License Plate Recognition

About Digifort LPR System

The Digifort LPR offers general-purpose license plate reading from any type of cameras. Allow or Ban a certain list of number plates, and set actions accordingly, such as send email, trigger alarm or trigger an output to open the gate – automatically!
About Digifort LPR Recognition Engine

The Digifort License Plate Recognition Engine possesses all the features a high quality license plate recognition system that is fast, highly accurate, fail safe, stable, and intelligent.

Meanwhile it provides the highest technological performance amongst today's license plate readers, Digifort LPR offers great flexibility for integrators of car plate recognition systems: it can be integrated into practically any system which needs automatic vehicle recognition.

Features of Digifort LPR

The Digifort LPR offers general-purpose license plate reading from digital pictures of any type of cameras. Whether it is a megapixel-size, 12bits/pixel high dynamic range, high resolution digital image or a 320x240 size colour CCTV video picture provided as input, Digifort LPR provides balanced reading of car plates.

The automatic number plate recognition engine is powered by CARMEN® with over 98.5% recognition rate (correct reading/total number of input) working 24h/day, 7days/week. CARMEN® is a proven product - and a living automatic vehicle recognition technology.

Technical Specifications of Digifort LPR Engine

<table>
<thead>
<tr>
<th>Supported Operating Systems</th>
<th>Windows Family (XP, Vista, 7, Server 2003/2008) 32/64Bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Plates</td>
<td>Recognition is country and font independent. Any Latin, Arabic, Chinese, Korean and Cyrillic characters can be recognized.</td>
</tr>
<tr>
<td>Trigger</td>
<td>Trigger is not necessary but recommended when recognizing from live video and more than 2 LPR cameras using single CPU core license. Motion Detection as trigger for 2 LPR Cameras maximum per CPU core license.</td>
</tr>
<tr>
<td>Sample Processing Time</td>
<td>Standard engine: 50ms @ CPU 2GHz B&amp;W images, 768x288 pixels (PAL/2)</td>
</tr>
<tr>
<td>Processing Time Dependence</td>
<td>Image quality (complexity, noise level etc.) Image size Processing power (CPU speed) Parameter settings</td>
</tr>
<tr>
<td>Output</td>
<td>Plate number in ASCII/UNICODE Confidence levels for each tips Single Plate detection per image</td>
</tr>
<tr>
<td>System Requirements</td>
<td>Intel Core2 Duo 1.8GHz or higher CPU (1024MB RAM)</td>
</tr>
</tbody>
</table>
Digifort LPR can provide and/or improve:

- Automatic highway toll collection systems
- Traffic Analytics during peak periods
- Automatic access control point management
- Automation of weigh-in-motion systems
- Enhanced vehicle theft prevention
- Effective law enforcement
- Border control systems
- Building a database of traffic movement
- Bus lane or red light enforcement
- Automation of airport and harbour logistics
- Security monitoring of roads, checkpoints, etc.
- Prevention of drive-off’s at gas stations, drive-in restaurants, etc.

Although they are many LPR cameras available, here are some that are highly recommended by Digifort.

- **Brand:** ARH
  - **Model:** FXCAM IBW 2000
  - **CCD:** 1/3”
  - **Infra-Red**
  - **IP66 Rated**
  - **Analogue Camera**

- **Brand:** Messoa
  - **Model:** SCR510
  - **Sony CCD:** 1/3”
  - **Infra-Red**
  - **IP66-IP67 Rated**
  - **Analogue Camera**

- **Brand:** DemoCSI
  - **Model:** TAG-1
  - **Sony CCD:** 1/3”
  - **Infra-Red**
  - **IP66 Rated**
  - **Analogue Camera**
License plate list

Date: 9/12/2010 11:15:27 AM
License plate: CV1110
Camera: VLC

Date: 9/12/2010 11:12:03 AM
License plate: AU603J
Camera: VLC

Date: 9/12/2010 11:10:03 AM
License plate: HN1422
Camera: VLC

Date: 9/12/2010 11:10:07 AM
License plate: DL311C
Camera: VLC
## Taiwan LPR Test

### Security Image print

![Image](image-url)

### Image details

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>License plate</td>
<td>605CLQ</td>
</tr>
<tr>
<td>Camera Name</td>
<td>01</td>
</tr>
<tr>
<td>Date and Time of the Image</td>
<td>Tuesday, 8 March 2011 15:45:04</td>
</tr>
<tr>
<td>Operator Name</td>
<td>Dario</td>
</tr>
<tr>
<td>Date and Time of the Print</td>
<td>Tuesday, 8 March 2011 15:57:03</td>
</tr>
</tbody>
</table>

### Operator Notes

Test Printing From Digifort

*<any notes here>*
Select Single/Multiple LPR Camera Objects
Print Reports from AND/OR Queries
Save to PDF
Export to CSV (comma-separated values)
Save to PDF
Jump to Playback/Recording
Advanced AND/OR Queries
Scroll through queried results with Snapshot Preview
Trigger Event(s) on detected number plate
Ability to Link to 3rd party system via HTTP API
As each number plate is detected, characters are assessed for an accuracy/confidence level rating. These ratings are represented as colour characters on the virtual number plate in the main GUI.

Accuracy, or Confidence level, is how certain the LPR engine is that the detected character is the actual character on the image.

**BLACK**  Over 90% Accuracy
**BLUE**   from 70% to under 90% Accuracy
**RED**    under 70% Accuracy

You can define a detection area (if using motion detection as trigger). This also allows configurations of a single camera for multiple lanes of traffic for LPR detection, or simply, narrowing down the detection area.

OSD Timestamp is ignored.
LPR Control List is a group of number plates to which an action or multiple actions can be applied. When these number plates are detected, actions are automatically executed by Digifort.
Note: Digifort LPR server, can run on a separate server, or on the same server as Digifort recording server. Primary factor that influences this is the number of LPR cameras that you wish to process.
Getting the best images for LPR

What is required?

To get the most accurate results from an LPR system, the captured images/video are the most important factor.

The requirements are:

1. **LPR Camera**
   Cameras specifically designed with high shutter speeds to capture fast moving objects without image blurring. Most megapixels cameras will blur on fast movements so you may consider slowing or stopping the vehicles if not using an LPR camera.

2. **Minimum Resolution 320x240 @ 3FPS**
   Character size on number plate must be minimum 16 pixels high. Resolution is not important as long as the captured image has good spatial resolution, sharpness, contrast, lighting conditions and angle of view.

3. **Camera Angle View**
   Camera needs to see the entire vehicle and the number plates so a person watching the video can read the number plates with their own eyes. If a person can make out the number plates with ease, then the Digifort LPR engine will also work well.

Examples:

- Characters too small (less than 16 pixels high)
- Low Spatial Resolution

- Image too blurry

- Low Contrast / too Dark

- Overexposure / too Bright

- Bad lighting conditions

- Distorted Image

- Interlacing

- Good Spatial Resolution
- Good Sharpness
- High Contrast
- Good Lighting Conditions
- Good Position and Angle of View
GOOD EXAMPLES

- Good Position/Angle
- Clear Image
- Good Contrast
- Good Size of Numbers

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How LICENSING works?

What is required?
To enable Digifort IP Surveillance for LPR detection, 2 licenses are required;

1. Separate Server (Recommended)
   A separate server is recommended for LPR detection, although not always necessary – depends on number of LPR cameras and configurations.

2. Digifort LPR Base License
   Digifort requires a license that will allow a LPR license dongle to be inserted & detected. Without the LPR BASE license, you will not be able to use Carmen or Kapta dongles on the system. Contact sales@digifort.com for more information.

3. Carmen FreeFlow License (Dongle) OR Kapta Dongle
   Carmen or Kapta dongles can be purchased directly from the manufacturer or through Digifort.
   
   **Kapta** is for South America only, and is looking for a particular format of the number plates. 3 Letters, 4 Numbers (EG: XXX-1234)

   **Carmen** can be used worldwide and is country and font independent.

   **NOTE:** Carmen and Kapta both use hardware protection; therefore they do not offer any **DEMO** options. A license/dongle needs to be purchased for demo purposes and the price can be negotiated with the manufacturer.