AUTOMATIC NUMBER PLATE RECOGNITION

USER MANUAL

CARMEN® GO

CARMEN® GO USER MANUAL

Document version: 1.4.0.

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About CARMEN® GO

CARMEN® GO is a camera-independent, plug-and-play ANPR service that recognizes license plates from live or recorded video streams. Setup is easy: it only takes a few minutes to create your ANPR solution without any ANPR system integration skills. CARMEN® GO works fully automatically, as it has a self-optimized operation for the best ANPR results. The streams are processed automatically, so there is no need for image preselection. Up to 8 parallel streams can be processed at the same time. It has a user-friendly web interface where the basic input (camera or video stream) and output settings of CARMEN® GO can be done.

INSTALLING CARMEN® GO

1. HARDWARE INSTALLATION

1. Connect the USB NNC dongle to one of the USB 2.0 (or higher) ports of the computer.
2. The dongle will only be detected and recognized once the software package has been installed.
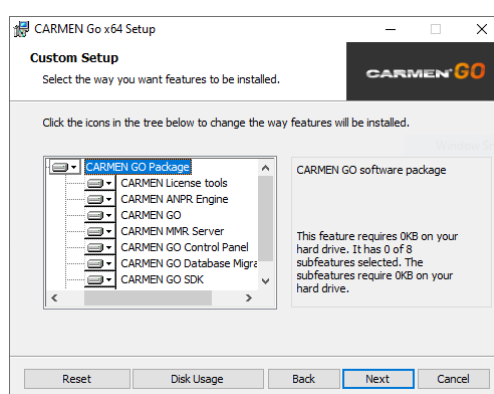
2. SOFTWARE INSTALLATION

1. The download link for the CARMEN® GO Installation Package is distributed via the Adaptive Recognition Hungary Technical Support System (ATSS). The link is sent out automatically once your order is processed. If you did not receive a download link, please contact your sales account manager.
2. Before installing CARMEN® GO, uninstall any previous versions of CARMEN®ANPR from your system (if applicable) and reboot the computer.

> **! Important**
>
> When you are installing a new version of CARMEN®GO and uninstall previous version, you may receive a warning window that older version is still exist on your computer and installing is not possible due to that reason. In this case, please contact with our support team on atsshelp@adaptiverecognition.com for and ask a GX CLEAN UTILITY software!

3. Install CarmenGo_x.x.x.x.msi

    The installer contains the following mandatory elements:
    IT IS RECOMMENDED TO INSTALL ALL COMPONENTS!

> **🗋 Note**
>
> The Database Migration tool is available from the Carmen GO folder. It starts automatically during installation if it finds an old database. Manages database changes between versions.

4. During installation, the software will check the Hardware key - so it is recommended to connect it in advance.
5. Follow the installation steps and accept the END-USER LICENSE AGREEMENT by clicking on "I AGREE".
6. Restart your computer to complete installation.
7. CARMEN® GO and Control Panel are now installed on your computer and ready to use.

> **Note**
>
> Please install corresponding regional engine at the end of the process, as Carmen® GO comes with a general engine preinstalled without country recognition.

> **Note**
>
> If any error occurs during use, run "CARMENGoInstaller_x64_x.x.xx.msi" file and select "Repair" button to fix any issue.

3. LICENSE INSTALLATION

Before you can start using CARMEN® GO, attached to the same message with the download link, you will find the license files that you need to upload to your hardware key to enable LPR. You can apply them with the License Manager utility. Please find the user guide here:
http://doc.arh.hu/carmen/license_manager_users_manual.pdf

START USING CARMEN® GO

- Connect the USB Hardware key to one of the USB ports (2.0 or higher). The key will only be detected and recognized once the software package has already been installed.

HARDWARE KEY / NNC DONGLE

- Simply go to the Start menu, locate and start the CARMEN® GO Control Panel application.

CONTROL PANEL

Control Panel is a tool for easy starting and monitoring the status of the CARMEN® GO service – accessible from the Start menu. Here you can also check license and NNC status.
If both the NNC key and CARMEN® GO license are ok, click on the **"Start"** button to start the CARMEN® GO service.
Once running, you can start using CARMEN® GO by clicking the **"Open Web Interface"** button.
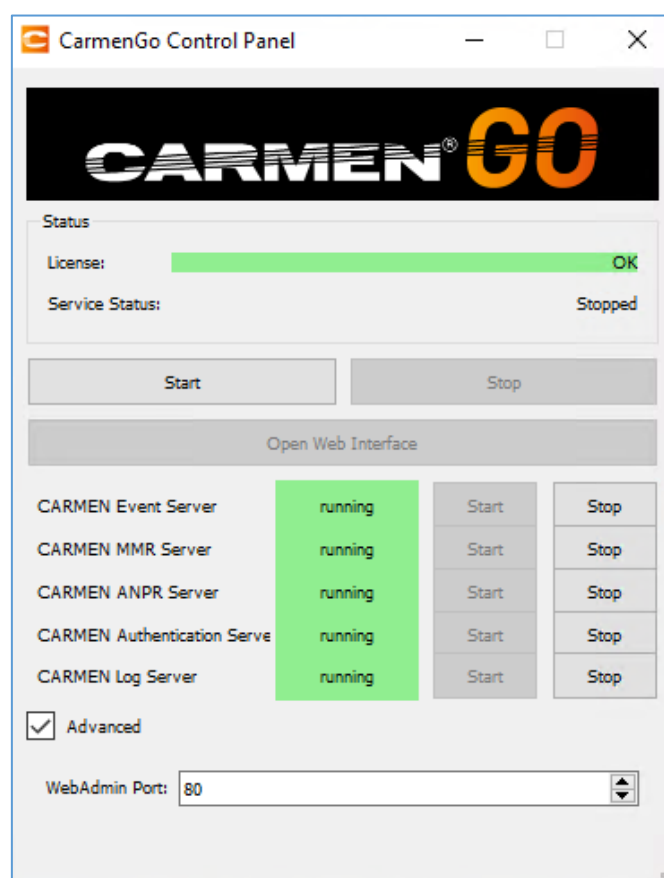
"**Open Web Interface**" will open the CARMEN® GO Management page in your default internet browser. (**The interface page is optimized for Google Chrome browser**)

> **Note**
>
> Alternatively: Open your internet browser (Chrome, Firefox, Opera, Safari) and type in the address bar: http://127.0.0.1/ or http://localhost/ to start using CARMEN® GO.

- If your Web server default port is reserved, you can change it in the Advanced menu.

> **! Important**
>
> The use of Internet Explorer is not recommended, the interface is not optimized for that browser!
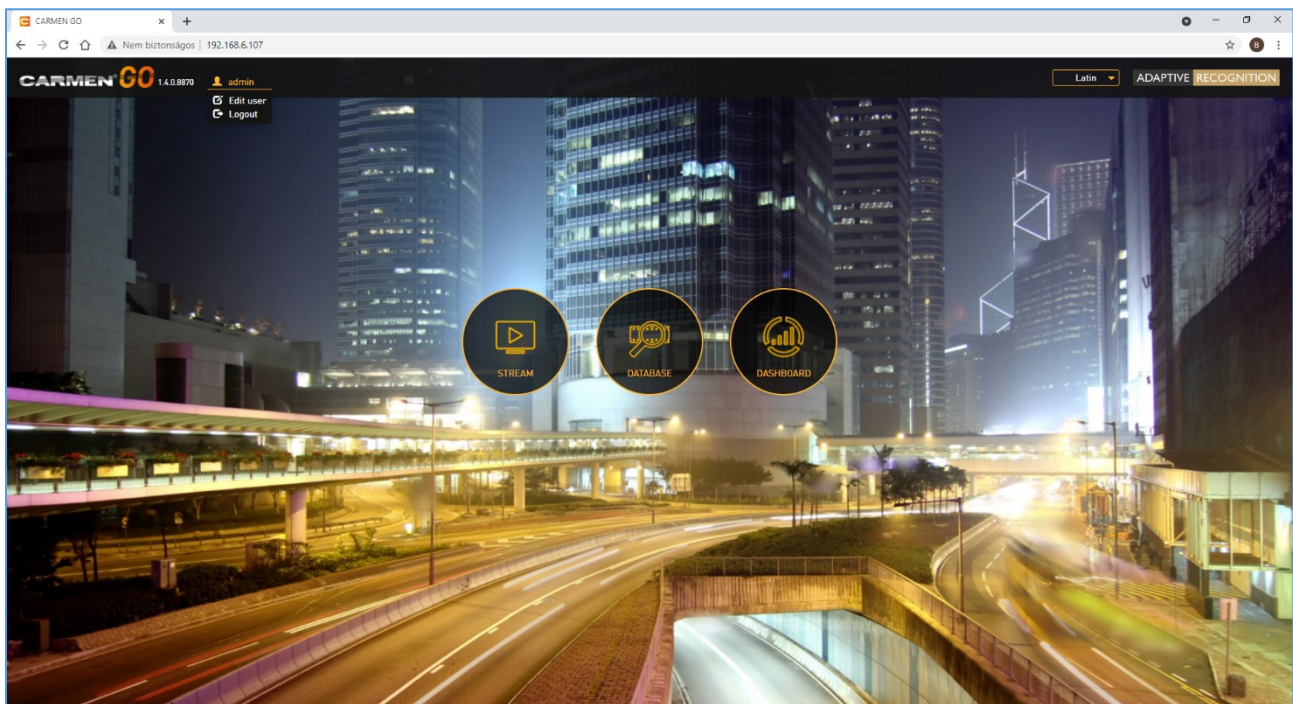
> **! Important**
>
> Closing the browser and Control panel does not stop the service, it will still be running in the background. To shut down the service, click on the "Stop" button on the Control panel.

WEB INTERFACE – MAIN MENU

There are three main functions available on the opening page:

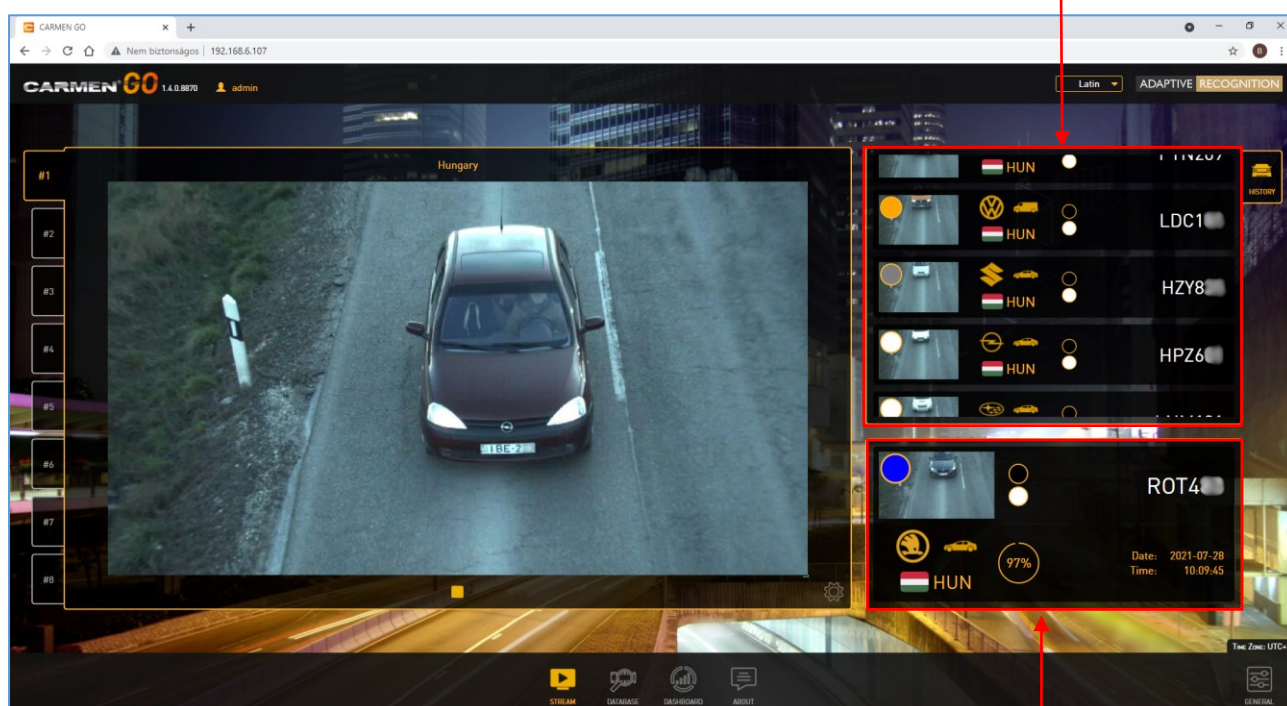- Stream

- Database

- Dashboard

1 - MAIN MENU

1. STREAM

The Stream menu enables the live view of the selected IP camera or Video file stream and the ANPR data captured. Up to 4 channels can be connected - this enables the recognition of number plates from 4 individual cameras or pre-recorded video streams at the same time.

The upper right "History" panel shows the previous 4 events detected (scrollable)

2 - STREAM MENU

This area shows the last detected number plate with country, MMR data, confidence and date and time

> 💡 **Hint**
>
> Clicking on any event will open it in a popup window, where zooming on the license plate is possible.

You can zoom in and out of the detected event image when you open it (also possible with the mouse scroller)
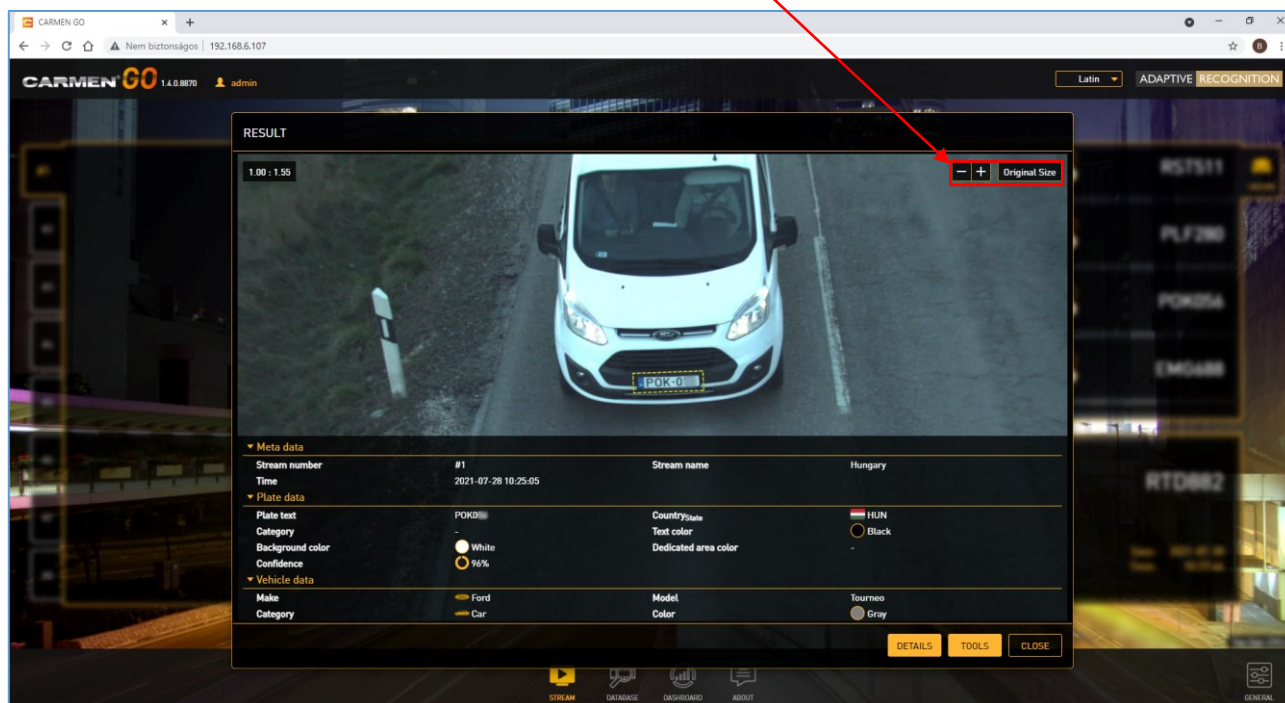
3 - RESULT

Hint

You can close this window by clicking **"Close"**.

Note

When refreshing the web page, results will disappear from the history but are not deleted from the internal database.
It is also possible to stop and play the stream. After stopping a video file, on the next start, it will jump to the beginning of the video.

2. STREAM SETTINGS

This menu allows you to edit input, output, and ANPR settings.

- System requirements depend on stream resolution and the number of passing vehicles
- For input formats, recommended camera positions, and image requirements, please check the input stream guide online document.

To get access to the Stream Settings menu, please click on the gear icon on the right lower corner of the live view.
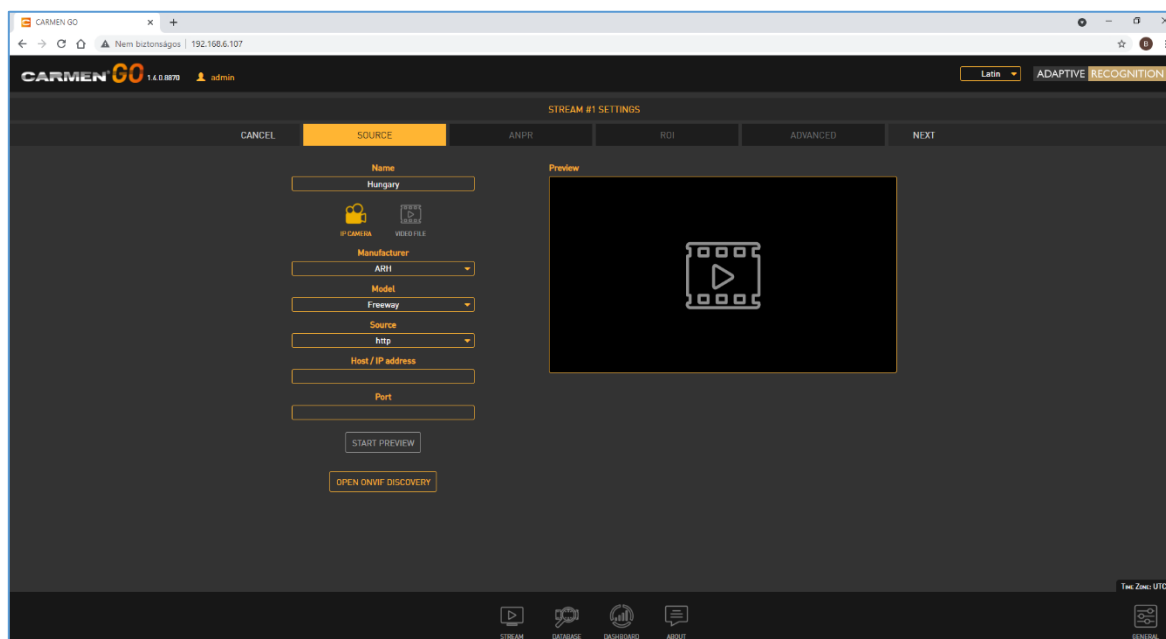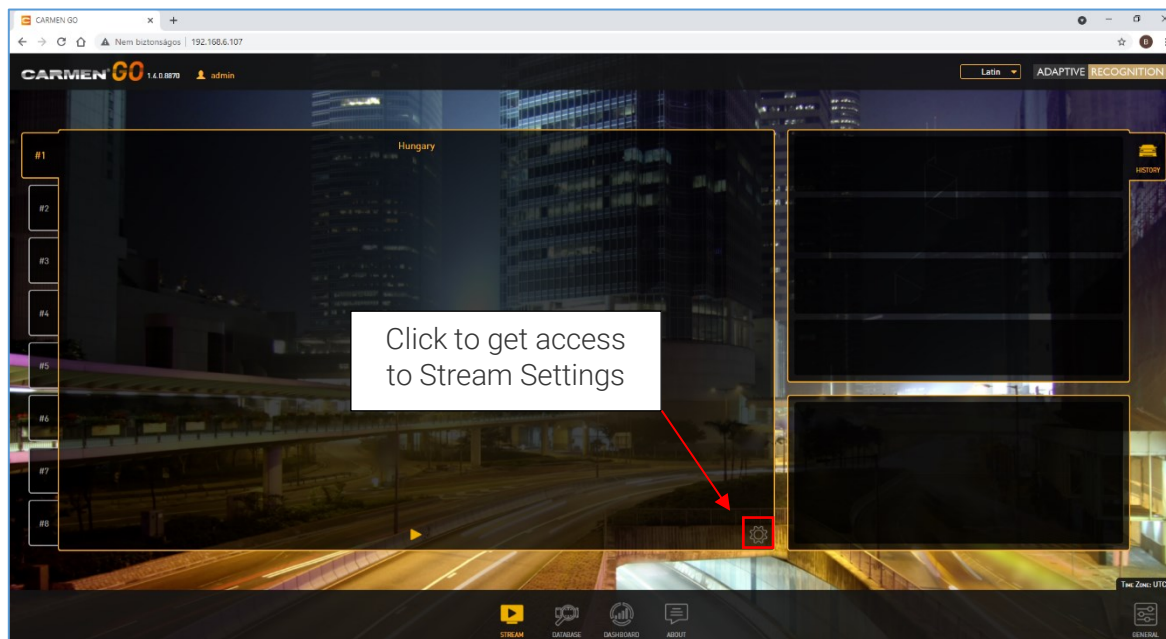

4 - SOURCE MENU

2.1. SOURCE TAB

2.1.1. IP camera

You can select the **"ARH"** or **"Generic"** option from the **"Manufacturer"** list - depending on what camera brand you are using.

- In case of ARH products, add related data of camera;
  - o choose between models
  - o source of the stream
  - o type in host or IP address
  - o and give the port of the stream

- In case of any other brand, type in or copy and paste the complete URL address of the camera's stream into **"Stream URL"**.

After all, parameters have been given, click on **"Start preview"** to see the live view of the camera.
You can assign a name to the camera (or video) stream in the **"Name"** field. With this, the changes are done, click on the **"Next"** button.
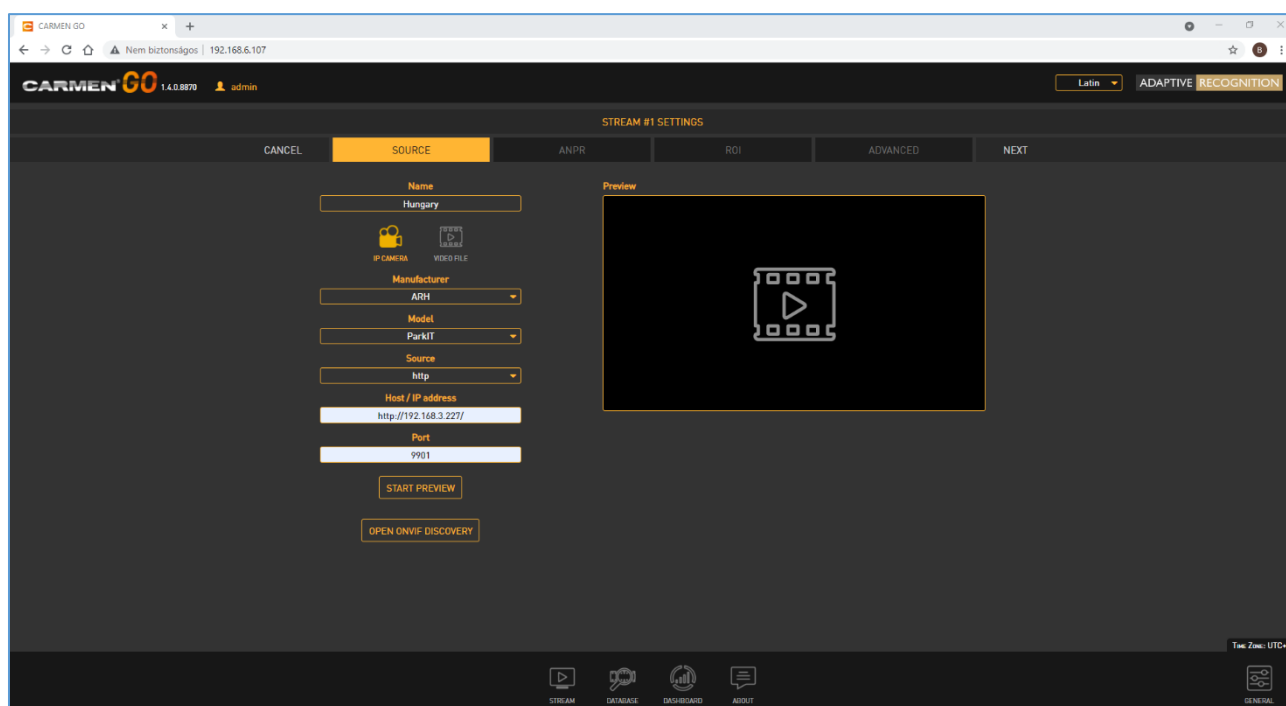
5 - IP CAMERA SETTINGS

> **Note**
>
> If the camera is password protected, enter the username and password into the URL address as below:
> `http://username:password@192.168.x.xx:9901/video.mjpeg`

2.1.2.   Video file

If you have a previously recorded video file about a monitoring event, you can browse and add it to the "File upload" field.

Note

File should be available from the computer where the web interface is accessed.

- To select the file, click on **"Browse"**, select video file, and press **"Upload"**
- Wait till CARMEN® GO uploads it to the server.
- The uploaded video file list will be populated under **"File selector"**
- The last step is to click on the **"Play button"** in the list, and the video will start.

Supported video formats: MPEG-4, AVI, MOV, MJPEG, H.264, VP8, VP9, and many more. You can give a unique name to this stream as well.
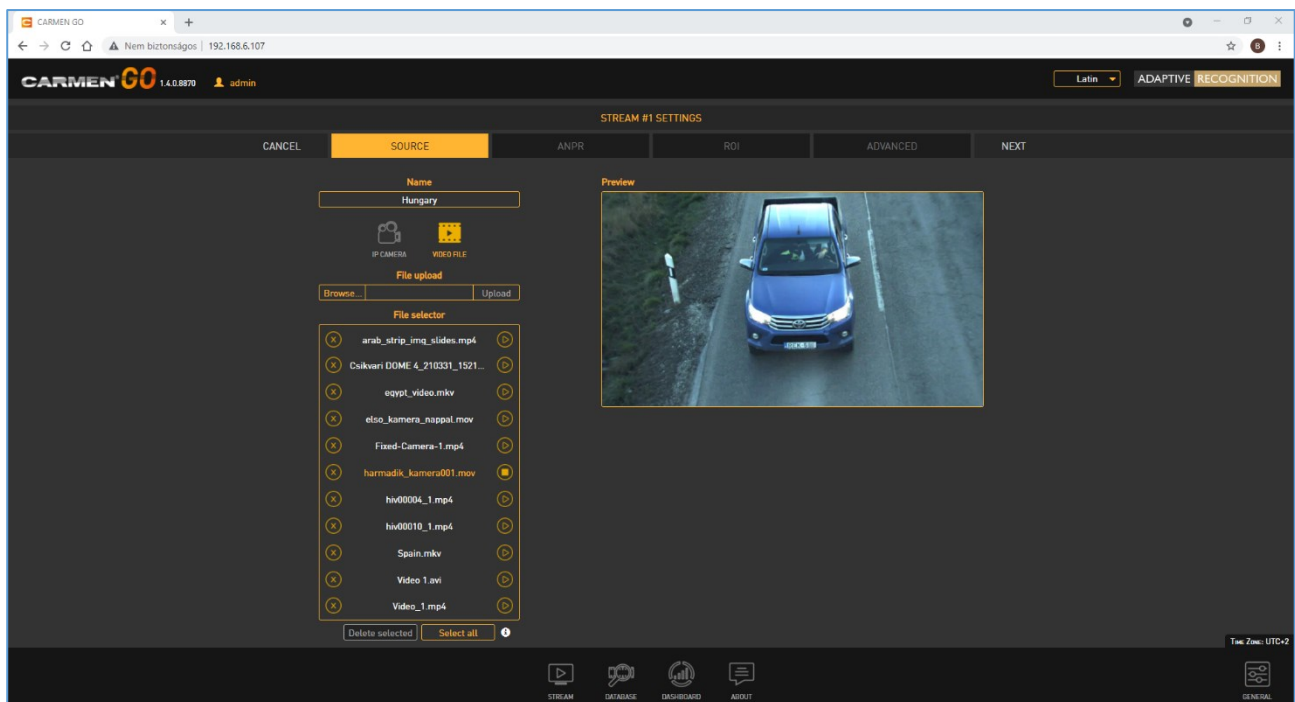
6 – VIDEO FILE SETTINGS

Note

You can upload more than one video file at the same time by selecting multiple files in the browser.

Note

When you are willing to delete the current video and click on either "Select all" or the "X" on the left side of the "File selector" and the video is playing, system will not allow it, because the file is being used at the time.

2.1.3. ONVIF Discovery

The primary purpose of the CARMEN® GO Discovery API is to detect and display (their address) ONVIF cameras on the network and to make camera selection easier, so you don't have to manually enter the stream URL.

Stream URLs are defined in two steps:

ONVIF devices: list camera URLs

ONVIF query determines the STREAM URL of the camera which was selected from the list. This requires an ONVIF username-password pair. Click on the Query Streams button to load the stream.

> **Note**
>
> Stream and ONVIF password might not be the same, if it differs, write username and password in to the URL address in the proper way.
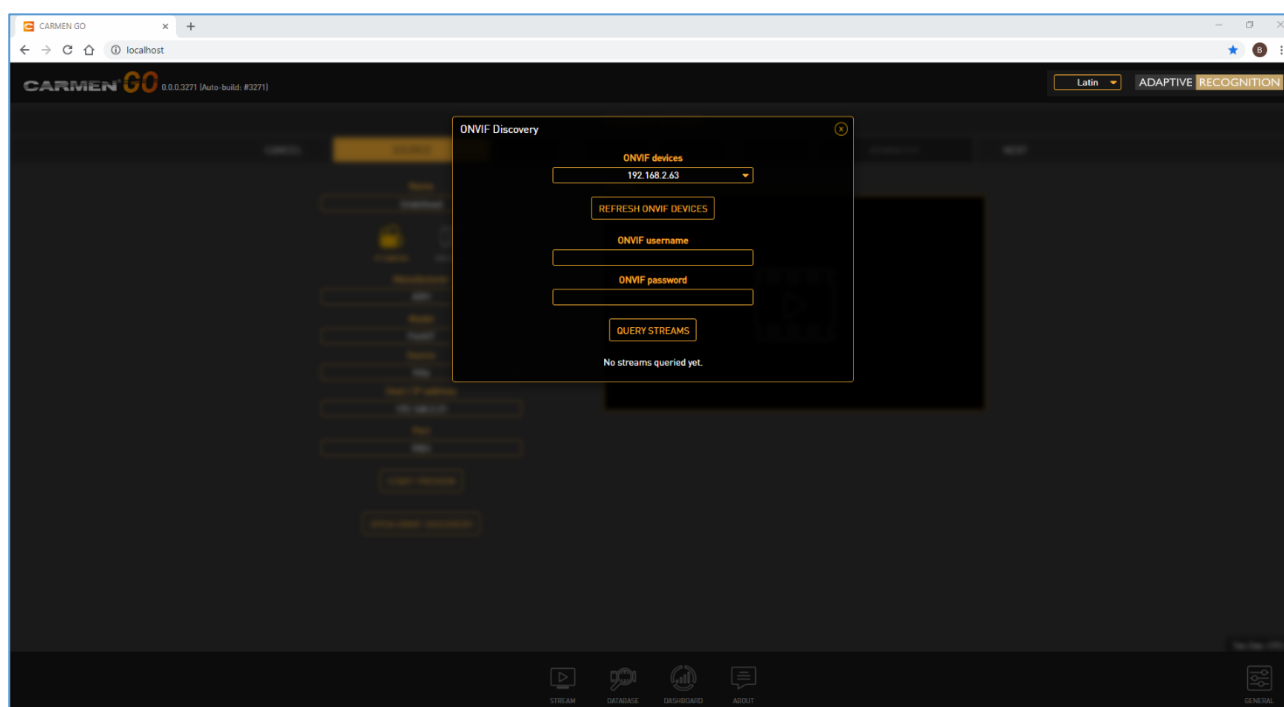
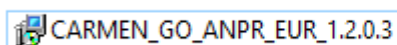7 - ONVIF SETTINGS

2.2. ANPR TAB

1. Region / Country

By default, only a general engine is installed with no country recognition. For country and state recognition, install the regional engine purchased.
Select the desired region in ANPR settings.

📄 Note

By selecting GENERAL engine, CARMEN® GO will recognize plate types of many countries, but not as accurate as specific engines.
Output data: plate characters and country name.

Description of engine file:

- **EUR** - name of the region
- **1.2.** – this number indicates the main version of CARMEN® GO and engine is related to that
- **0.3** – patch number

❗Important

It is not granted that previous versions of CARMEN® GO will work properly with 1.1.xx engines!

📄 Note

When you have installed engine and CARMEN® GO is running, please refresh webpage to load the engine to the web interface.

📄 Note

You can uninstall engines from System settings (Add or remove programs).

After the regional engine is installed, select the engine in **"region"** and country in **"country"** .

Plate color recognition: including text color and background color recognition.

Vehicle recognition: MMR module is integrated into the CARMEN® GO package. The Make and Model Recognition (MMR) module enables its users to retrieve additional information from a digital image after a successful ANPR. This includes the following properties of the vehicle:
• Category (CAR, BUS, VAN, LGT – Light Truck, HVT – Heavy Truck)
• Make (VW, Isuzu, Toyota …)
• Model (Passat, Turquoise, Corolla…)
• Color (White, Red, Gray…)

**Vehicle color recognition:** the module recognizes the color of the detected vehicles.

2. Trigger method

This drop-down menu contains three trigger algorithms:
- **General video process:** general ANPR trigger setting
- **Parking:** recommended for parking situations. (Triggers in every 600 milliseconds)
- **Plate Finder:** Image processing algorithm designed to detect a license plate inside of a predefined ROI.
- **Stop and Go:** recommended to use for access control. Sensitivity can be set from low to high with the slider. The optimal setup is 50%. (Motion based trigger)
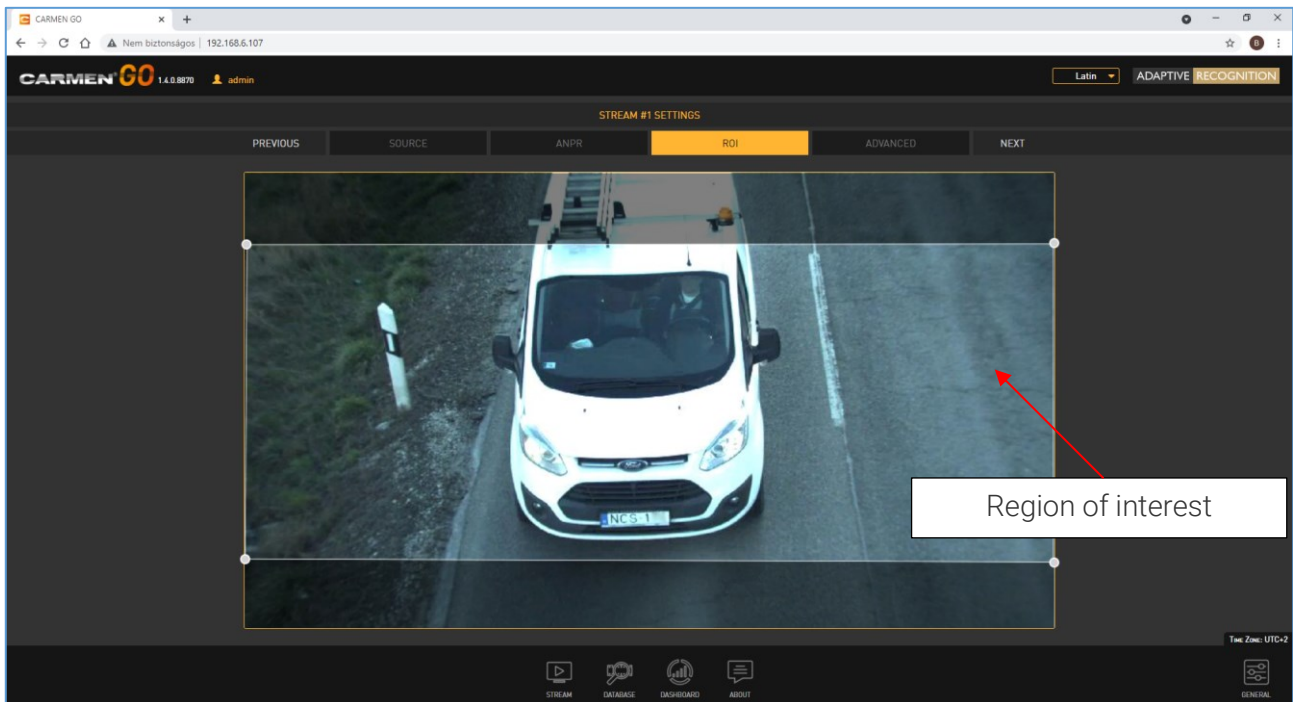
3. Event duplication timeout

The minimum amount of time that must elapse to store events with the same plate text and type.
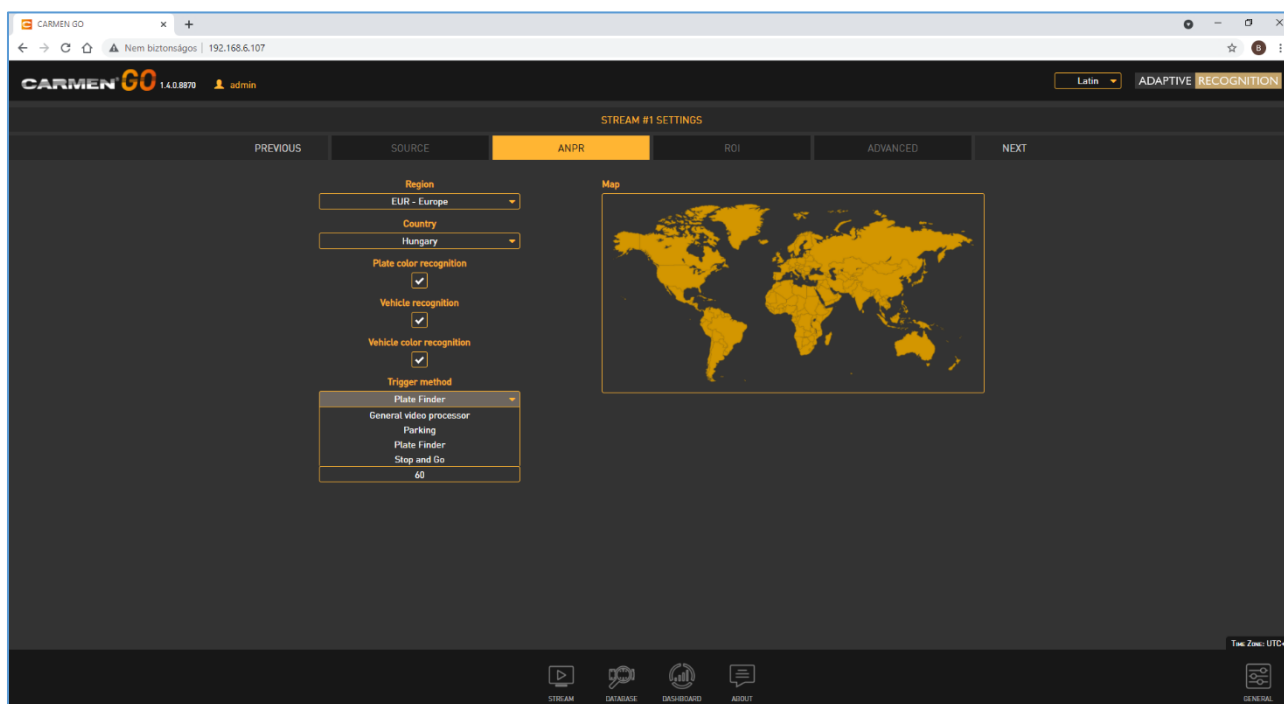
8 – ANPR METHOD

2.3.   ROI

This menu point is intended to set up regions of interest (ROI) both for triggering and ANPR. Set the ROI by dragging the corner points of the trigger area.
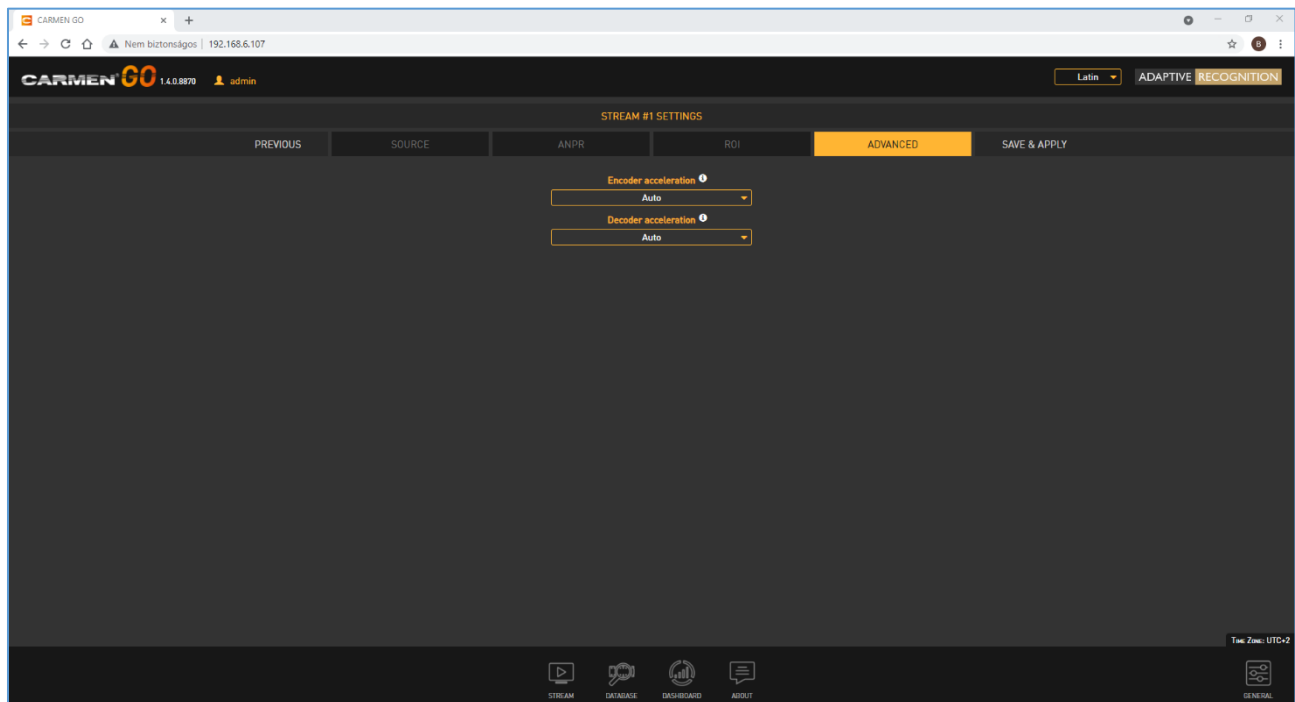

9 - ROI

2.4. ADVANCED

Encoder and decoder acceleration option for stream compression. The recommended setting is Auto.

> **! Important**
>
> Acceleration is dependent on the CPU features.

10 – ADVANCED MENU

2.4.1. General tab

There is an option to export ANPR results from CARMEN® GO:
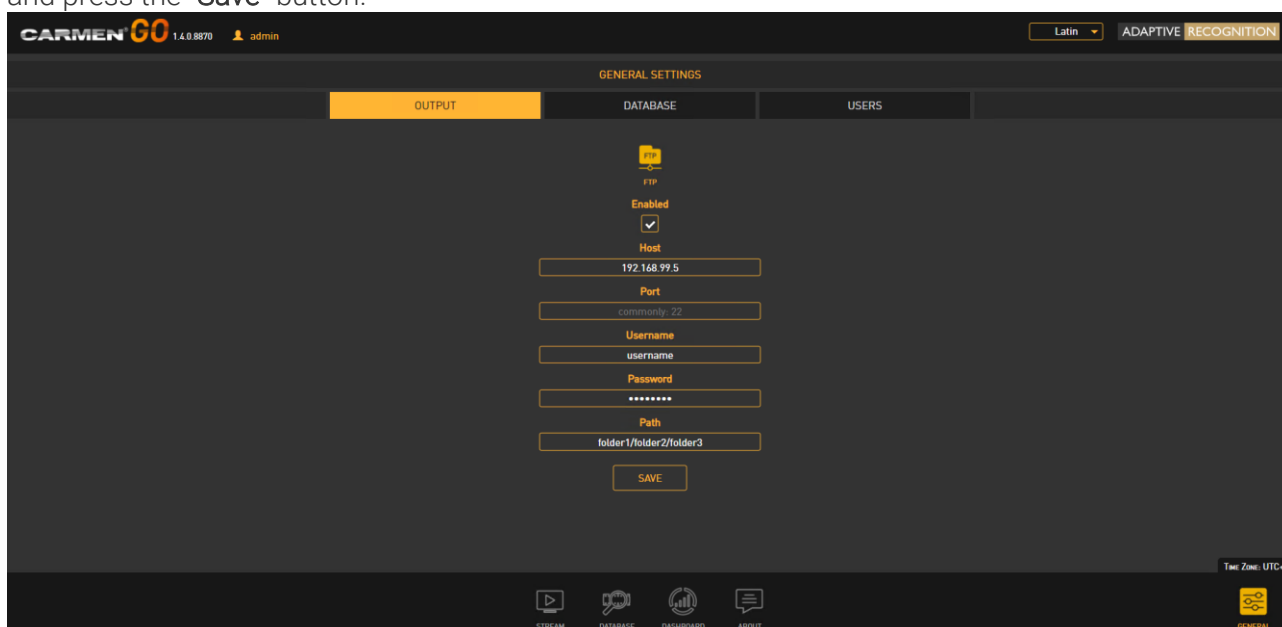
- **FTP server** - remote

On top of the 2 selectable, there are also other 2 "always on" outputs:
- **REST API** – remote
- **Data Stream** – remote

2.4.2. FTP server

You can export the output data directly to an FTP server (including images).
Type in all details (Host, Port, Username, Password, and Path) in the required fields, check **"Enable"** and press the **"Save"** button.

11 - FTP FILE

2.4.3.   Data stream

This "always on" output enables transferring events to third-party software.
- SDK is available to install at the initial installation
- With this SDK it is possible to connect to the CARMEN® GO server - if the Data stream option is active

- Online document available here:
  http://doc.arh.hu/carmen_go/carmen_go_data_stream_sdk_programmers_guide.pdf

2.4.4.   REST API

Through this new feature, it is possible to pull event data from the internal database through HTTP with REST API commands. Results are available in JSON format.
For details, please see the online document:
http://doc.arh.hu/carmen_go/carmen_go-database_rest_api_reference_manual.pdf

2.4.5. Database

Database settings are available on this page. Path, storage limits, and database status can be set according to user preferences.

- **Database path:** The path to the database, including the filename. It does not affect the location of previous events, only subsequent ones.
- **Storage limits:** You can add size and time limits according to your resources and appropriate settings manually.
  - **Maximum size [MB]:** Maximum database size to store. The oldest events will be deleted when the database exceeds this limit.
  - **Maximum time interval [h]:** Maximum time interval to store. The older events will be automatically deleted.
- **Storage:** Visually displays storage capacity.

📄 Note

If you turn on both size- and time interval limit, the one that is reached first will trigger the deletion.
The database growth rate depends on the number of streams, traffic density, and image quality.
We recommend monitoring the behavior for a while so that you can determine the appropriate settings.
Size: Minimum 100MB, maximum 9.000.000.000MB
Time: Minimum 1h, maximum 10.000.000h

❗ Important

If you do not set a database limit, you will run out of storage space. If there is no space, then it will be an undefined behavior in your Operating System. Therefore, set as much as you will able to allocate on your storage.

---
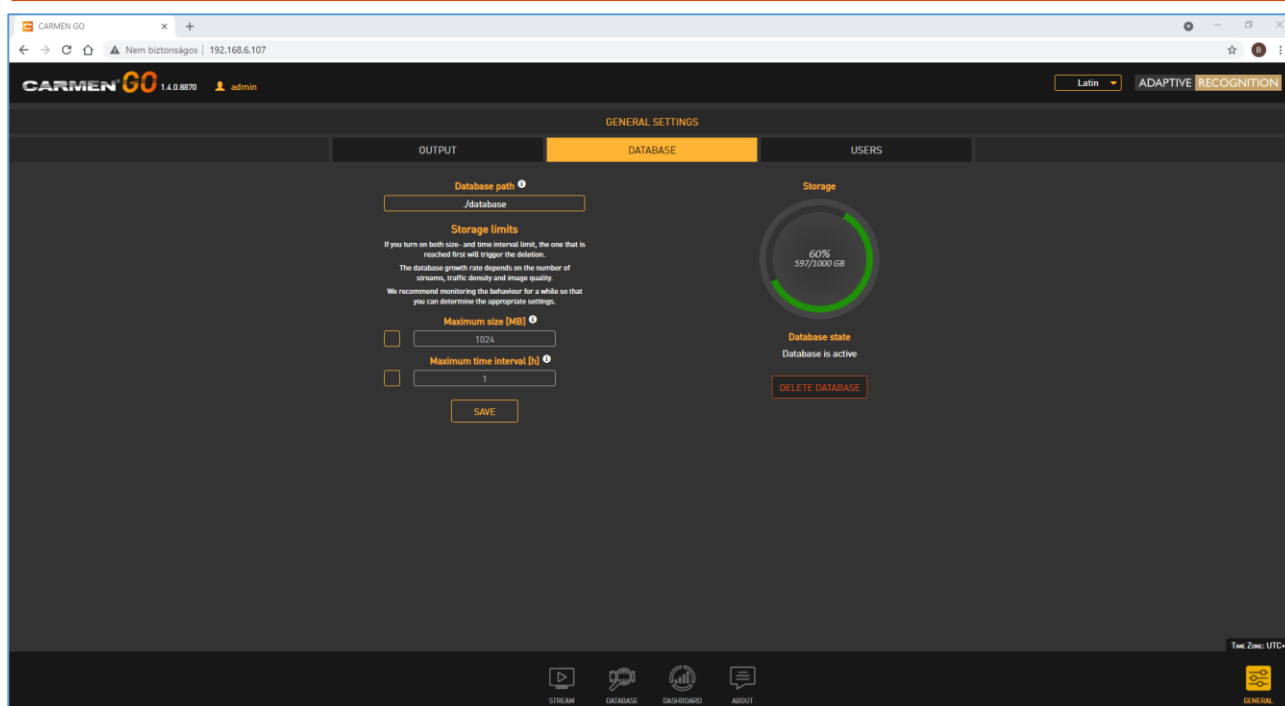
12 – GENERAL SETTINGS DATABASE

3. USERS/AUTHENTICATION

> **!Important**
>
> First login:
> There is a default user named "admin". When you first login in the system, you have to use this user's default credentials:
> **Username: admin**
> **Password: Admin1234**
>
> After entering in the system you can modify the password connected to the admin user by checking on the "admin" text, next to the CARMEN® GO logo, and then select "Edit user".
> "Change password" option is listed there. After selecting it, fill the appearing fields and press "Modify" button for confirmation.
>
> You can also add and modify users under the General tab, Users menu.
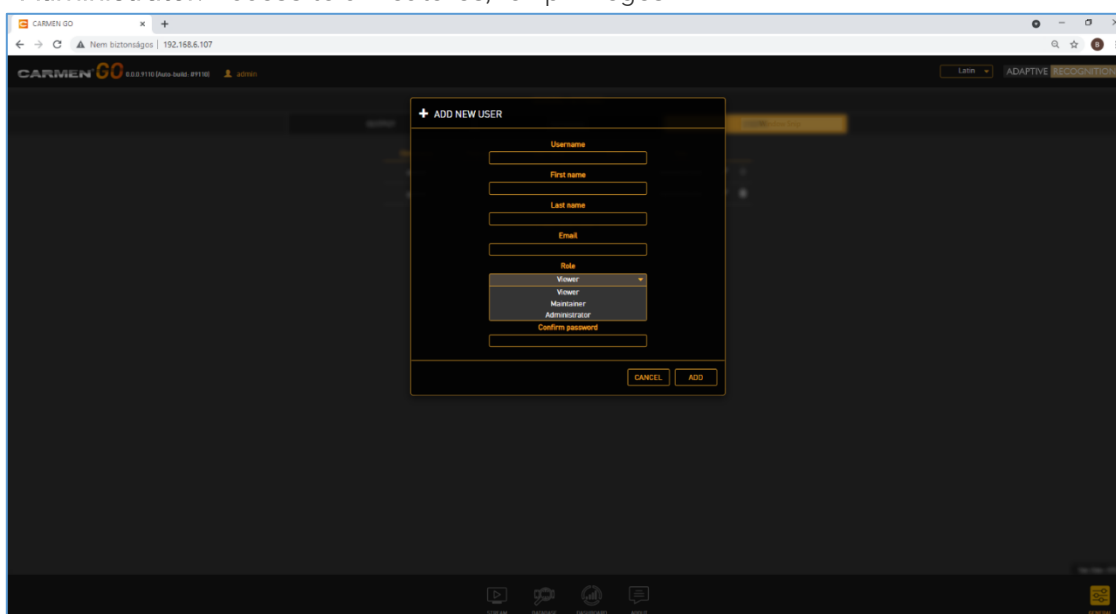
Adding a new user: On clicking the **ADD NEW USER button** a form appears requesting the following fields:

- **Name**: The username that will be used to log in.
- **First name**: Forename of the user.
- **Last name**: Family name of the user.
- **Email**: Email address of the user.
- **Role**: User roles and privileges.
- **Password**: Corresponding password.
- **Confirm password**: Confirm the given password to rule out mistyping.

After all necessary data is entered, click on the **Add** button to confirm.
Roles:

- **Viewer:** Access only to see detected events.
- **Maintainer:** Almost full access, except handling users.
- **Administrator:** Access to all features, full privileges.

13 – GENERAL SETTINGS USERS

4.   DATABASE

The database menu shows all events from all streams with relevant details.

You can search within the database. You are also able to delete the whole database.

14 - DATABASE MENU

This area shows the detection history with all relevant data about each event captured (Number plate, Type, Time, Plate text, Country, Confidence, Image and Vehicle data)
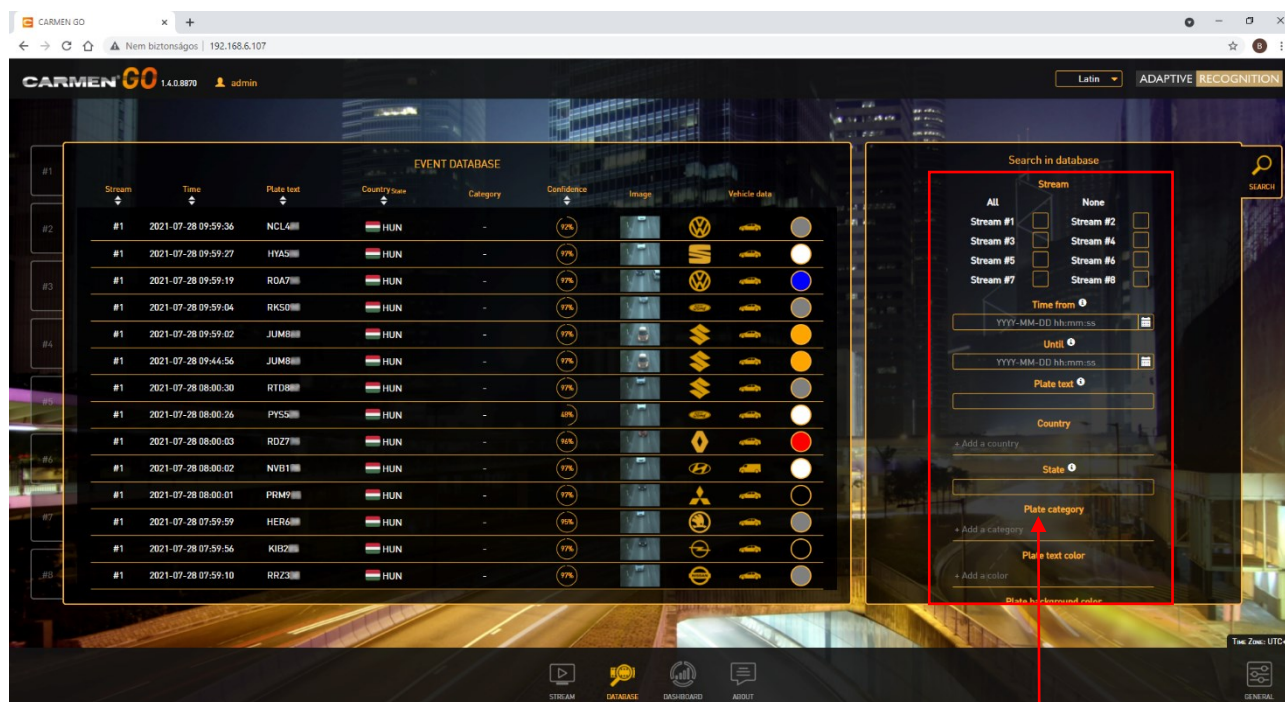
You can export CSV file into Excel

📱 **Note**

There are two options to download CSV file:

- Download database as CSV
- Download database as ZIP – it also contains images

📱 **Note**

Database is gathering and storing all event data – until the maximum capacity of storage is reached or the "Clear" button is clicked.

15 - DATABASE MENU

You can search separately among the Stream, Time, and Plate text

Plate category: ANPR recognizes the category of the number plate and automatically adds it to the detected event data. If you click on **+ Add a category**, you can search among the listed categories.
Plate text color: choose among the text colors to find the required result.
Plate background color: choose from the background colors.
Plate dedicated area color: In some countries, there is an extra distinction on the license plate, like circle, star, bar and that is its color.
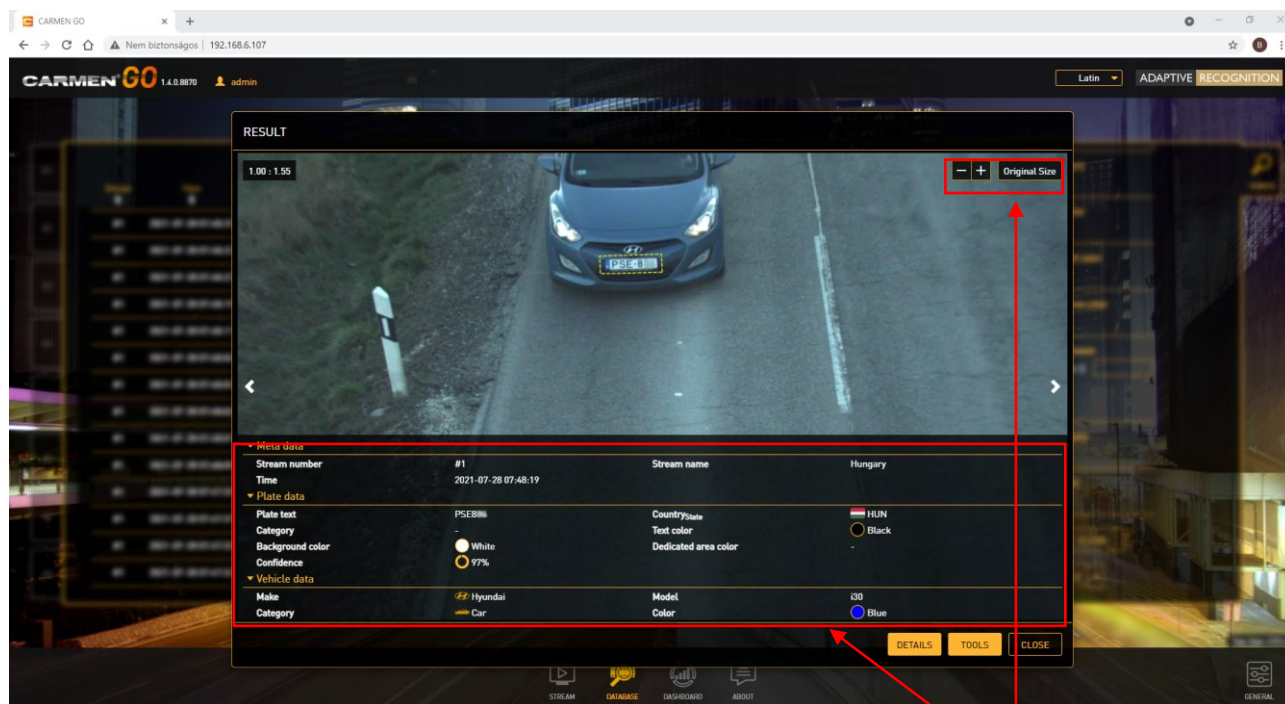**Confidence:** Search between two values to receive the required events.
Make: Select vehicle models from the list.
Vehicle category: Choose from the vehicle categories.
Vehicle color: You can search by vehicle color.

Database result:

16 - DATABASE MENU

You can zoom in and out of the detected event image and check relevant data

Result data:

- **Meta data:** Contains information about Stream number, time, and name.
- **Plate data:** Contains all relevant data about the detected number plate.
- **Vehicle data:** Relevant MMR data about the detected vehicle.

5.   DASHBOARD

This menu represents information on detections. It has four categories:
- **Plate types:** all detected number plate
- **Detection count:** show all detected events
- **Average detection time:** average time of each detection
- **System load:** the measure of the work amount that the system performs in a 24h period

17 - DASHBOARD MENU

The dashboard is collecting data while the CARMEN® GO service is running. If you restart the service, it will continue gathering events.

> **Note**
>
> If you stop the **ANPR Server** manually, **the** Dashboard will be completely empty at next start.
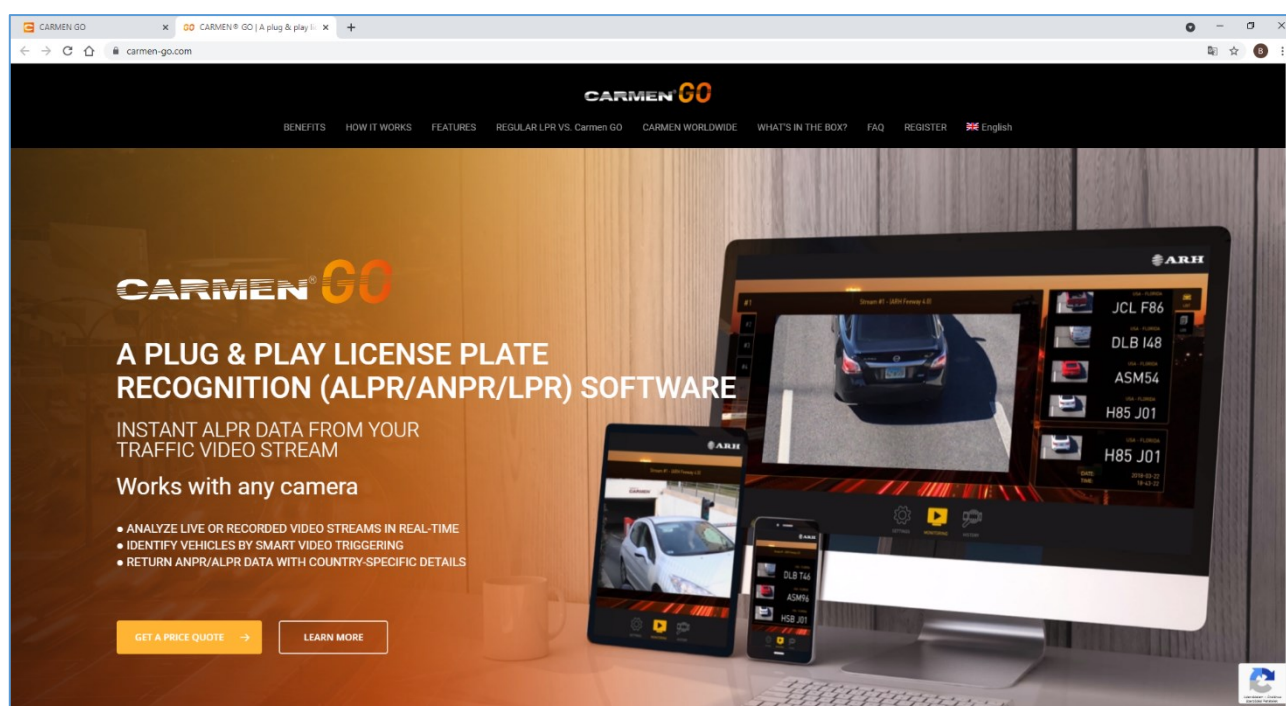
> **Note**
>
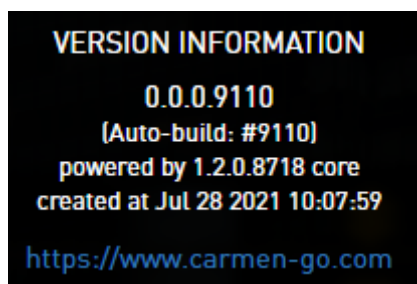> Deleting the database clears the Plate types tab history.

6. ABOUT

The software version number and a link to the official CARMEN® GO webpage are available here.
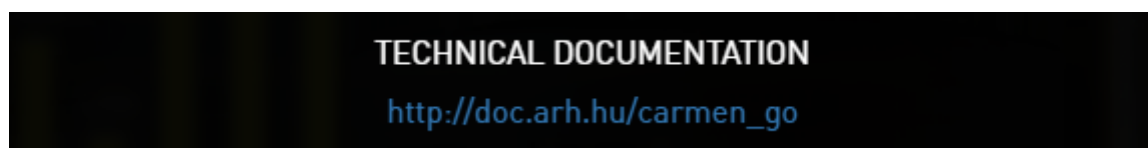

18 - CARMEN® GO MICROSITE

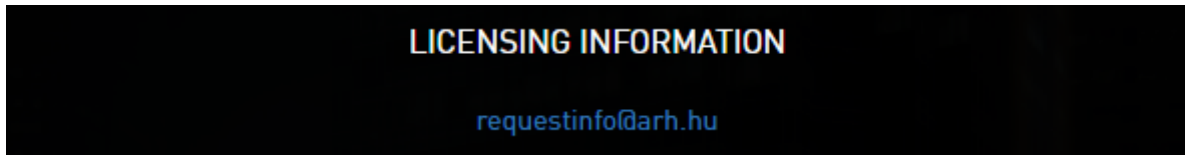Version information is available here.

19 – VERSION INFORMATION

Technical documentation: relevant documents of CARMEN® GO are available from this site.
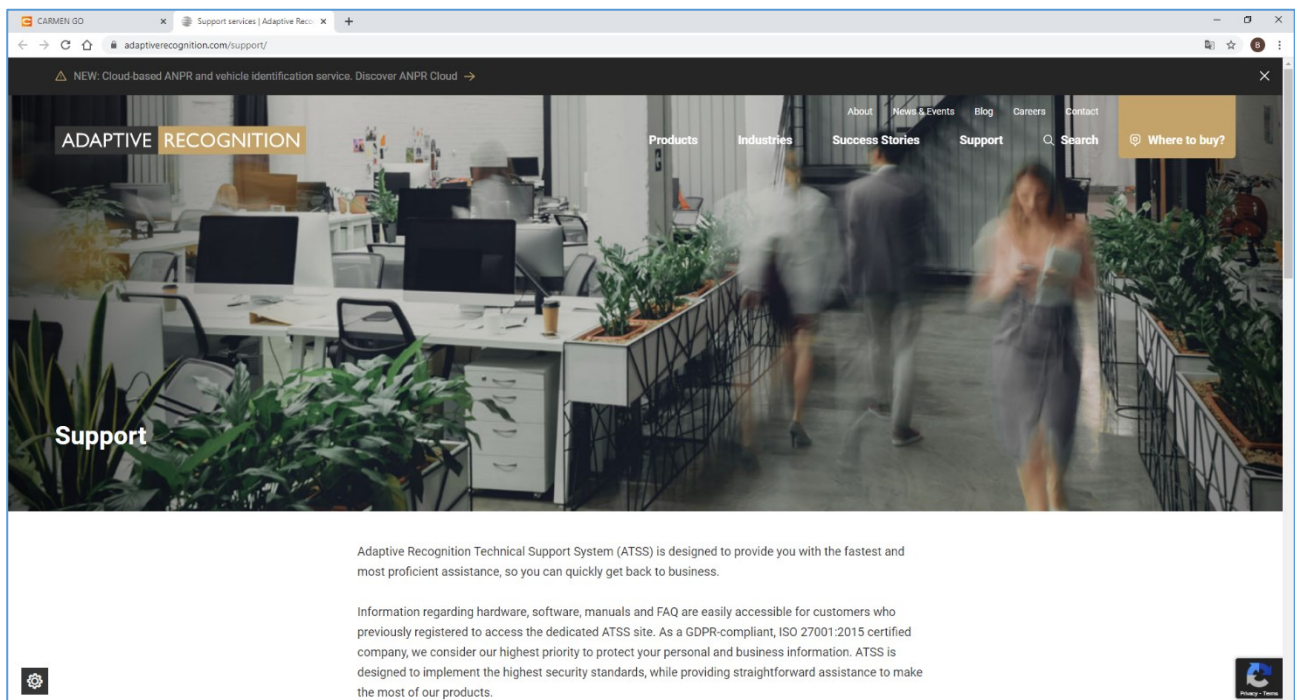

20 – TECHNICAL DOCUMENTATION

"Licensing information": to request information about your licenses via e-mail.
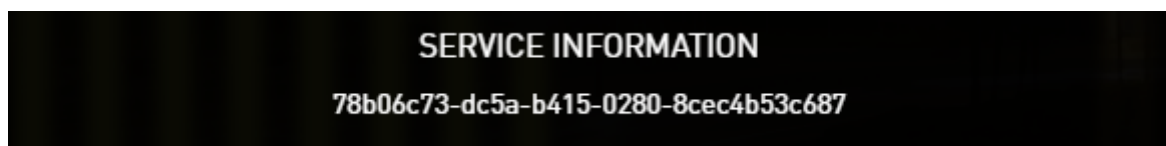

21 - LICENSING INFORMATION

The "Technical assistance" link will direct to a web page, where technical assistance can be requested from our support team.

22 - TECHNICAL SUPPORT WEB PAGE

Service information: it is the unique ID of the service.

23 – SERVICE INFORMATION

Contact Information

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E-mail: rmarequest@adaptiverecognition.com

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.
For further technical information about our products, please visit our official website.

Information regarding hardware, software, manuals, and FAQ are easily accessible for customers who previously registered to enter the dedicated ATSS site. Besides offering assistance, the site is also designed to provide maximum protection while managing your business information and the technical solutions utilized.

New User
If this is your first online support request, please create an account by clicking on this link.

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.

If you need assistance with login or registration, please contact atsshelp@adaptiverecognition.com for help.