate for communication with the RFID chip.

## 10. LOAD/UNLOAD CERTIFICATE

OPTIONS > RFID > LOAD/UNLOAD CERTIFICATE

Browse and select your certification file that enables you to run RFID security mechanisms (PA and TA).

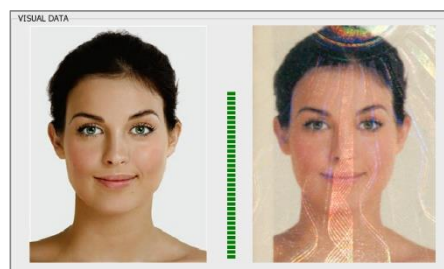
### Note

Private keys (.pkcs8) cannot be loaded with **[LOAD CERTIFICATE]** button.

## 11. COMPARE FACE

OPTIONS > RFID > COMPARE FACE

Enable/Disable comparing the face photo stored in chip against the one printed on the data page.

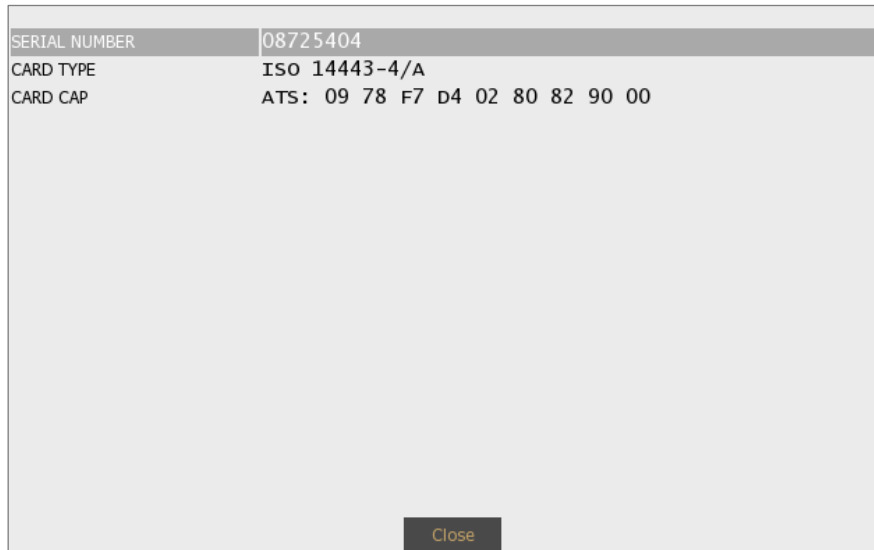




## 12. RFID DETECTION

### OPTIONS > RFID > RFID DETECTION

Use the **RFID DETECTION** feature to determine if there is an eDocument positioned onto the document reader device. If you click on this button, a window will pop up with the fundamental data of the document/chip.



#### Note

This feature works only when the document is within 10 mm from the RFID antenna of the device.

### 5.6.6. MANUAL SETTINGS

Fine-tune your software by changing default system property values to customize operation according to your preferences.

#### Note

Changing parameters may have negative effect on system performance and operation. If in doubt with the proper value, please consult with [ADAPTIVE RECOGNITION support team](#).

#### 1. PROPERTY NAME

OPTIONS > MANUAL SETTINGS > PROPERTY NAME

Every property has a name and most properties have path as well. When referring to a property (e.g., in the FPR application) the path must be specified as well.

#### 2. PROPERTY VALUE

OPTIONS > MANUAL SETTINGS > PROPERTY VALUE

The property value is a number or text that determines the effect of the property.

PROPERTY NAME	<input type="text" value="document/tip_century"/>
PROPERTY VALUE	<input type="text" value="1"/>
<input type="button" value="SET"/> <input type="button" value="GET"/> <input type="button" value="SAVE"/>	

#### Note

For more information on possible property values, please check the [Passport Reader Property List](#) chapter.

## 5.6.7. PROCESSING

### 1. PROCESSING TIME

OPTIONS > PROCESSING > PROCESSING TIME

Brief summary of the **PROCESSING TIME** of each processing phase.

### 2. PROCESSING LOG

OPTIONS > PROCESSING > PROCESSING LOG

The **PROCESSING LOG** displays the main events of each document reading process.

The screenshot displays a software interface with a vertical sidebar on the left labeled 'PROCESSING'. The main content area is divided into two sections:

**PROCESSING TIME**

Capture time	5072 ms
OCR time	487 ms
Total processing time	5582 ms

**PROCESSING LOG**

Connecting to 'COMBOSCAN-L221884' device...  
The device is calibrated.

\*\*\*\*\* Processing number 1 \*\*\*\*\*

Capture time (Infra): 2079 ms  
Capture time (UV): 1960 ms  
Capture time (OVD): 1005 ms  
Capture time (White): 75 ms  
Capture time: 5151 ms  
OCR time: 465 ms  
Total processing time: 5755 ms

\*\*\*\*\* Processing number 2 \*\*\*\*\*

Capture time (Infra): 2092 ms  
Capture time (UV): 1962 ms  
Capture time (OVD): 997 ms  
Capture time (White): 80 ms  
Capture time: 5167 ms  
OCR time: 439 ms  
Total processing time: 5745 ms

\*\*\*\*\* Processing number 3 \*\*\*\*\*

Capture time (Infra): 2132 ms  
Capture time (UV): 1956 ms  
Capture time (OVD): 967 ms  
Capture time (White): 87 ms  
Capture time: 5172 ms  
OCR time: 439 ms  
Total processing time: 5746 ms

\*\*\*\*\* Processing number 4 \*\*\*\*\*

Capture time (Infra): 2120 ms  
Capture time (UV): 1896 ms  
Capture time (OVD): 940 ms

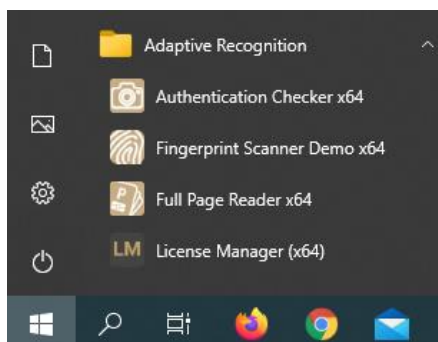
A 'CLEAR' button is located at the bottom of the log area.

## 5.7. FAQ

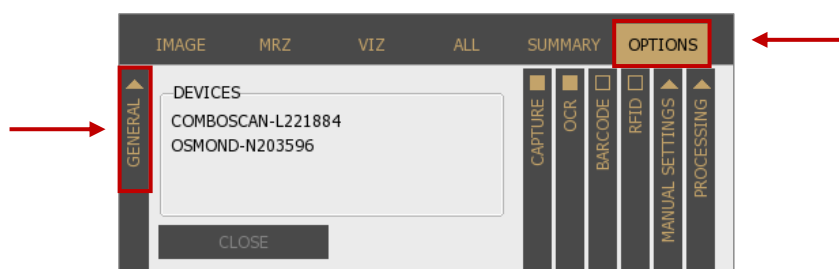
### 5.7.1. BASICS

#### How to connect reader before scanning?

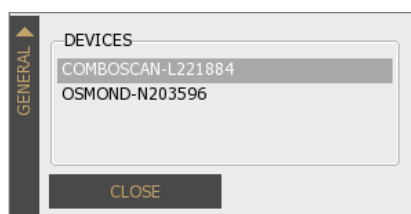
1. Open Full Page Reader (FPR) app.



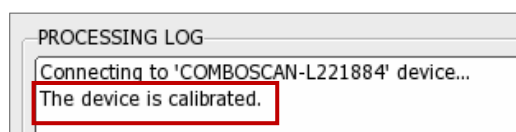
2. View **GENERAL** layer in **OPTIONS** tab to see available reader(s).



3. Connect reader to your system to gain access its features by
  - a. clicking on the **[CONNECT]** button or
  - b. clicking on the selected reader in the **DEVICES** list.



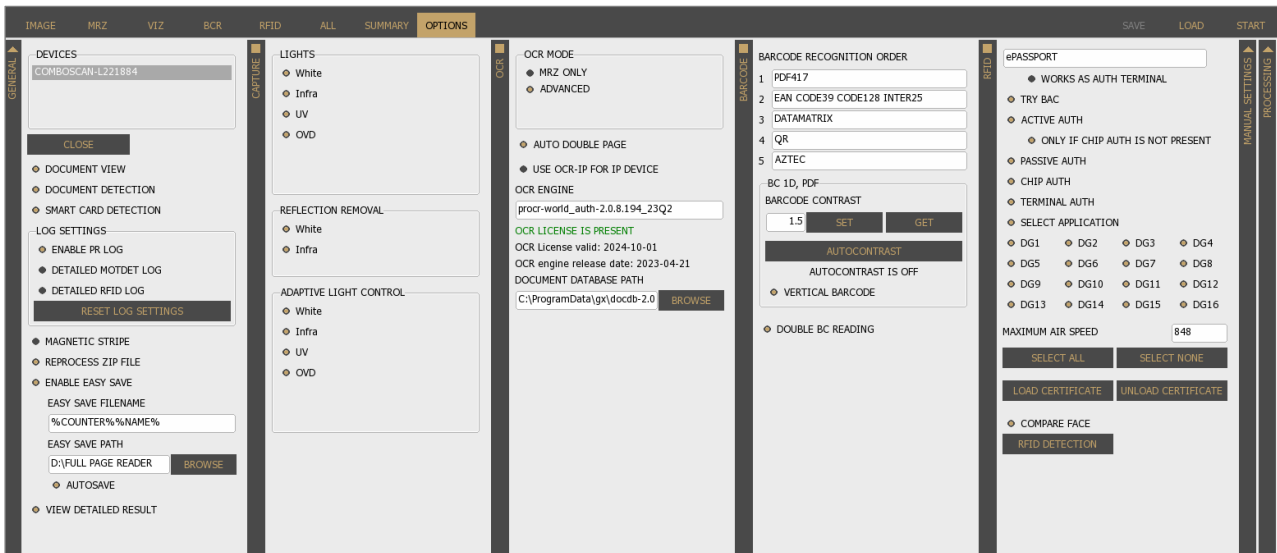
4. Check the status of the reader in the **PROCESSING LOG**.  
If you get the "**The device is calibrated.**" message, your reader is ready to use.



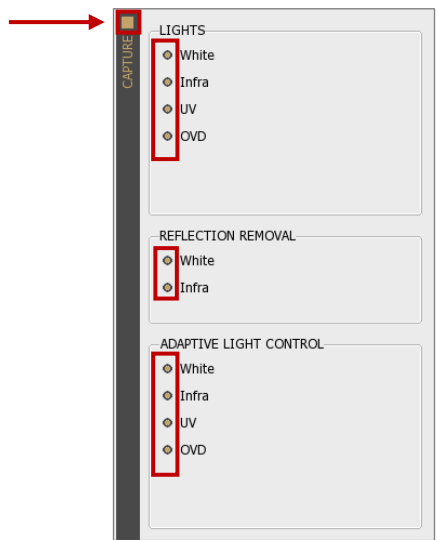
### 5.7.2. SCANNING

#### How to scan?

1. Connect reader.
2. Open vertical layers in **OPTIONS** tab and enable/disable filters to customize the FPR's operation according to your needs.



- a. Activate **CAPTURE** layer for scanning documents by filling in the checkbox and set the illumination types you wish to apply.



- b. Activate **OCR** layer by filling in the checkbox and select your **OCR ENGINE** for performing character recognition.

**Note**

Select **ADVANCED** mode to read data from **MRZ and VIZ fields** as well.

OCR

OCR MODE

- MRZ ONLY
- ADVANCED

AUTO DOUBLE PAGE

USE OCR-IP FOR IP DEVICE

OCR ENGINE

procr-world\_auth-2.0.8.194\_23Q2

OCR LICENSE IS PRESENT

OCR License valid: 2024-10-01

OCR engine release date: 2023-04-21

DOCUMENT DATABASE PATH

C:\ProgramData\gx\docdb-2.0 **BROWSE**

- c. Activate **BARCODE** layer by filling in the checkbox to read barcode(s) from documents. If you expect different barcode types, you can set an order for faster process time.

BARCODE

BARCODE RECOGNITION ORDER

- PDF417
- EAN CODE39 CODE128 INTER25
- DATAMATRIX
- QR
- AZTEC

BC 1D, PDF

BARCODE CONTRAST

1.5 **SET** **GET**

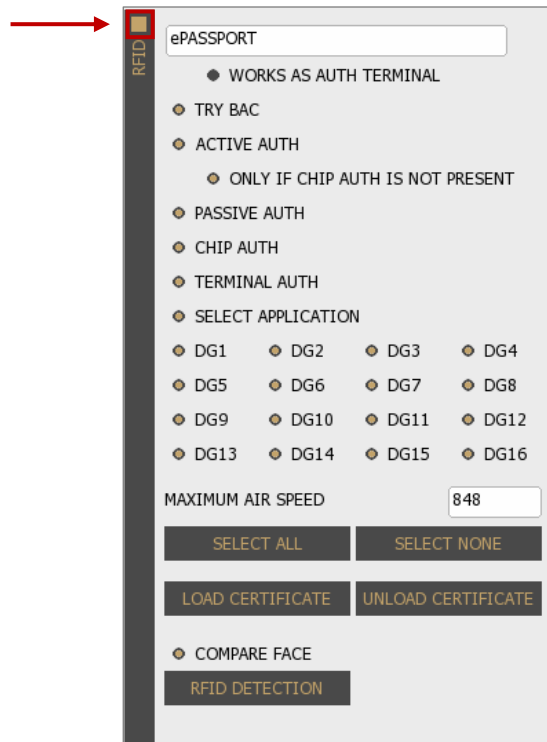
**AUTOCONTRAST**

AUTOCONTRAST IS OFF

VERTICAL BARCODE

DOUBLE BC READING

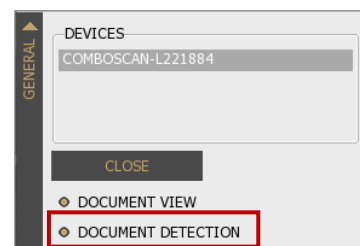
- d. Activate **RFID** layer by filling in the checkbox to read RFID chip data from e-documents. Select the data groups to read and the authentication mechanisms to execute.



3. Start scanning by pressing the **[START]** button or use **DOCUMENT DETECTION**.

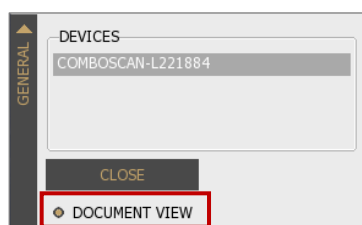
## How to enable document presence detection (aka Motion Detection, Freerun Mode, Auto-scan)?

Select **DOCUMENT DETECTION** option on **OPTIONS / GENERAL** layer to enable document presence detection. This feature automatically scans images using the selected filters whenever a document is available on the surface of the reader.



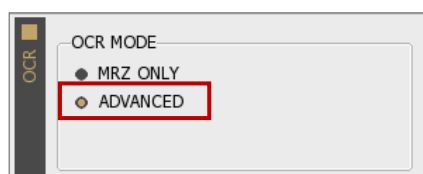
## How to crop and rotate document?

Select **DOCUMENT VIEW** option before the starting of the scanning process on **OPTIONS / GENERAL** layer to crop and rotate documents into upright position.

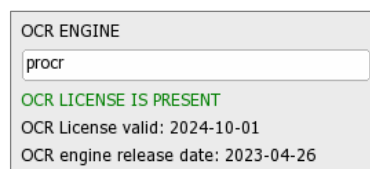
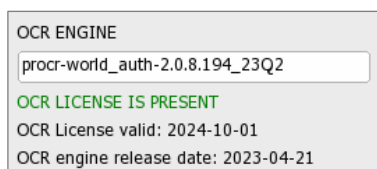


## How to read VIZ fields?

- Select **ADVANCED** mode on **OPTIONS / OCR** layer to read data from **VIZ**.



- Select your **VIZ-OCR** engine to use.



- Check the processed VIZ data of a given document on the **VIZ** tab.

### Note

**VIZ** tab is only visible if you have activated on the **OCR** layer.



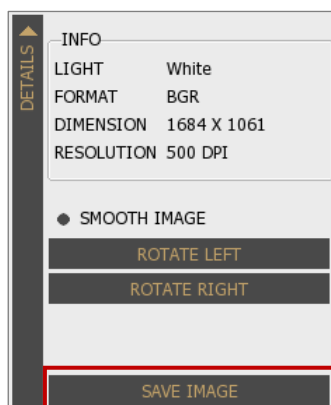
### 5.7.3. SAVE, LOAD, REPROCESS

#### How to save a scanning?

1. Select filters and scan a document.
2. Choose from the **following saving methods**:
  - a. Click on **[SAVE]** and browse the path as well as specify the filename to finish the saving process.



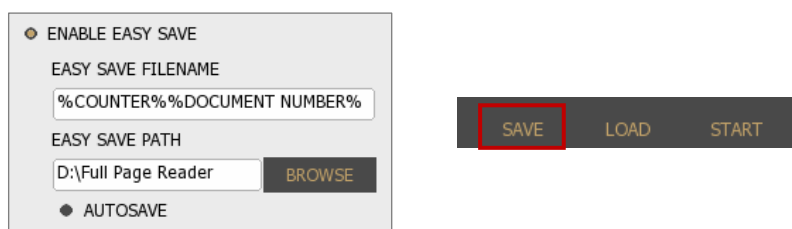
- b. Click on **[SAVE IMAGE]** on **IMAGE / DETAILS** layer to save the selected image. Browse the path and specify the filename to finish the saving process.



#### Note

**SAVE IMAGE** function is only able to save into **image format**.  
ZIP, PDF, XML or CSV formats are not available options.

- c. Select **ENABLE EASY SAVE** and click on **[SAVE]** to preserve the selected scanning.



#### Note

At the first saving, you have to browse the path and define the filename, if the **EASY SAVE PATH** is not specified.

- d. Select **ENABLE EASY SAVE** and turn on **AUTOSAVE** to perform automatic saving.

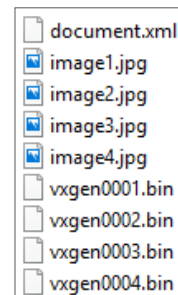
**Important!**

If the **EASY SAVE PATH** is not specified, the automatic saving is not performed.

3. If you have selected **ENABLE EASY SAVE**, you will find the images of the scanned document in the folder that you have selected at **OPTIONS / GENERAL / EASY SAVE PATH**.

### What is included in the saved file?

- All **images** scanned by different light sources are available in original view.
- XML file with the **processed data** from document.
- Corresponding **binary data** for each image in .bin files.
- Copy of the **face photo** from RFID chip (if available).
- Copy of the **biometric data** from RFID chip (if RFID and CVCA certificate is available).



**Note**

If the following properties are enabled, the **cleanovd**, **cleanuv** and certain **field images** are also saved in the ZIP file:

- save\_cleanovd – save cleanovd image,
- save\_cleanuv – save cleanuv image,
- save\_fieldimage – save field image.

For more information on these properties, see [Passport Reader Property List](#) chapter.

## How to load or reprocess a previous scanning? What is the difference?

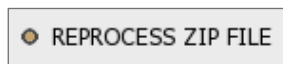
- **LOAD**

1. Click on the **[LOAD]** button.
2. Browse for your .zip file and click on it.
3. Open the selected file.
4. You get the original data and images in the app as it was processed earlier.



- **REPROCESS**

1. Select **REPROCESS ZIP FILE** option on **GENERAL** layer in **OPTIONS** tab.



2. Set different filters to review same document in different conditions.  
I.e.: Select different OCR engine or barcode setting.
3. Click on the **[LOAD]** button.
4. Browse for your .zip file and click on it.
5. You get the reprocessed data as it was modified with new filters.

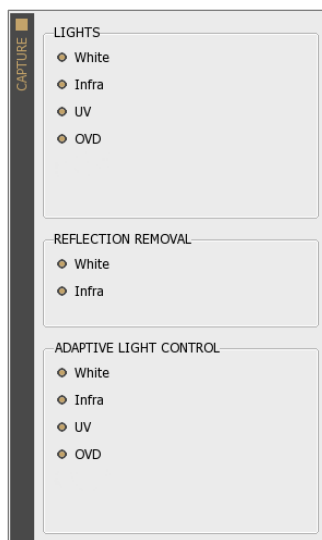
The difference between the two is that with the **LOAD** you get the original saved data in the app (you do not have to check the ZIP file) and with the **REPROCESS ZIP FILE** the saved data is processed again according to the actual or selected engine.

## How to make a collection of sample documents to send to ADAPTIVE RECOGNITION?

1. Open Full Page Reader.
2. Select **all available illumination types** for both **LIGHTS** and **REFLECTION REMOVAL**.

### Note

**REFLECTION REMOVAL** ensures glare-free images that provides higher OCR accuracy.



3. Scan the document based on the following:
  - Make sure that the document is in standstill position while scanning is performed.
  - Protect the scanning window from direct sunlight or strong ambient light from the environment.
  - Scan both sides of the document.
  - In case of ID-1 and ID-2 size documents:  
For the best OCR quality, please make scans with rotating the cards by 90° and 180° or positioning them randomly.
4. Save document(s) by clicking on the **[SAVE]** button – for training purposes, minimum 15 different scans needed from the same document type.

### Hint

If you wish to scan more documents, using of **ENABLE EASY SAVE** and **AUTOSAVE** options are recommended to use to minimize the saving time.

## VII. MAINTENANCE

The device has no moving parts – except for the motorized, auto-focus module – which ensures maximum reliability and low maintenance. However, in order to ensure that the device remains in a satisfactory operating condition, the following actions should be performed regularly.

### 1. CLEANING THE DEVICE

ADAPTIVE RECOGNITION document reader devices generally do not need any kind of special maintenance; however, they should be regularly cleaned in order to ensure that they are fully operational and are able to extract data from the IDs properly.

#### Important!

The devices are to be used indoors, in an office environment only (SOHO).

Combo Scan document reader package includes:

- 1 piece of **Passport Reader Glass Wet Wipe (alcoholic virucide wipe)**,

#### Note

However, any kind of soft cleaning wipe and **standard mild glass cleaner liquid** can be used to clean the devices.

The glass window (the ID reading surface) should be cleaned regularly with mild glass cleaner and a soft cloth. Lint-free microfiber cloth is recommended for the best results.

Cleaning the reading surface **frequently** is of utmost importance, as contamination and stains on the glass surface could negatively impact the accuracy of the optical data reading, and shorten the lifespan of the glass itself.

#### Important!

Abrasive materials (e.g., sand) are to be avoided by any means.

Hard materials can also shorten the lifespan of the reading surface (for example metal objects (e.g., rings) touching the window glass). This kind of contact with the scanning window should be avoided.

### 1.1.1. DISINFECTION






















Isopropyl alcohol (70%) can be used to safely clean and disinfect the surface of the document reader devices, both the scanning window glass and plastic parts. For the exact concentration of isopropyl alcohol which is sufficient to eliminate COVID19, please consult WHO and other trusted sources.



## VIII. APPENDIX

### 1. LED STATUSES OF THE COMBO SCAN DEVICE

The following table summarizes the meaning of the LED statuses, which represent the several states of the device.

Device Status	Green LED	Orange LED	Red LED
Boot seq. + powered			
Connected			
Copying calibration file			
Detecting motion			
Image processing			
Ready to scan			
Suspended			

## 2. CORRECT DOCUMENT PLACEMENT

The following section provides a short guide on how different types of documents should be placed on the scanning surface of the Combo Scan device in order to acquire the best OCR and authorization results.



In the case of **IDI size** cards (like national ID cards, driver licenses, EHIC (European Health Insurance Card), name/business cards or any other 86 x 54 mm = 3.4" x 2.1" sized (or smaller) printed documents), place them in the middle of the scanning surface according to the pictogram on the device.

In the case of **passports** only the MRZ lines can be read. Place them in the middle of the scanning surface as well.



### 3. LICENSE MANAGEMENT

This short description will guide you through the steps of uploading ADAPTIVE RECOGNITION Passport Reader licenses to your document reader device.

In case of a new order, license upload is required only when the ordered software license was supplied separately (not pre-installed on the scanner).

#### Purpose of licenses

Each software module has its own related license file, storing:

- Issuing date
- Expiry date
- Device serial number

The update service period of the given software module is controlled by the expiry date. All software versions that are issued prior to this date, will run on the device.

#### License storage

In case of all scanner models that were manufactured in 2014 or later, the licenses are stored on the scanners.

#### Ways of uploading licenses

1. In case of **USB** devices:
  - For uploading licenses to a small number of specific scanners, our suggestion is using the [License Manager](#) application.
  - In case of uploading licenses to a larger quantity of scanners, we offer an automated license upload feature (MSI installer). For more information on it, see [Automated Ways for License Upload](#) chapter.

#### Migrating licenses between devices

License migration is not possible, as all issued licenses are linked to one scanner, based on its serial number.

### 3.1. LICENSE UPLOAD USING LICENSE MANAGER

The License Manager application is designed to upload ADAPTIVE RECOGNITION passport reader license files to a specific document reader device.

#### 3.1.1. INSTALLATION

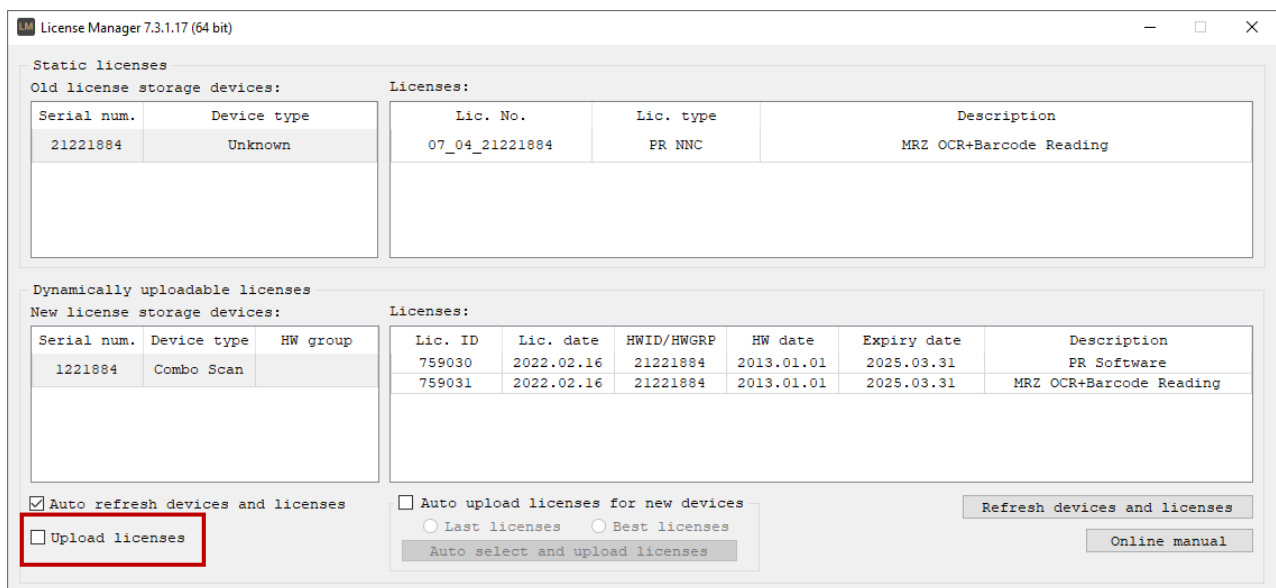
The application gets automatically installed by installing Passport Reader version 2.1.7. and above versions.

#### 3.1.2. STEPS OF LICENSE UPLOAD

1. Enable the "Upload licenses" option to view functions for uploading licenses.

#### Note

If "Auto upload licenses for new devices" is enabled, the function is greyed out.



2. Make sure that the new license files are copied under the path specified at "License directory".

### 3. Select the license(s) to upload to your device.

#### Note

In order to select more licenses at the same time, use **Ctrl + left click**.  
In order to select all the licenses at the same time, use the **Ctrl + A** keyboard shortcut.

Upload licenses

License directory:

Saved user licenses:

Lic. ID	Lic. date	HWID/HWGRP	HW date	Expiry date	Description
1121078	2023.10.02	42203596	2013.01.01	2024.10.01	PR Software
1121079	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR+AUTH Level1-Country
1121080	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR+AUTH Level2-Region
1121081	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR+AUTH Level3-World
1121082	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR Level1-Country
1121083	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR Level2-Region
1121084	2023.10.02	42203596	2013.01.01	2024.10.01	VIZ OCR Level3-World
1121085	2023.10.02	42203596	2013.01.01	2024.10.01	MRZ OCR+Barcode Reading

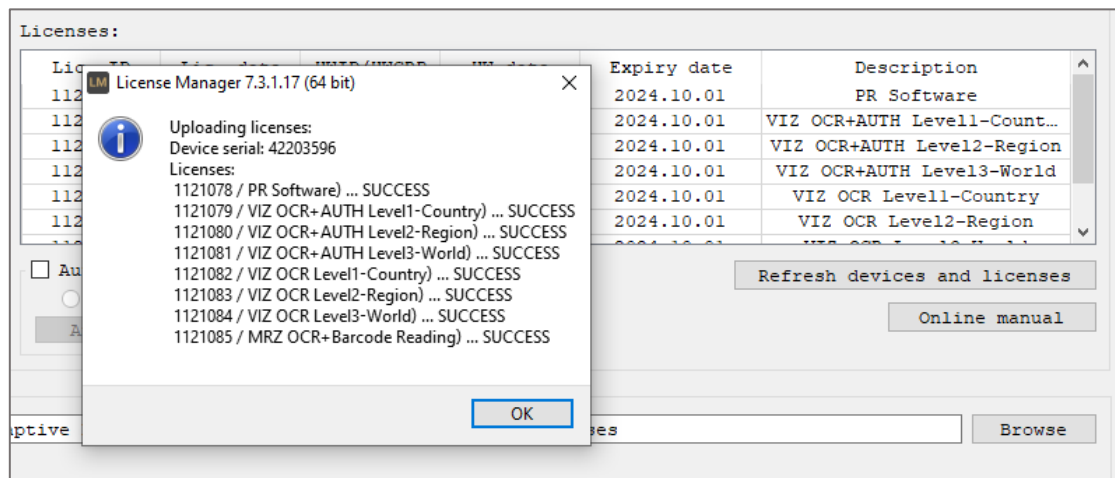
Auto save after upload  
 Auto summary after upload  
 Create log file  
 Log directory:

#### Hint

By enabling the "**Auto upload licenses for new devices**" option, licenses can be uploaded automatically, according to one of the following logics:

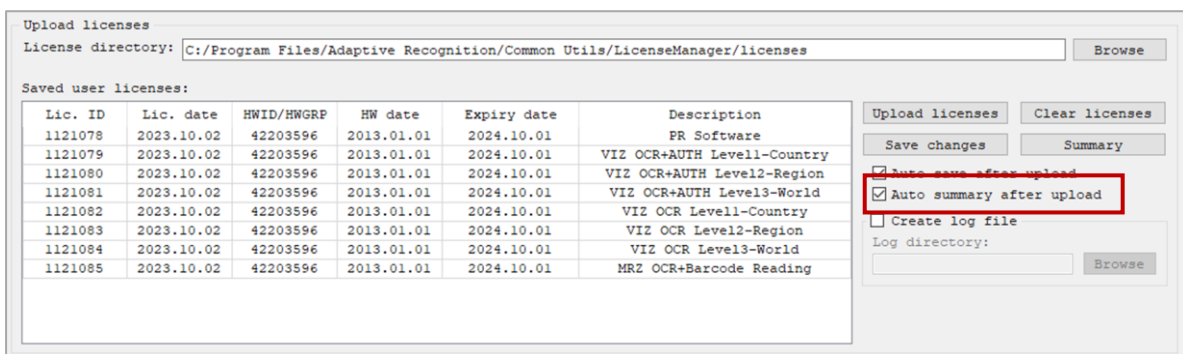
- a. **Last licenses:** Automatically upload the latest license file for the connected device (license update).
- b. **Best licenses:** Automatically upload licenses that provide support the maximal number of documents/region (license upgrade).

4. Click **"Upload licenses"** to copy the selected license(s) to your device and check their presence in the **"Licenses"** textbox.

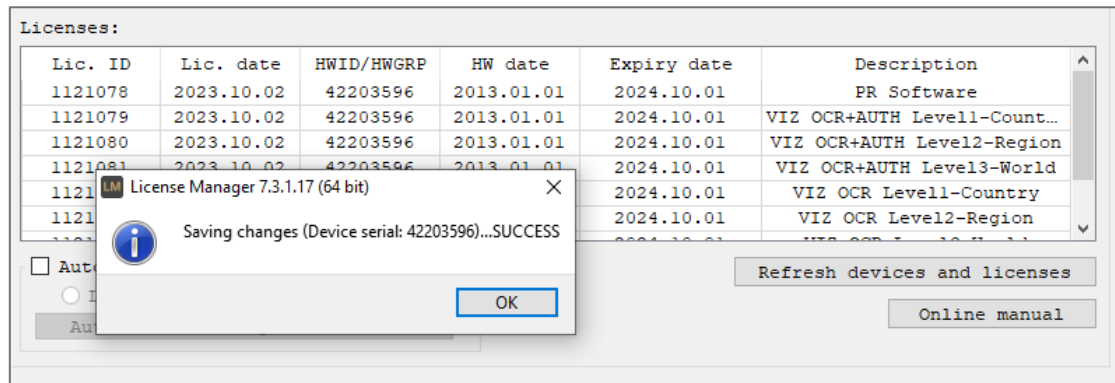


### Hint

Enable **"Auto summary after upload"** to have instant pop-up feedback after successful upload.

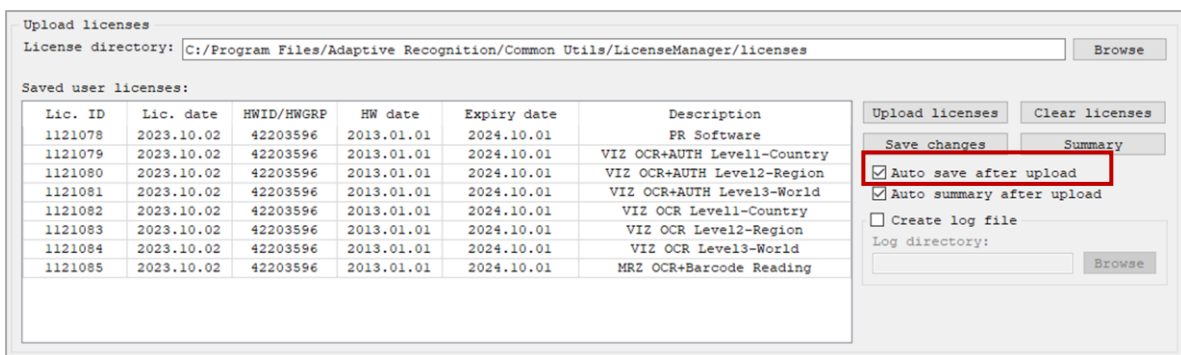


5. Click on "Save changes" and exit the application.



### Hint

Enable "Auto save after upload" to skip using "Save changes" after each license upload.



## 3.2. AUTOMATED WAYS FOR LICENSE UPLOAD

For uploading licenses to multiple devices, we offer automated methods instead of using License Manager one-by-one with each scanner.

### Note

This functionality is only available for USB document scanners or devices operating in USB mode.

### 3.2.1. STEPS

Automated upload can be activated in the following way:

1. Set the **update\_licenses** property to 1. This can be done via **gxsd.dat** (within the `<pr>` and `</pr>` nodes) or by using the **SetProperty()** function.
2. Move the license files to:
  - **ProgramData\GX\pr** folder on **Windows** systems.
  - **/var/gx/pr** directory on **Linux** systems.
3. Once that is completed, upload will be performed automatically, by the **UseDevice()** function. In practice, it happens when the scanner is started by either ADAPTIVE RECOGNITION Full Page Reader or any end user application.

#### More information about [update\\_licenses](#) property

- **0**: automatic license update is disabled
- **1**: automatic license update is enabled
- **2**: automatic license update is enabled but only once. After a successful update, the value of **update\_licenses** property is automatically changed to 0. This value is designed to skip checking hundreds of licenses upon each **UseDevice()** function that may require few seconds.
- **3**: Only if "licupd.txt" file is present in the **license\_path** or **rwddata\_dir** path. Upon successful update, it deletes the file. The file can contain a request date in YYYYMMDD format, thus former licenses also can be uploaded.

### 3.2.2. USING MSI PACKAGE

The above logic can be implemented in a special MSI package that performs exactly the same automated license upload tasks on your passport reader devices. This special MSI package is available on request from [ADAPTIVE RECOGNITION Support Team](#).

## 4. VIZ OCR AND VIZ AUTH OCR ENGINE MANAGEMENT

This short description will guide you through the steps of uploading ADAPTIVE RECOGNITION Passport Reader engines to your document reader device.

OCR engines are add-on modules of the Passport Reader software. They are required for reading and identifying the VIZ (Visual Inspection Zone) fields of the documents.

The following types can be distinguished based on zone coverage:

- country (L1 / Level 1 Single Country)
- region (L2 / Level 2 Region)
- world (L3 / Level 3 World)

### Note

The use of OCR engine is license-bound.

### Note

For availability and more information on OCR engines and software licenses, please contact your ADAPTIVE RECOGNITION sales representative.

### Note

[VIZ OCR](#) and [VIZ AUTH OCR](#) engines are available and can be downloaded from the ADAPTIVE RECOGNITION website.

### Note

In case of purchasing **VIZ OCR or VIZ AUTH OCR engine**, it is strongly recommended to use 64-bit operating systems.

### Ways of uploading OCR engines

1. In case of **USB** devices:
  - OCR engines can be uploaded with MSI installer. For more information on this, see [Uploading OCR Engines to USB Devices](#) chapter.

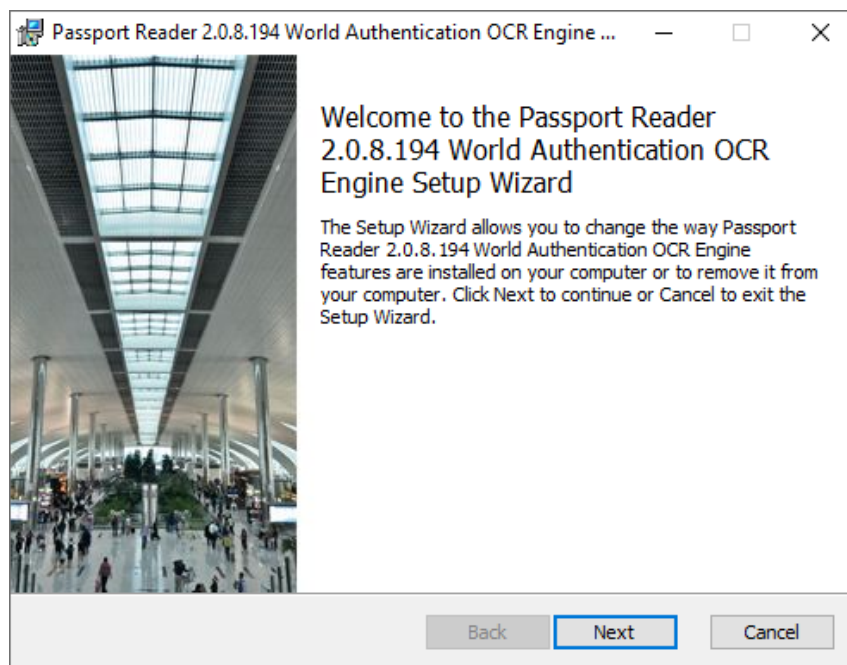
## 4.1. UPLOADING OCR ENGINES TO USB DEVICES

### Important!

Administrator rights are needed for installation.

OCR engines are available and can be downloaded from the [ADAPTIVE RECOGNITION website](#).

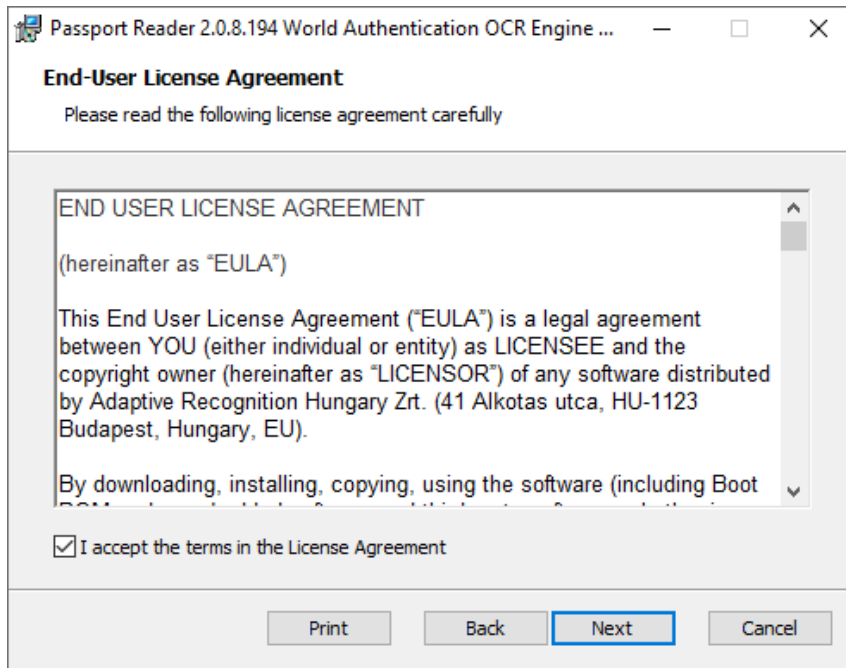
1. On the website click on **Engines** and click on the **[Download]** button belonging to the selected OCR engine (VIZ OCR or VIZ AUTH OCR).
2. By clicking on the **[Download]** button, the webpage redirects you to the **VIZ OCR Software Add-On for VIZ reading** (in case of VIZ OCR) or **Authentication Software Add-Ons for AR ID reading** (in case of VIZ AUTH OCR) page.
3. Under **Engines** select the required version and click on its **[Download]** button.
4. Open the downloaded package and select the appropriate folder depending on the OS and device.
5. Run the **procr-XXX\_ocr-2.0.X.XX.msi** (in case of VIZ OCR) or **procr-XXX\_auth-2.0.X.XX.msi** (in case of VIZ AUTH OCR) installer.
6. The installation starts with the following window:



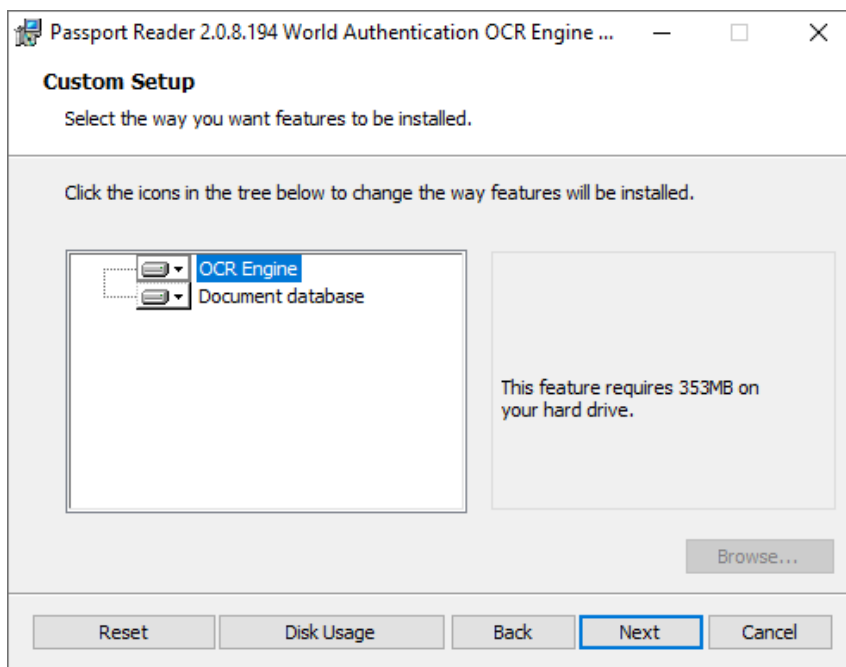
7. Click **[Next]** to launch installation.



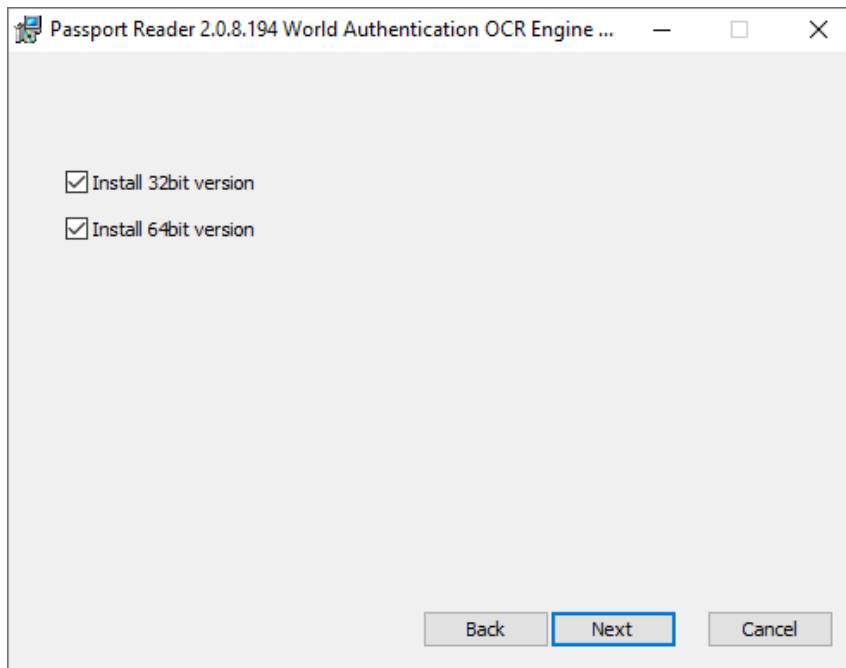
- Accept the EULA (by ticking the checkbox) and start the custom installation process by clicking on **[Next]**.



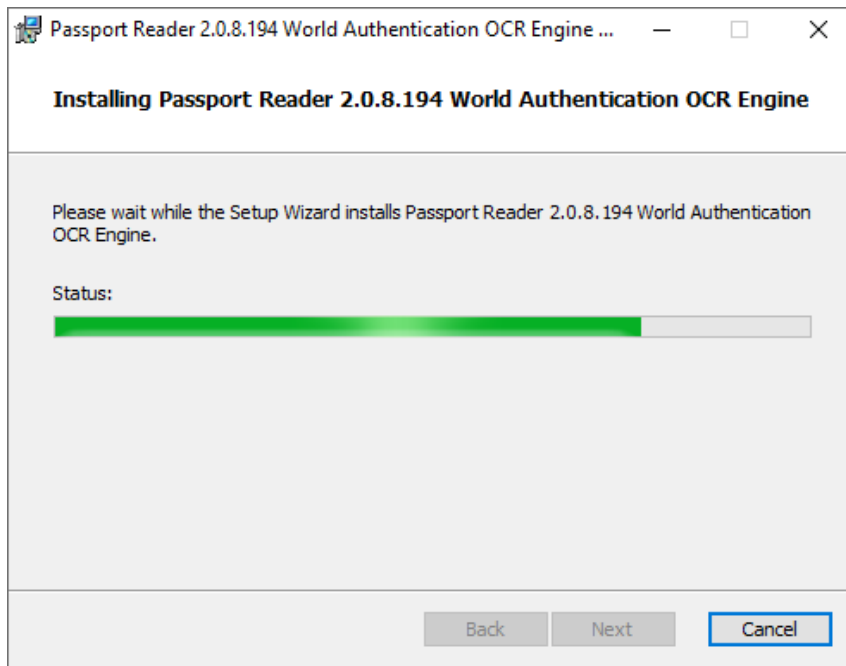
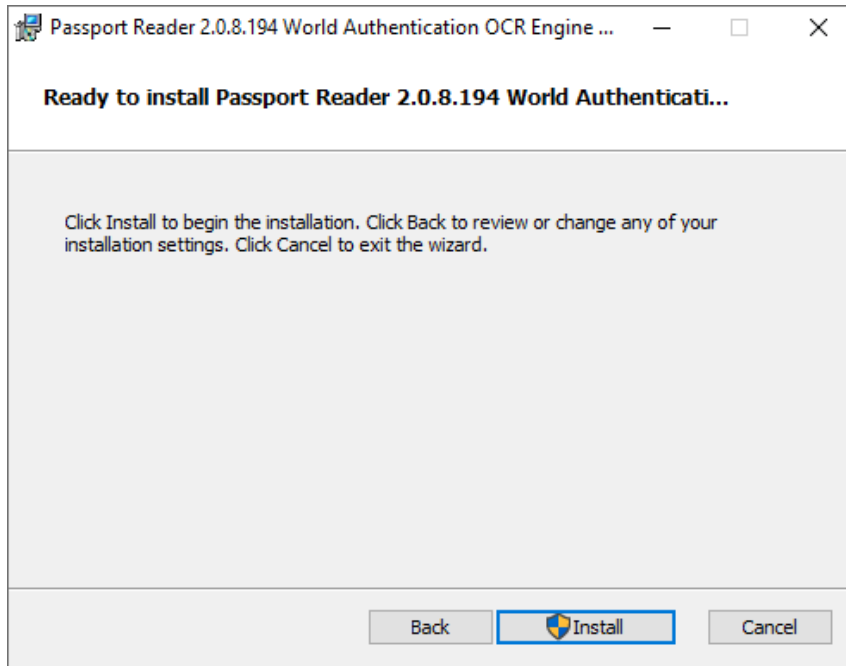
- In the **Custom Setup** window, select the modules to be installed according to your preferences.



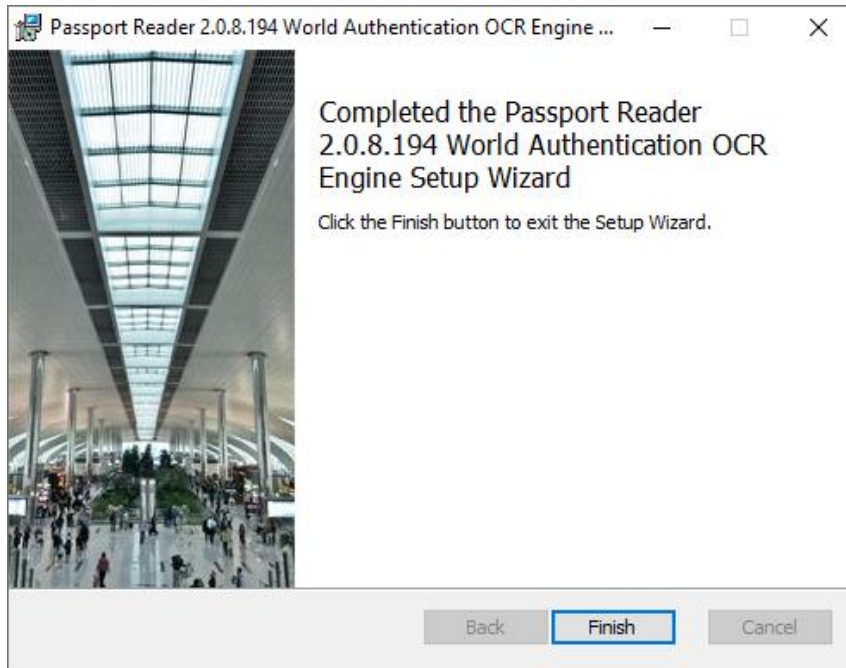
10. Select the bit version of the engine to be installed according to your system architecture.



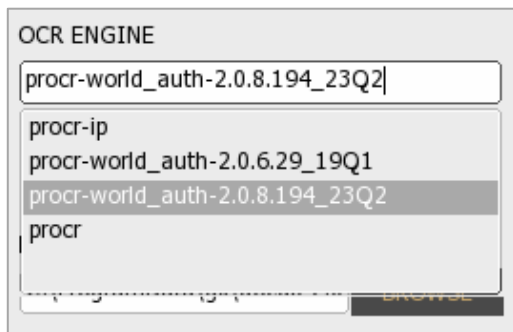
11. Clicking on **[Install]** will begin installation.



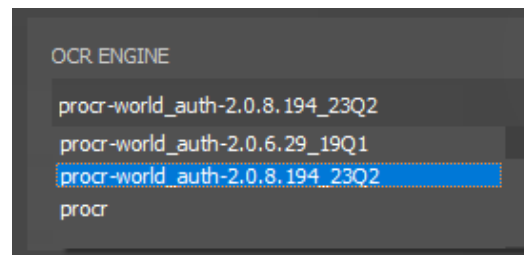
12. Click **[Finish]** to complete the installation.



13. After finishing the installation, select the installed OCR engine in the Full Page Reader or Authentication Checker application.



In case of Full Page Reader



In case of Authentication Checker

## 5. PASSPORT READER PROPERTY LIST

The property list contains the short descriptions of the passport reader properties according to the following:

### Property Path and Name

Every property has a path and a name. When referring to a property (e.g., in the Full Page Reader application) the path must be specified as well.

#### Note

If you write in the **gxsd.dat** file, pay attention to type between the `<pr>` and `</pr>` elements.

### Value type/Values

The property types are specified to help to make managing them easier. Use values of the specified type when setting property values.

#### Note

For **boolean** values use 0 or 1.  
For **integer** values use decimal numbers only.

### Accessibility

- **F (File)**: means the initialization from the `gxsd.dat` file.  
It can be found:
  - in the **ProgramData/gx** hidden directory on **Windows** systems,
  - in the **var/gx** directory on **Linux** systems.
- **R (Read)**: means that the **getProperty** method can be called in the program.
- **W (Write)**: means that the **setProperty** method can be called in the program.

### Default Value

The values marked bold represent the values applied by default.

### Description

In the following sections the short description of the properties will be provided.

 Note

All properties located under the **docimageprops** and **log** tabs are described in the **GX Reference Manual**. Most of these advanced properties are not required to be adjusted in typical user applications.

 Note

All properties located under **document/mqc** tab are described in the **MRZ Quality Assurance Reference Manual**. Most of these advanced properties are not required to be adjusted in typical user applications.

 Note

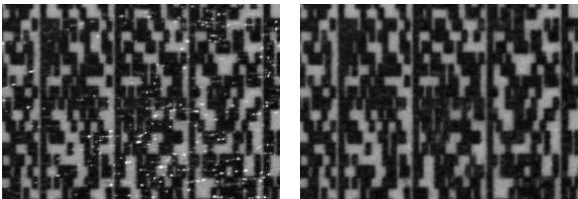
The following properties can only be set when the device is already in use:

- properties starting with ctrl/
- preview\_light
- testdoc\_mode
- uvwarm\_quality
- freerun\_mode

When connecting the device again, these properties will be reset.

## 5.1. DETAILED PROPERTY DESCRIPTIONS

Property Path and Name	Value type/ Accessibility	Default Value	Description
<b>act_page</b>	Integer R		The ordinal number of the last scanned page.
<b>api_date</b>	String R		The date required for the PRSoftware license.
<b>autosave/enddate</b>	String F / R / W		Date after which the automatic saving is discontinued. E.g., 2020-12-02
<b>autosave/filter</b>	Integer F / R / W	<b>0</b> min: 0 max: 2	Enables the automatic encrypted saving. Such files can be decrypted if the appropriate private key is available. <b>NOTE:</b> The <b>autosave/path</b> property must be set too. <b>Possible values:</b> <b>0</b> – The automatic encrypted saving is turned off. <b>1</b> – The saving of every image after scanning. <b>2</b> – The saving of the images recommended by the engine.
<b>autosave/keepime</b>	Integer F / R / W	min: 1	Number of days, after which the images are deleted automatically. <b>NOTE:</b> Check and Delete algorithm only runs with the saving next in line.
<b>autosave/maxfilenum</b>	Integer F / R / W	min: 1	The automatic saving saves up to this number of images. It always deletes the oldest ones, if it is needed. The files saved manually are not counted into this value. <b>NOTE:</b> Check and Delete algorithm only runs with the saving next in line.
<b>autosave/path</b>	Path F / R / W		The path of the automatic encrypted saving. Such files can be decrypted if the appropriate private key is available. <b>NOTE:</b> The <b>autosave/filter</b> property must be set too.

<b>autosave/skip_text</b>	Boolean F / R / W	False	In case of "autosave/filter" = 2, it enables or disables the system to generate txt files.
<b>barcode/contrast</b>	Float F / R / W	<b>1.5f</b> min: -3.f max: 10.f	<p><b>NOTE:</b> This property applies only to <b>ID</b> and <b>PDF417</b> barcodes.</p> <p>The <b>barcode/contrast</b> property controls the contrast compensation level. The default value is <b>1.5</b>. Changing this value affects the barcode reading accuracy. If it is set to <b>-2</b>, an automatic contrast adjustment is launched. If set to <b>-3</b>, an appropriate contrast setting is searched, but not preserved (used for the actual reading process only).</p>
<b>barcode/degliner</b>	Boolean F / R / W	False	<p>There are some special cases when the <b>barcode/degliner</b> property can be useful. It reduces the noise caused by the damages of the covering foil. It is specially developed to eliminate the light horizontal thin lines produced by the glinting of the broken foil. The deglintering process works only if the height of the noise line is significantly smaller than the size of the barcode signs.</p> 
<b>barcode/enable_vertical</b>	Boolean F / R / W	False	Note, that this property applies only to ID and PDF417 barcodes. Basically, barcodes can be read only in horizontal direction. This behavior can be changed with the <b>barcode/enable_vertical</b> property.
<b>barcode/interchar_space</b>	Boolean F / R / W	False	This property is needed for reading a particular barcode located in the inner side of the Mexican documents. (Code 39 with large gap between characters.)



<b>barcode/recog_order</b>	String F / R / W		<p>The barcode reading process can be sped up by specifying this property. The order in which certain barcode types are read can be specified. The not needed types can be omitted.</p> <pre>&lt;recog_order value="51789a"/&gt;</pre> <p><b>1</b> – for all ID codes  <b>5</b> – PDF417  <b>7</b> – DataMatrix  <b>8</b> – QR code  <b>9</b> – AZTEC  <b>a</b> – UPU</p>
<b>calib_file</b>	Path R		It returns the name and path of the used calibration file.
<b>calib_path</b>	Path F / R / W		<p>Path of the calibration file. If not specified, the calibration file is searched at the following default locations:</p> <ul style="list-style-type: none"> <li>• A directory specified by the <b>calib_path</b> property.</li> <li>• %SystemRoot%\system32\gx\pr directory on Windows systems,</li> <li>• /usr/share/gx/pr directory on Linux systems.</li> <li>• %CommonProgramFiles%\gx\pr directory on Windows systems</li> <li>• Programdata\gx\pr on Windows operating systems</li> <li>• /var/gx/pr directory on Linux systems.</li> </ul>
<b>ctrl/always_gray</b>	Boolean F / R / W	False	If <b>1</b> , it provides gray output images. Recommended for time-critical applications.
<b>ctrl/autoread_calib</b>	Boolean F / R / W	True	Internal property.
<b>ctrl/capture_mode_mask</b>	Integer R / W	0	<p>Obsolete.</p> <p>Enables the low-resolution image capturing. Certain bits represent corresponding lights. Instead of this property, use the <b>capture_style</b> property.</p>

<b>ctrl/detdark</b>	Boolean F / R / W	False	This property is specially developed for capturing dark documents (e.g., front cover of certain passports). By setting this property to <b>1</b> , the motion detector of the device will detect dark documents as well.
<b>ctrl/ip</b> or <b>ctrl/ip/#</b>	String R		In case of composite USB/network device, it returns the IP address of the device. In place of # ordinal number or connector type can be written. E.g., eth0.
<b>ctrl/mdarea</b>	String F / R / W		The area examined by the motion detection can be specified in thousandths using the following methods: <b>Example:</b> "400" → the middle 40% x 40% area "left,top-right,bottom" → the area specified by the left, top, right, bottom values (in thousandths).
<b>ctrl/photo/adjust</b>	Boolean F / R / W	False	This property is applicable for PRMc devices. The software correction of the accidental displacement of the photo image.
<b>ctrl/raw_delay</b>	Integer F / R / W	<b>1000/50</b> min: 10 max: 1600	<b>NOTE:</b> This value is applicable only for Combo Scan devices in order to control the speed of image capturing and transferring to the PC. The higher this value is, the slower the image transfer will be. Adjust this value according to the performance of your PC: Low values are preferred on fast PC-s, while high values are applicable on slow ones. Default value: 1000 or 50 depending on the device type.
<b>ctrl/resolution</b>	Integer F / R / W	<b>0</b> min: 0 max: 100000	The default resolution of the captured images can be set with this property (in pixel/meter). Setting the resolution to lower values results in smaller image size, which e.g., eases the insertion into a database. If it is set to <b>0</b> , the default resolution of the device will be applied.

<b>ctrl/resolution_#</b>		Integer F / W	0 min: 0 max: 100000	<p><b>NOTE:</b> The number of the window is to be written in place of #, deviating from the regular, numbered from 1.</p> <p>This property is applicable for multi-window devices (e.g., devices equipped with photo camera). Single step setup of all resolutions belonging to a single window of a multi-window device.</p>
<b>ctrl/shield</b>		Integer F / R / W	0 min: -1 max: 4	The devices with cover colored white are indicated with this property, in order to recognize semi-transparent documents.
<b>ctrl/white/ ctrl/infra/ ctrl/uv/ ctrl/coax/ ctrl/edge/</b>	<b>resolution</b>	Integer F / R / W	0 min: 0 max: 100000	Resolution of the captured image under the light specified in the Path. This value is provided in pixel/meter.
	<b>capture_style</b>	Integer F / R / W	0	The <b>capture_style</b> property can set different settings that modify certain elements of the captured image.
	<b>rr</b>	Boolean R		Defines, that the applied device supports the <b>Reflection Removal</b> on the given light.
<b>debug/failures</b>		Boolean F / R / W	False	Helps to discover the program freezes. If it is turned on, at every reading the (encrypted) image is saved temporarily, then deleted. It can increase significantly the processing time.
<b>debug/floats</b>		Boolean F / R / W	False	The <b>debug/floats</b> property enables/disables the tracking of invalid floating-point operations. When it is set to 1, the system disables the floating-point exceptions for each API call and restores the state before exiting the function. This property also enables saving images in case of OCR error.
<b>debug/memory</b>		Boolean F / R / W	False	This property applies only to Windows operating systems. Enables memory test when entering or leaving the API code.

<b>debug/path</b>	Path F / R / W		The <b>debug/path</b> property specifies the directory for saving debug info if some internal image processing exception occurs. The occurrence of such errors is shown by the creation of one or more debug files containing images that caused the specific exception and/or error descriptions. Please send back these files to our support team in order to help us improving the recognition engine.
<b>debug/recog</b>	Boolean F / R / W	False	The <b>debug/recog</b> property enables/disables the tracking of image processing errors in some well-known situations. The system saves data when the failure is exactly known. E.g., checksum failed.
<b>docimageformat</b>	Integer F / R / W	<b>GX_JPEG</b> min: GX_BMP max: GX_WSQ	File format of the images which are saved in ZIP archives: <b>1</b> =BMP format (GX_BMP) <b>2</b> =JPEG format (ISO/IEC 10918-1) (GX_JPEG) <b>3</b> =JPEG-2000 Code stream syntax ISO/IEC 15444-1 (GX_JPEG2K_JPC) <b>4</b> =JPEG-2000 JP2 format syntax ISO/IEC 15444-1 (GX_JPEG2K_JP2) <b>5</b> =RAW format (uncompressed pixel data without header) (GX_RAW) <b>6</b> =PNG format – Portable Network Graphics (GX_PNG) <b>7</b> =WSQ format – Wavelet Scalar Quantization (GX_WSQ)
<b>docimageprops/ #imageprops#</b>	... F / R / W		Saving parameters for the images which are saved in ZIP archives. This path contains not a single, but multiple properties, which are described in the GX Reference Manual.
<b>docrect/algorithm</b>	Integer F / R / W	<b>0</b> min: 0 max: 2	<b>0</b> – First algorithm <b>1</b> – Second algorithm <b>2</b> – Both, if the first one is not successful

<b>doirect/modify</b>	Integer F / R / W	<b>MOD_DR_</b> <b>YES</b>  min: MOD_DR_ NO  max: MOD_DR_ ROTATIO N+MOD_D R_LS	This property enables the recalculation of "document views" by the result of the OCR functions. This option is necessary for e.g., recognition of upside-down documents. It is recommended to leave it turned on (1).  <b>0</b> – Turned off <b>1</b> – Using new frame <b>2</b> – Only using the rotation <b>4</b> – Landscape in case of ID cards. It can be combined with <b>0, 1, 2</b> values.
<b>document/database</b>	Path F / R / W		Location of the automatic database. Such database contains sample images for authentication.  Default: <ul style="list-style-type: none"><li>• Windows: %ProgramFiles%\gx\docdb"</li><li>• Linux: /var/gx/docdb</li></ul>
<b>document/fonttypes</b>	String R		Returns a comma separated list of fonts usable for manual OCR.
<b>document/icao_0o</b>	Integer F / R / W	<b>0</b>  min: 0 max: 3	During MRZ reading, the occasional O-O character reading error (mix-up) is restored by pattern fitting algorithm. The property offers the option to skip the steps of the algorithm.  <b>0</b> – Checksum based exchange <b>1</b> – Use of the direct OCR result <b>2</b> – Database based exchange <b>3</b> – Exchange, considering the environment
<b>document/log/#logprops#</b>	... F / R / W		Properties for logging. This path contains not a single, but multiple properties, which are described in the GX Reference Manual.

<b>document/log/logprocess</b>	String F / R / W		<p>With the help of the logging option of the document processing module, performance logs can be created by setting the <b>log/logprocess</b> property to 'timing'.</p> <p>Example:</p> <pre>&lt;default&gt;   &lt;pr&gt;     &lt;document&gt;       &lt;log&gt;         &lt;logprocess           value="timing"/&gt;         &lt;file           value="prdoc.log"/&gt;         &lt;filter value="6"/&gt;         &lt;format           value="\$h:\$m:\$s             (\$l:\$L) [\$i] &gt; \$M\r\n"/&gt;         &lt;/log&gt;       &lt;/document&gt;     &lt;/pr&gt;   &lt;/default&gt;</pre>
<b>document/mqc/#qcprops#</b>	... F / R / W		This path contains not a single, but multiple properties, which are described in the MRZ Quality Assurance Reference Manual.
<b>document/tip_century</b>	Integer F / R / W	0 min: 0 max: 1	<p>In the case of the dates which do not contain the century, the algorithm tries to figure it out from the year and current date.</p> <p>0 – Turned off 1 – Default algorithm</p>
<b>document/tip_names</b>	Integer F / R / W	0 min: 0 max: 3	<p>Tip algorithms related to names. At present it works only with Australian documents.</p> <p>0 – Turned off 1 – Division of the name parts 2 – Transformation of lowercase/uppercase</p> <p><b>NOTE:</b> The values can be combined.</p>
<b>document/ weak_char_confidence</b>	Integer F / R / W	0 min: 0 max: 1000	<p>If the confidence of a character is less than this value, then the character is replaced to <b>weak_char_value</b>. In most cases, this value can be applied for MRZ lines only.</p>

<b>document/ weak_char_value</b>	Integer F / R / W	'#' min: 0x21 max: 0x7e	The value that replaces characters with confidence value below <b>weak_char_confidence</b> . Default value: # e.g., 65="A"
<b>finger/cformat</b>	Integer F / R / W	0 min: 0 max: 1	Makes the saved fingerprint image more contrasted.
<b>finger/check_hand</b>	Boolean F / R / W	True	Enables hand swapping test. This test only gives signal when the four fingers of the scanned hand are present.
<b>finger/check_upright</b>	Float F / R / W	-1.f min: -1.f max: 4.f	Test upright position of the fingers. The value is the maximal allowed angle of fingers in radian. A negative value turns off the test.
<b>finger/image_size</b>	String F / R / W		Sets the size of the fingerprint images. <ul style="list-style-type: none"> <li>• Fix size: xsize,ysize</li> <li>• All option: minx[-maxx][,miny[-maxy]][,prox/proy]</li> <li>• Minimal size: 80 pixels</li> <li>• Maximal size: 2048 pixels</li> <li>• Default size: 256 pixels</li> <li>• Default ratio: 2/3</li> </ul>
<b>finger/slap_quality</b>	Boolean F / R / W	False	Use common quality for all fingers instead of individual qualities for each finger for collecting the best fingertips. Used when a slap image (that contains all fingers in one image) is required.

<b>hide_fieldimage</b>	String F / R / W		<p>The codes of the fields that should be hidden, are to be written into the <b>hide_fieldimage</b> property separated by commas or semicolons. E.g., 2400 – VIZ face photo.</p> <p>The local value 1000 can be omitted. In such cases the system covers the VIZ as well as the MRZ fields. Naturally, only the fields read by the engine can be covered. E.g., the VIZ face photo will not be covered upon running GetMRZ. Neither the barcodes nor the RFID images should be covered. The text or binary data are left unmodified, similar to field images cut earlier. The coverage does not work on the Photo camera as well as it may work improperly on multi-camera devices (e.g., Big-eye). But upon setting the property, the algorithm runs on the already existing complete images and the document images are regenerated.</p>
<b>license_path</b>	Path F / R / W		<p>Path, where the system is searching for the licenses in order to upload automatically upon starting the device. Searches for them in the <code>rwdata_dir</code> regardless of the property.</p>
<b>log/#logprops#</b>	... F / R / W		<p>Properties for logging.</p> <p>This path contains not a single, but multiple properties, which are described in the GX Reference Manual.</p>



<b>log/logprocess</b>	String F / R / W		<p>By logging the prapi module, the user can keep track of the device handling events like motion detection results, image capture events or device initialization events. In order to enable logging, set the <b>log/logprocess</b> property to one or more of the following values (separated by commas):</p> <ul style="list-style-type: none"> <li>• <b>apierror</b> - logging api errors independent of the user application</li> <li>• <b>timing</b> - logging process timings</li> <li>• <b>initialization</b> - logging the events of the device initialization</li> <li>• <b>motdetonchange</b> - logs motion detection only upon change</li> </ul> <p>Example:</p> <pre>&lt;default&gt;   &lt;pr&gt;     &lt;log&gt;       &lt;logprocess value="apierror,initialization"/&gt;       &lt;file value="prapi.log"/&gt;       &lt;filter value="6"/&gt;       &lt;format value="\$h:\$m:\$s (\$l:\$L [\$i] &gt; \$M\r\n"/&gt;     &lt;/log&gt;   &lt;/pr&gt; &lt;/default&gt;</pre>
<b>module_dir</b>	Path R		The path of the pr modules.
<b>ocr_module</b>	Path F / R / W		Name of the OCR module to use. It can be edited. If the module cannot be opened, then the program tries to use the default procr module.
<b>omit_task_loading</b>	Boolean F / R / W	False	If set to <b>1</b> , only images are loaded in case of LoadDocument, without results.
<b>pcsc/autostart</b>	Boolean F	False	Sets the autostart mode of the PC/SC upon the connection of the device. The pcsccontrol.exe file must be run in order to set autostart mode.

<b>pcsc/max_air_speed</b>	Integer F	<b>1700</b> min: 0 max: 1700	The maximum communication speed of the autostarted PC/SC control.
<b>preview_light</b>	Integer F / R / W	<b>Infra</b> min: 1 max: 0xff	The lighting conditions of the preview image can be set by the <b>preview_light</b> property. <b>Possible values:</b> 1 - Visible light 2 - Infrared light 3 - Ultraviolet light 4 - Visible coaxial light 5 - OVD image 6 - Photo image
<b>rfid/air_speed</b>	Integer F / R / W	<b>848</b> min: 106 max: 848	Speed of communication with the RFID chip.
<b>rfid/extended_length</b>	Boolean F / R / W	True	If <b>1</b> , fast RFID reading mode is enabled. This property may cause RFID reading errors in case of reading documents that do not comply with certain RFID standards, but they indicate incorrectly that they do. In these cases, the <b>extended_length</b> should be set to <b>0</b> . <b>NOTE:</b> This property is to be turned off in case of certain flawed cards.
<b>rfid/log/#logprops#</b>	... F / R / W		Properties for logging. This path contains not a single, but multiple properties, which are described in the GX Reference Manual.

<p><b>rfid/log/logprocess</b></p>	<p>String F / R / W</p>	<p>The prrfid module log can be used for logging the communication and work flow between the card and the device. It is useful during the development or the testing process when communication tracing is necessary. It should not be used in production systems because it may contain personal data in this way violating security norms. The <b>log/logprocess</b> property for the prrfid module can be set to one or more of the following values (separated by commas):</p> <ul style="list-style-type: none"> <li>• <b>cardinfo</b> - logging information about the RFID card capabilities</li> <li>• <b>timing</b> - logging process timings</li> <li>• <b>initialization</b> - logging the events of the device initialization</li> <li>• <b>rfidstream</b> - logging binary data of the communication</li> <li>• <b>cryptodata</b> - logging cryptographic data</li> <li>• <b>formatting</b> - generates separator lines to the log</li> </ul> <p>Example:</p> <pre>&lt;default&gt;   &lt;pr&gt;     &lt;rfid&gt;       &lt;log&gt;         &lt;logprocess value="cardinfo,timing,rfidstream"/&gt;         &lt;file value="prrfid.log"/&gt;         &lt;filter value="7"/&gt;         &lt;format value="\$h:\$m:\$s (\$l:\$L) [\$i] &gt; \$M\r\n"/&gt;       &lt;/log&gt;     &lt;/rfid&gt;   &lt;/pr&gt; &lt;/default&gt;</pre>
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<b>rfid/pref_ext_ds</b>	Integer F / R / W	0 min: -1 max: 2	This property controls the priority of document signer certificates Cert.DS during the checking process:  If <b>0</b> , the checking process is executed with the file in the RFID chip first.  If <b>1</b> , the checking process is executed with the external certificate first.  If <b>-1</b> , the checking process is executed only with the file in the RFID chip.  If <b>2</b> , the checking process is executed only with the external certificate only.
<b>rfid/try_bac</b>	Boolean F / R / W	False	If set to <b>1</b> , all errors are assumed as BAC error message upon trying to access the document. This property is specially developed to read RFID information from those non-standard documents that return other error message than "Command not allowed security status not satisfied" when the RFID chip is accessed.
<b>rfid/use_serial_port</b>	String F / R / W		Obsolete. Internal property.
<b>rodata_dir</b>	Path R		Path to read only data directory. <ul style="list-style-type: none"><li>on Windows systems: <code>System32\gx\pr</code></li><li>on Linux systems: <code>/usr/share/gx/pr</code></li></ul>
<b>rwdata_dir</b>	Path R		Path to read/write data directory. <ul style="list-style-type: none"><li>on Windows systems: <code>ProgramData\gx\pr</code></li><li>on Linux systems: <code>/var/gx/pr</code></li></ul>
<b>save_cleanovd</b>	Boolean F / R / W	False	Black OVD image is saved in the ZIP file.
<b>save_cleanuv</b>	Boolean F / R / W	False	Enhanced UV image is saved in the ZIP file.
<b>save_fieldimage</b>	String F / R / W		List separated by commas with codes of fields. Corresponding pictures of those fields are to be individually saved to the document file.

<b>testdoc_mode</b>	Integer F / R / W	<b>0</b>	Internal property.
<b>twain/devno</b>	Integer F	<b>0</b> min: 0 max: 8	Ordinal number of the device to use.
<b>twain/docview</b>	Boolean F	False	To scan cropped and rotated image.
<b>twain/feeder_mode</b>	Integer F	<b>0</b> min: 0 max: 1	<b>Possible values:</b> <b>0</b> – It is enough to just move the document to repeat the scanning. <b>1</b> – The document must be removed to repeat the scanning.
<b>twain/light</b>	String F		The name of the light to scan.
<b>twain/window</b>	Integer F	<b>1</b> min: 1 max: 2	The ordinal number of the window to scan from (numbered from 1).
<b>update_licenses</b>	Integer F / R / W	<b>1</b> min: 0 max: 3	Upon connecting to the device, the system is able to upload the licenses automatically. <b>0</b> – The automatic update is turned off. <b>1</b> – The automatic update always runs. <b>2</b> – Always runs, but upon successful update it voids the property in the .dat file. <b>3</b> – Only if "licupd.txt" file is present in the license_path or rwd_data_dir path. Upon successful update, it deletes the file. The file can contain a request date in YYYYMMDD format, thus former licenses also can be uploaded.

<p><b>uvwarm_quality</b></p>	<p>Integer F / R / W</p>	<p><b>0</b> min: 0 max: 1000</p>	<p>This property is applicable only for PRM, CLR and PRMc devices equipped with UV tubes.</p> <p>Although, acceptable images can be captured with less warming time, the best image quality is achieved when the UV tubes are warmed up completely. The necessary warming quality can be controlled by the <b>uvwarm_quality</b> property in range of 0 to 1000. If the quality is set to 1000 and the tubes are cool, it takes 25 seconds to capture an UV image.</p> <p>If the UV tube warming task is set in the freerun mode and the <b>uvwarm_quality</b> property is set as well, the system waits for the UV tube to warm up before the first capture and the warmed state of the UV tube is continuously maintained between consequent captures.</p>
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## 5.1.1. PR 2.1 SDK PROPERTIES

The following properties can only be used in the **Pr 2.1 SDK**.

In the new SDK these properties are set automatically or via methods.

**! Important!**

Do not set these properties from the **Pr 2.2 SDK**.

Property Path and Name	Value type/ Accessibility	Default Value	Description
<b>api_version</b>	String R		Returns the api version.
<b>async_callback</b>	Boolean F / R / W	False	The user implemented callback function has to be registered with the <b>SetEventFunction</b> . If the capture is started asynchronously by the <b>CaptureStart</b> function, then the callback function is called only while the <b>CaptureStatus</b> or the <b>CaptureWait</b> functions are called. This behavior can be changed with the <b>async_callback</b> property. Use this property with precaution because user programs might hang up in case of calling Windows functions from an internal capture thread that doesn't own a message queue.
<b>document/ mrz_quality_check</b>	Boolean F / R / W	False	If this property is set to <b>1</b> , then the quality of the MRZ line is checked and the results are saved into a variant. If <b>0</b> , then no checking is executed.
<b>document/ ocr_version</b>	String R		Returns the engine version. When starting the system or changing the engine, the new engine only loads at the first use. This property can be used to make the engine load earlier.
<b>document/ test_fibres</b>	Boolean F / R / W	True	Runs UV fiber search algorithm for unknown documents during <b>Recognize</b> .

<b>event_types</b>	Integer F / R / W	0 min: 0 max: 15	<p>There are two main event sources in the PR system: the <b>directly called processes</b> like the capture process, which can raise events to report their progress and the <b>parallel running freerun mode tasks</b>, which can raise events to report state changes like document detection or button testing.</p> <p>The raised event can be filtered with the <b>event_types</b> property. The event type values are defined in the PR_EVENT enumeration as well as the event values.</p> <p>Events in the PR system are arranged into groups. A bit signals a group. In the first group, there is only one event while the second group contains the rest of the events.</p> <p>There are three different types of events: <b>LED, capture</b> and <b>I/O</b>.</p> <p>Elements between <b>100</b> and <b>199</b> are <b>capture events</b>. Elements between <b>200</b> and <b>299</b> are <b>I/O events</b>.</p>
<b>fg_fail_mask</b>	Integer R		List of finger positioning failures. The <b>FPS_FAILURE</b> enumeration contains its error flag bits.
<b>freerun_mode</b>	Integer F / R / W	0 min: 0 max: 0x3f	<p>Between two capturing processes the light and camera control modules are in a so called <b>freerun</b> mode. In this mode the system can run a set of the following tasks that the user can enable through the <b>freerun_mode</b> property:</p> <p><b>UV tube warming</b> – for better UV image quality. <b>Motion test</b> – for autostarting the capturing process. <b>Lighting for preview capture</b> – for low resolution real-time preview capturing.</p> <p><b>NOTE:</b> Certain combinations can be combined. E.g., 3 or 6.</p> <p><b>Possible values:</b></p> <p><b>0</b> – Disable freerun activity. <b>1</b> – Direct controlled lights for real-time preview image capturing. <b>2</b> – UV tube warming control. <b>4</b> – Lights controlled by the HW/SW object motion detection algorithm.</p>



<b>rfid/selected_files</b>	String F / R / W		Contains ID codes of the RFID files separated by space. It is used when the file identification parameter of the RFID file reading method is set to "Selected".
<b>trigger_event</b>	Integer W	0	Triggers an event. Not all the event can be triggered. Connection 1<<9 MotionDetection 1<<6 Power 1<<8
<b>use_virtual_light</b>	Integer F / R / W	0 min: 0 max: 2	Enables the usage of the photo camera as "photo light" and OVD visualization on the scanned images.

## 6. DATA FIELDS

The Passport Reader system returns all OCR, RFID, barcode and basically all kinds of results as fields. For better understanding, this document classifies fields into four logical groups:

- General data fields: results of OCR, barcode-, and RFID reading processes
- Authentication fields: results of optical and RFID authentications
- Document type identification fields: data returned from the OCR engine database
- Image only fields that contain biometric data

### 6.1. FIELD VALUE

Most fields have textual values of three kinds: **raw**, **formatted** and **standardized**. It varies which value a field may contain. Even all three values can be available for the same field.

The following table will show you some typical examples. The detailed explanation can be found in the subchapters.

	Basic	Raw	Formatted	Standardized	Best
<b>IssueCountry</b>	SI<	SI<	SI	SVN	SVN
<b>BirthDate</b>	9201154	9201154	19920115	1992-01-15	1992-01-15
<b>Authenticity 11</b>	750		750	750	750
<b>Name</b>	KARPATI<<VIK TORIA<<<<<	KARPATI<<VIK TORIA<<<<<	KARPATI VIKTORIA		KARPATI VIKTORIA

#### 6.1.1. RAW

**Raw**: as it is read, including checksum and filler characters. Raw value is empty when the data of a field is not read but produced logically e.g., VIZ authentication field and Document type identification fields.

In the above example for Raw value: the checksum of the birthdate is 4.

### 6.1.2. FORMATTED

**Formatted:** value without checksums and filler characters. Authentication fields and Document type identification field values are available in formatted form. The values of the authentication fields are in thousandths.

### 6.1.3. STANDARDIZED

**Standardized:** Using a standard, the field is converted to a format to ease further processing of data. Such format is document type independent thus can be compared to other documents and/or converted to other forms easily.

### 6.1.4. BASIC AND BEST

For getting data in any available text format, we introduced two format concepts called **Basic** and **Best**. When the **Basic** value is queried, the returned value is the least modified format: the first that is available in order of raw, formatted and standardized values. The **Best** value uses the opposite logic of selection. It returns the most processed format: the first that is available in order of standardized, formatted and raw values.

### 6.1.5. BINARY

If the value of a field cannot be converted into text (e.g., 2D barcode data or RFID face photo image file), it is returned as a **binary** value.

### 6.1.6. NO VALUE

Image only fields e.g., "VIZ Face" has no value.

## 6.2. OTHER

### 6.2.1. AMID

AMID refers to "Authentication Method Identifier" that is detailed in BSI TR-03135, section "spectrally selective check routines". The purpose of AMID is to describe all optical authentication fields.

## 7. ENCRYPTED SAVING

From pr-2.1.11 version the user specific file can be set for encrypted saving. In such case the encrypted file cannot be decoded with the ADAPTIVE RECOGNITION key.

### Note

If you want to save encrypted files which can only be decoded in ADAPTIVE RECOGNITION's network, then, when saving the file in [Full Page Reader](#) or [Authentication Checker](#) application select .ecz extension and do not set anything else. This setting applies to autosave too.

### 7.1. KEY GENERATION

Key pair can be generated from command line by issuing the `ssh-keygen -b 4096 -f keyfilename -N ""` command. This command creates two files:

- The .pub extension file is the **public key**.  
This file can be copied and shared, even through the Internet.
- The file without extension is the **private key**.  
The encrypted files can be decrypted with the private key.

### Note

The private key must be kept safe. Do not share it!

### Note

The user key must be of RSA type with a key length of minimum 4096 bytes.

## 7.2. PROCESS OF THE ENCRYPTION

There are multiple options to give the public key in the SDK. The certificate containing the key can be loaded from the memory as is used at the ecard handling (Certificates.Load() method). Then, the returned key ID number must be handed over to "rfid/encryption\_key" property.

### Note

For more information on property use and setting property values, please check the [Passport Reader Property List](#) chapter.

### Note

The Certificates.Load() method only works as programmed in source code. Otherwise, the filename must be entered.

If the key is stored in file, the path of the file can be set in the property as well. Thereby, the new key can be set through the gxsd.dat file in any program which can save encrypted files.

For ease of use, not only the certificate file but the ssh public key file can be given as well. (Single line ssh key file and ssh2 file are also suitable.) However, these files cannot be loaded with the Certificates.Load() method.

### 7.3. PROCESS OF THE DECRYPTION

For decryption, the prdecrypt command line program is given by ADAPTIVE RECOGNITION.

#### Note

The prdecrypt program is located in:

- **C:\Program Files\Adaptive Recognition\utils\prdecrypt\** or
- **C:\Program Files (x86)\Adaptive Recognition\utils\prdecrypt\** folder.

The file containing the private key must be handed over to the program. When starting the program without parameters, the following text is displayed:

```
usage: prdecrypt encryptedfile keyfile [outputfile]
```

Meaning:

`encryptedfile` – name of the encrypted file

`keyfile` – name of the private key file

`outputfile` – name of the extracted file (optional)

First, specify the name of the encrypted file as a parameter. Then, specify the name of the private key file as well. Optionally, the name of the extracted file can be specified too.

#### Note

The program does not manage password protected private key files.

The file format of the private key can be the following:

- PKCS #1 RSA PRIVATE KEY
- PKCS #8 PRIVATE KEY
- OPENSSH PRIVATE KEY
- putty ppk file

## 7.4. ENCRYPTED AUTOSAVE

This section provides a short description on how to save scanning results as encrypted files in the Full Page Reader and Authentication Checker applications.

### 7.4.1. ENCRYPTED AUTOSAVE IN FULL PAGE READER

In order to save the scanned data as encrypted file in Full Page Reader, turn on "**ENABLE EASY SAVE**" and "**AUTOSAVE**" options at "**GENERAL**" layer.

Then, enter a desired filename with **.ecz extension** and the path where the file will be saved.

GENERAL

DEVICES

COMBOSCAN-L221884

CLOSE

- DOCUMENT VIEW
- DOCUMENT DETECTION
- SMART CARD DETECTION

LOG SETTINGS

- ENABLE PR LOG
- DETAILED MOTDET LOG
- DETAILED RFID LOG

RESET LOG SETTINGS

- MAGNETIC STRIPE
- REPROCESS ZIP FILE
- ENABLE EASY SAVE

EASY SAVE FILENAME

document.ecz

EASY SAVE PATH

D:\FULL PAGE READER BROWSE

- AUTOSAVE
- VIEW DETAILED RESULT

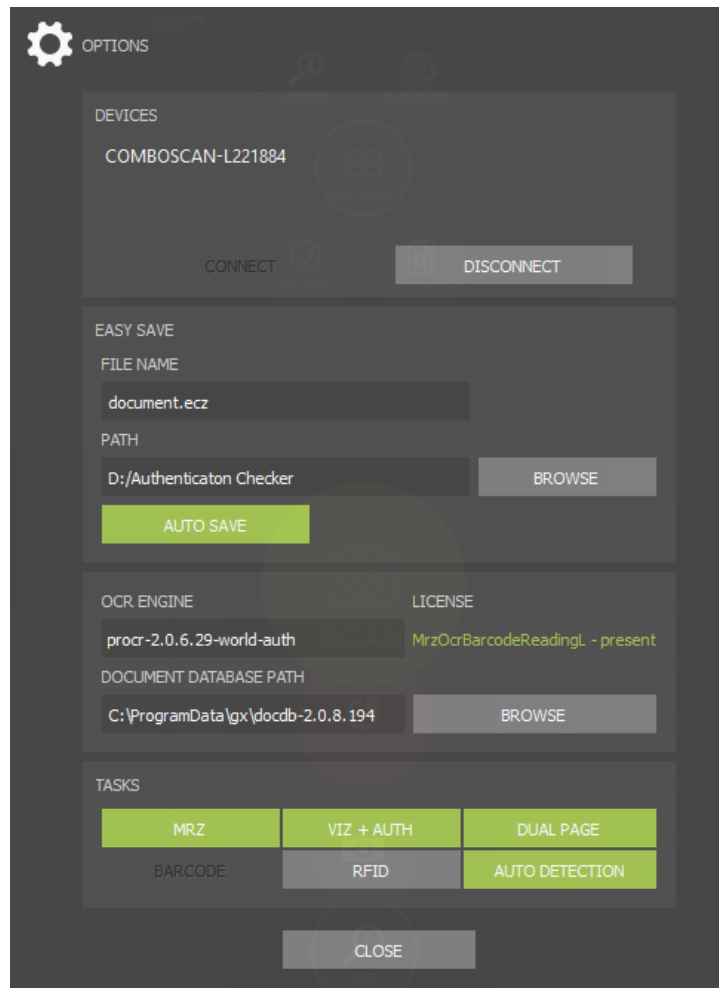
#### Note

To make Full Page Reader write the same file during every reading, give a constant name of the file. **Do not use** any field name like "%DOCUMENT NUMBER%".

### 7.4.2. ENCRYPTED AUTOSAVE IN AUTHENTICATION CHECKER

In order to save the scanned data as encrypted file in Authentication Checker, turn on "**AUTO SAVE**" at "**OPTIONS**" menu.

Then, enter a desired filename with **.ecz extension** and the path where the file will be saved.



#### Note

To make Authentication Checker write the same file during every reading, give a constant name of the file. **Do not use** any field name like "<Counter>".



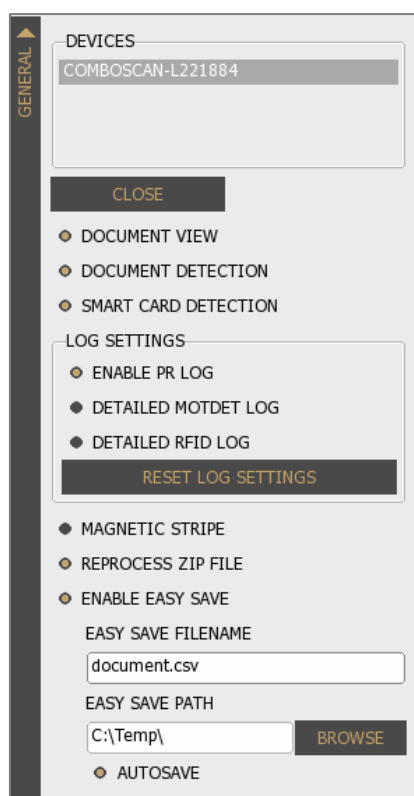
## 8. FULL PAGE READER – SAVING IN CSV FORMAT

This chapter provides a short guide how to save scanning results in CSV format in Full Page Reader application.

### 8.1. SETTINGS

In order to save the read data into a CSV file, you need to turn on "ENABLE EASY SAVE" and "AUTOSAVE" options in Full Page Reader's "GENERAL" layer.

Then, give a desired file name with **.csv extension** and the path where the file will be saved.



#### Note

To make Full Page Reader write the same file during every reading, give a constant name of the file. **Do not use** any field name like "%DOCUMENT NUMBER%".

## 8.2. CSV STRUCTURE

With the above settings, the Full Page Reader will generate the set CSV file. If the file already exists, it will append each scanning result to it.

In the headline of the CSV file, there are keywords which represents the field type of the particular column.

	A	B	C	D	E	F	G
1	DOCUMENT NUMBER	TYPE	ISSUE COUNTRY	ISSUE PLACE	ISSUE DATE	EXPIRY DATE	ISSUE ORG
2	BH0002918	P	Hungary			1/1/2022	
3							
4							
5							
6							
7							
8							
9							

These headers are freely changeable or removable, so you can create a template which contains only the desired type of data in given order.

	A	B	C	D	E	F
1	GIVEN NAME	SURNAME	NATIONALITY	EXPIRY DATE	BIRTH DATE	EXPIRY DATE
2						
3	ROZALIA	SPECIMEN	Hungary	1/1/2022	2/22/1978	1/1/20
4						
5						
6						
7						

## 9. NETAPI

The NetAPI is the network version of the Passport Reader SDK. Its interface implements WebSocket communication with JSON-RPC format packages. This WebSocket channel is either provided by an Osmond N network device (in NAI mode) or by the NetAPI service (prwebsrv) running on PC.

The NetAPI is designed to control remote network devices via Ethernet connection as well as Windows/Linux connected legacy USB document scanners from not natively supported operating systems.

Additional uses:

- It supports running UWP programs on Windows via localhost connection.
- It helps to optimize memory usage by balancing load between client and server.
- The Passport Reader software package includes a NetAPI client that allows accessing all supported document reader devices through the conventional SDK as well.
- The standalone version of the .NET interface can be operated without the installation of the PR system as well.

### Note

This chapter provides information on how to set up the server and the client. The sample code (SDK) is available in the "sdk" folder of the PR Software Package or it can be downloaded from the [ADAPTIVE RECOGNITION website](#).

## 9.1. SETUP SERVER ON PC

1. Create a NetAPI user with the [PRDTool](#) program. The user needs admin or user role. Maximum 5 users can be logged in at the same time in order to use several connected devices. The user sessions can be managed with admin role.
2. The operation parameters can be set with the PRDTool program:
  - Port number (default: 8000)
  - SSL certificate file and SSL private key file for encrypted communication  
If the encrypted communication is configured, the server cannot be accessed without encryption.
  - Enable external access  
If enabled, the server accepts requests from other devices. Otherwise, communication is restricted to localhost.
  - RFID certificate folder  
The path comprising files required for Passive and Terminal Authentications
3. The NetAPI service is realized by the prwebsrv program that can operate as a Windows service or Linux daemon. The server can be turned on/off with the PRDTool program as well.  
On Windows, the service state can be queried from command line with the `'prwebsrv --svc-query'` command. If the program is executed in foreground with the `'prwebsrv --showlog'` command, it displays the communication packages to assist developer.
4. The configuration files - prwebsrv.json and the webusr.json - can be copied freely between computers. Uninstalling the Passport Reader software package removes these files.



## 9.2. SETUP CLIENT

The NetAPI client is part of the Passport Reader software. In order to use it, set the following properties within the default/pr node in the gxsd.dat file manually, or by your client program:

- ipdev/url – Server IP address (or domain name) and port number.
- ipdev/user – Username.
- ipdev/password – Password. Not recommended, but possible to set it in the gxsd.dat file.
- ocr\_module – OCR tasks can be performed on client side or on server side. Set this property to 'procr-ip' to perform OCR on server side. If the server and the client are on the same PC (localhost connection), do not apply this setting in the gxsd.dat file.

### Note

The gxsd.dat file is located in the "C:\Programdata\gx\" folder.  
When editing gxsd.dat, use a text editor, e.g., Notepad++.

### 9.3. USING FULL PAGE READER APPLICATION WITH USB PASSPORT READER DEVICES THROUGH NETAPI

Users have the possibility to use the Full Page Reader application through NetAPI. In this section the necessary steps to acquire this function will be described.

1. Navigate to **ProgramData/gx** hidden directory on Windows.
2. Open the **gxsd.dat** file.
3. Extend the gxsd.dat file with the appropriate user data in place of the blue highlighted text, according to the following example:

```
<pr>
.
.
.
  <ipdev>
    <url value="10.0.7.31:3000"/>
    <user value="netapi_user"/>
    <password value="netapi_password"/>
  </ipdev>
.
.
.
</pr>
```

#### Note

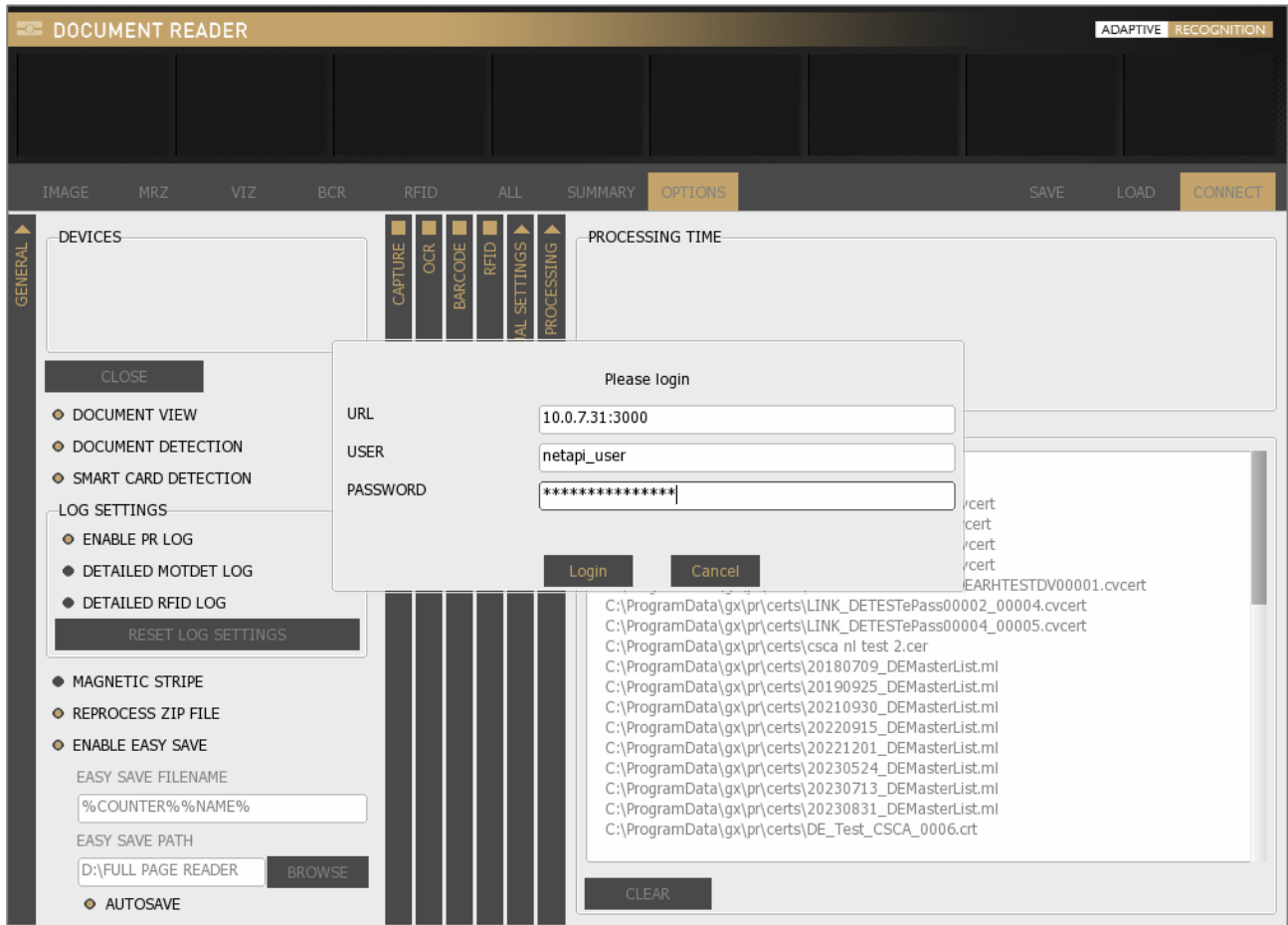
The **URL value** consists of the **IP address** and the **port number**.

#### Note

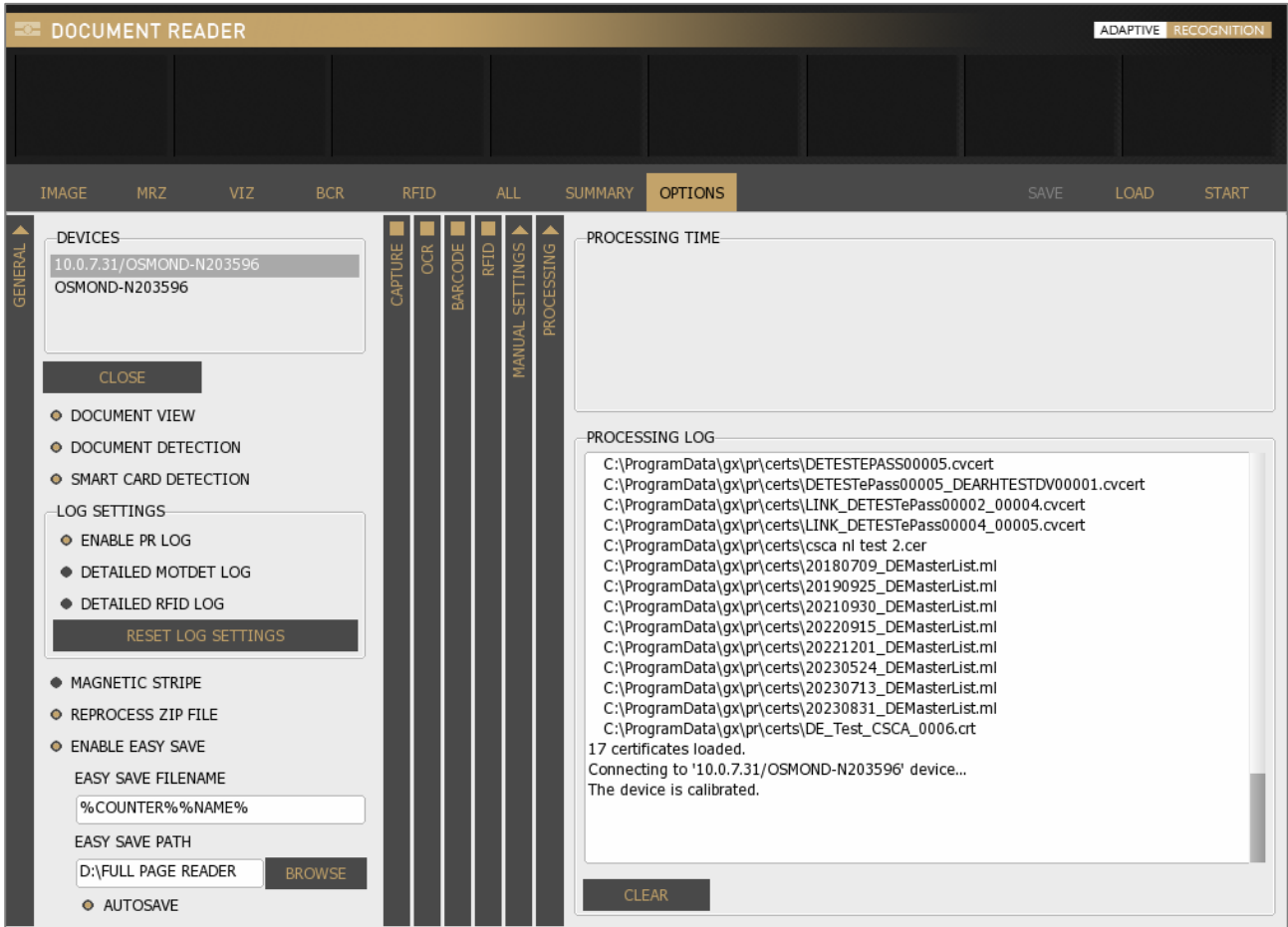
When editing the **gxsd.dat** file, pay attention to type between the **<pr>** and **</pr>** elements.

4. Save the modifications.

5. Open Full Page Reader.
6. When the FPR application is opened, a login window pops up.
7. Enter the **PASSWORD** into this window.



8. After a few seconds, the device is calibrated and ready to be used in NetAPI mode.





## 10. PRDTool

PRDTool is a utility tool which is part of the Passport Reader software packages from version 2.1.9.1 and above. This program is for querying device information, as well as performing auto update configurations, NetAPI server settings and some low-level operations for PR devices connected via USB, especially for the Osmond device.

### 10.1. START PRDTool

- **Windows**

The PRDTool is usually located in **C:\Program Files\Adaptive Recognition\utils\PRDTool\** or **C:\Program Files (x86)\Adaptive Recognition\utils\PRDTool\**, depending on the architecture of the installed PR software.

- **Linux**

Depending on your distribution, you can open command terminal and insert: **PRDTool** or use dashboard search bar: **Linux Start menu > Applications > Adaptive Recognition Apps > PRDTool**.

Only one instance of the program is running. If the window is not opened on the desktop, then it can be found on the notification area. The program can only be closed through the pop-up menu of the notification icon. After launch, the devices connected via USB are displayed in a list located in the lower part of the window. To manage a given device, it must be selected from the list. Once it is selected, the firmware version information of the device appears.

**Note**

In case of a dual USB/Network interface device (e.g., Osmond N, Osmond N Kiosk) the IP address of the device also can be seen. This feature can be useful if the set address is forgotten or the address set by DHCP cannot be extracted in any other way.

The screenshot shows the PRDTool application window. At the top, it displays 'Firmware: loaded' and 'PRDTool ver.: 2.1.11.2-x64'. Below this, it shows 'Device identifier: CC52 code', 'Hardware panel version: 5.3.0.0', and 'Program version: 1.3.2.10'. The 'IP address:' field shows 'Device has no IP address!'. There are buttons for 'Update device', 'Restart device', 'Shutdown device', and 'Set mode'. A table lists two devices: OSMOND-N203596 and COMBOSCAN-L221884. The COMBOSCAN-L221884 row is highlighted in orange. At the bottom, there is a 'Start' button and a dropdown menu showing 'Max speed at start: 848'.

Device name	RFID	Loader	PCSC	Max speed	Settings
OSMOND-N203596	+	+	READY	-	
COMBOSCAN-L221884	-	+	NO RFID	-	

## 10.2. COMBO SCAN OPERATION MODE

Combo Scan device operates in **USB mode**. In USB mode, the device operates as any other ADAPTIVE RECOGNITION passport reader. It can be used through our regular SDK, and with the [Full Page Reader](#) or [Authentication Checker](#) application as well.

### Note

The Combo Scan device is in USB mode by default. It cannot be modified.

## 10.3. SETTINGS

### 10.3.1. AUTO UPDATE SETTINGS

#### Note

**Auto update settings** can only be applied to Osmond N devices.

Osmond N devices are capable of downloading and installing update files automatically. Such updates can be configured in this menu. Set frequency of checking for updates at **Check for update**, specify update server with port (**Download URL**), and provide username and password if remote server uses basic authentication. Supported protocols for remote servers are the following: **HTTP/HTTPS** with or without basic authentication.

History of earlier updates and downloads as well as option for automatic (or manual) firmware download (**Auto DL**) and removal (**Remove**) is available for each connected device at **Device information**.

Settings

Auto update settings | NetAPI server settings

Check for update:  No check  Daily  Weekly  Monthly  Check every  min (5-1440) Check Update now

Download URL:

File path:  ...

User name:

Password:

Device information:

Device name	Version	Auto DL	Firmware status	Remove	Update result
COMBOSCAN-L221884		<input type="checkbox"/>		Connected	
COMBOSMART-GEN2-L240352		<input type="checkbox"/>		Remove	
OSMOND-N203596	1.8.11	<input type="checkbox"/>		Connected	

Cancel Save

### 10.3.2. NETAPI SERVER SETTINGS

In the NetAPI server settings menu set the following values:

- **Port:** Port number of NetAPI
- **RFID Cert. folder:** Path of the certificates used for passive authentication
- **External access:** If it is enabled, NetAPI is not only available from localhost but from other network locations.
- **SSL cert file:** Certificate for NetAPI use
- **SSL key file:** Key belonging to the certificate
- **Set auto start on:** Starting prwebsrv automatically at Windows startup
- **Start/Stop server:** Starting or stopping the prwebsrv

At least one user and the belonging password are required to enter in order to use the NetAPI. Specify the username to the **Name** field and the password to the **Password** field. After that, click on the **[Insert]** button in order to add the entered user.

#### Note

Run PRDTool as **Admin** to create new user.

Settings

Auto update settings NetAPI server settings

Port: 8000

RFID Cert. folder: ...

External access:

SSL cert file: ...

SSL key file: ...

Set auto start on Start server

Service is installed

Name: netapi\_user Password: ..... Role: User

Name	Entry ID	Role
netapi_user	eJh70EEExtLC0bOqs	User

Insert Delete

Cancel Apply

## 10.4. PCSC CONTROL

### Note

The PCSC control can only be used with type 'R' (RFID) devices.

The PCSC control is part of the PRDTool program. This is the command line version of the former PCSCCtrl.exe. The functions of the PCSC can be found at the bottom of the opened PRDTool window.

The screenshot shows the PRDTool application window. The title bar reads "PRDTool". The main area displays the following information:

- Firmware: loaded
- Device identifier: CC52 code
- Hardware panel version: 14.5.3.0
- Program version: 1.3.2.12
- IP address: Device has no IP address!

PRDTool ver.: 2.1.11.0-x64

Buttons: Update device, Restart device, Shutdown device, Set mode, Settings.

Device name	RFID	Loader	PCSC	Max speed	Settings
COMBOSCAN-R164053	+	+	READY	-	⚙️

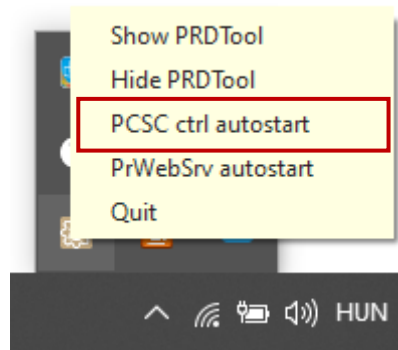
At the bottom, there is a "Start" button and a dropdown menu for "Max speed at start: 1700".

The default status is either **READY** or **STARTED** (if PCSC **Autostart** is enabled). The current status is displayed under the **PCSC** column. PCSC can be enabled or disabled by clicking on the device name, and then on **[Start]** or **[Stop]**. The "max RFID communication speed at start" can be selected under the **Max speed at start** drop-down menu.

### Important!

Please make sure to close any application that uses the Passport Reader device before starting or stopping the PCSC interface.

PCSC can be started automatically via the quick menu of PRDTool: right click on the **PRDTool** icon and click on **PCSC ctrl autostart**.



## 10.5. COMMAND LINE MODE

The PRDTool can also be used in command line mode to query device information. By calling the „--help“ switch, the correct use is displayed. The device list, the device version and the IP address information can be queried. The file format of the output can be specified for the easier automatic processability.

```
C:\Program Files\Adaptive Recognition\utils\PRDTool>PRDTool.exe --help

Usage: PRDTool.exe [options] [device]
This program is used for low level controlling in UI mode and getting information from Passport Reader devices.
Example: -h -l; Displays help of the devicelist command.

Options:
-?, -h, --help           Displays this help.
-p, --pcsc <pcsc cmd>  Controls accessing the RFID module of a device
                        through PCSC interface. See PRDTool -hp for details.
-s, --speed <maxspeed> Maximal RFID data transfer rate parameter for PCSC
                        functionality.
-e, --hide              Runs PRDTool in notification area.
-l, --devicelist        Lists available devices.
-d, --devicedetails    Reports the details of a device.
-o, --output <format>  Output format of the result.
-v, --version           Displays version information.

Arguments:
[device]                The name of the device to query/control.

C:\Program Files\Adaptive Recognition\utils\PRDTool>
```

```
C:\Program Files\Adaptive Recognition\utils\PRDTool>PRDTool.exe -l -d

panel_version    5.3.0.0
program_version  1.3.2.10
standby          -1
power_button_mode -1
resolution       -1
connected_devices COMBOSCAN-L221884

C:\Program Files\Adaptive Recognition\utils\PRDTool>
```

```
C:\Program Files\Adaptive Recognition\utils\PRDTool>PRDTool.exe --devicelist

connected_devices    OSMOND-N203596
connected_devices    COMBOSCAN-L221884
```





## 11. ACRONYMS AND TECHNICAL TERMS USED IN THE DOCUMENT

### API

Application Programming Interface

### Aztec

One of the readable two-dimensional (2D) barcode types.

### BAC

Basic Access Control: An RFID security mechanism.

### BCR

Barcode Recognition. Barcodes are line drawings designed to be recognized easily by computers.

### Code 39

One of the readable one-dimensional (1D) barcode types.

### Code 128

One of the readable one-dimensional (1D) barcode types.

### CSCA

Country Signing Certification Authority

### EAC

Extended Access Control: An RFID security mechanism.

### EAN

One of the readable one-dimensional (1D) barcode types.

### DataMatrix

One of the readable two-dimensional (2D) barcode types.

### ICAO

International Civil Aviation Organization

### Interleaved 2 of 5

One of the readable one-dimensional (1D) barcode types.

### ISO

International Organization for Standardization



**MRTD**

Machine Readable Travel Document

**MRZ**

Machine Readable Zone: Lower part of the travel document. It contains text designed for reading optically with a travel document reader device.

**OCR**

Optical Character Recognition: Recognizing characters from a digitalized image.

**OVD**

Optically Variable Device: Security feature which shows different information, depending on the viewing and/or lighting conditions.

**OVI**

Optically Variable Ink: Printing ink that contains microscopic pigments acting as interference filters, resulting in large color shifts (strong variations in color) depending on the angle of observation or lighting.

**PDF417**

One of the readable two-dimensional (2D) barcode types.

**QR Code**

One of the readable two-dimensional (2D) barcode types.

**RFID**

Radio Frequency Identification: System based on built in chip that contains data and can communicate through air.

**SDK**

Software Development Kit

**SOD**

Document Security Object

**VIZ**

Visual Inspection Zone: Upper part of the travel document. It may contain face photo image and textual, human readable data.

## IX. CONTACT INFORMATION

**Headquarters:**

Adaptive Recognition, Hungary Inc.  
Alkotás utca 41 HU  
1123 Budapest Hungary  
Web: [adaptiverecognition.com](http://adaptiverecognition.com)

**Service Address:**

Adaptive Recognition, Hungary Inc.  
Ipari Park HRSZ1113/1 HU  
2074 Perbál Hungary  
Web: [adaptiverecognition.com/support/](http://adaptiverecognition.com/support/)

Adaptive Recognition Hungary Technical Support System (ATSS) is designed to provide you the fastest and most proficient assistance, so you can quickly get back to business.

Information regarding your hardware, latest software updates and manuals are easily accessible for customers via our [Documents Site \(www.adaptiverecognition.com/doc\)](http://www.adaptiverecognition.com/doc) after a quick registration.

### New User

If this is your first online support request, please contact your sales representative to register you in our Support System. More help [here \(www.adaptiverecognition.com/support/\)](http://www.adaptiverecognition.com/support/)!

### Returning User

All registered ATSS customers receive a personal access link via e-mail. If you previously received a confirmation message from ATSS, it contains the embedded link that allows you to securely enter the support site.

