



ARTECO LPR SERVER



ARTECO LPR

The server-based solution for License Plate reading

USER MANUAL

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ARTECO LPR SERVER

Requirements

The ARTECO LPR application is a software installable on Windows-based workstation, which can read the license plates and transform the images into data.

Arteco LPR Server can capture **up to max. 8 RTSP MJPEG video streams**, from IP cameras, encoders, or video servers.

The performance may vary depending on the camera you choose, the lens you are installing, and the lighting.

The best performance is achieved with "box" cameras, as they allow the mounting of a suitable lens and can be installed in a proper housing with an appropriate illumination.

Below the minimum system requirements.

Operative system	Windows 7 or higher
Processor	Intel i5 or higher
RAM	8GB or higher

Below, however, the requirements in terms of **supported video streams**.

Max n° of channels	8
Image resolution	Max. 1080p
Input stream	RTSP
Encoder	MJPEG
Compression quality	Higher than 85%
Plate contrast	High, by means of IR
Characters contrast	High, IR must come from a led array surrounding lens
Plate sharpness	High, the light must be enough in order to allow high shutter frequencies

Lastly, the requirements in terms of the **size of the license plate**.

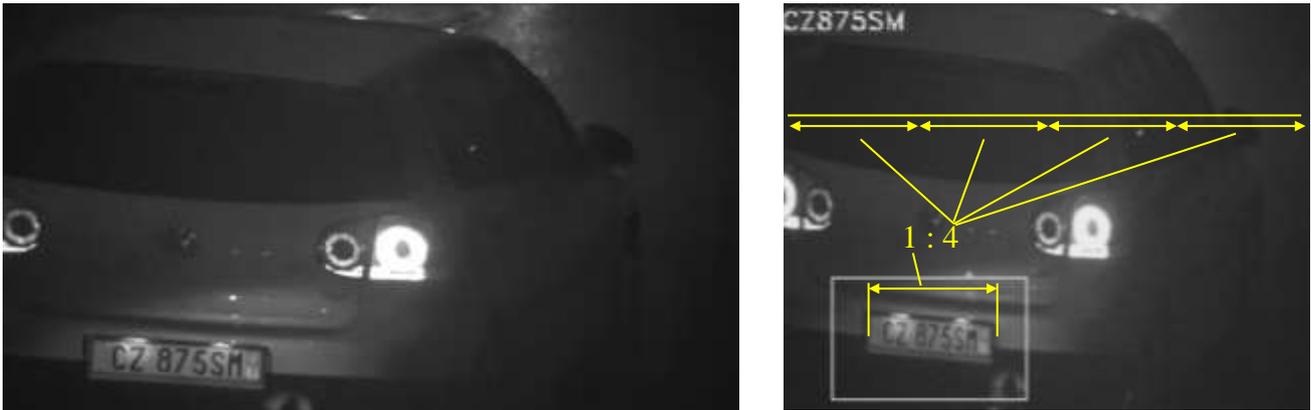
Minimum character height	20 pixels
Maximum plate angle	+/- 20°
Max rotation	+/- 3°



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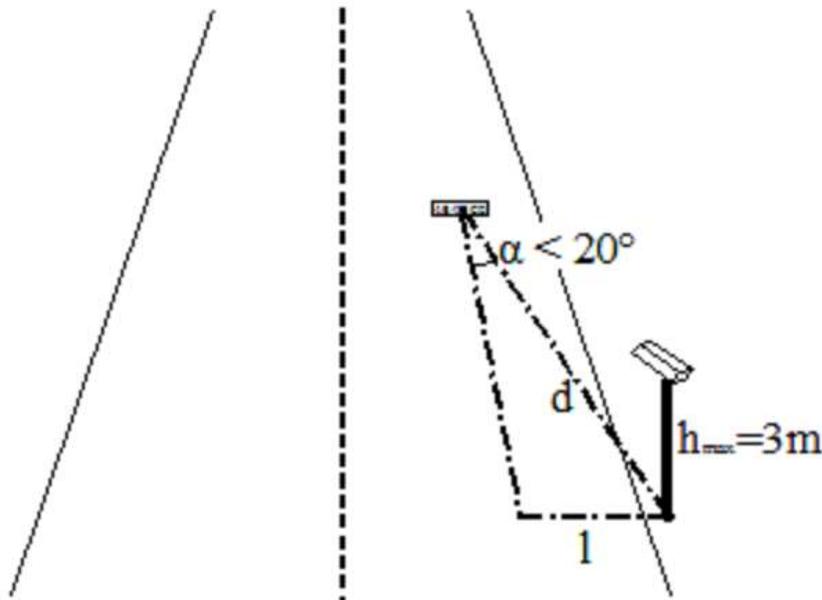
Camera installation

Generally speaking, in order to read a plate of a known Country, the plate width must be about $\frac{1}{4}$ of the image width. The plate image must have good contrast and the camera must be set into b/w, when possible. In any case, the most important requirement is the PIXEL height of the license plate, which, in the image received by Arteco LPR Server, must be at least 20 pixels.



For instance, you can note the original image in the left frame and the same image successfully read by the ARTECO LPR at right: in the latter the size of the plate is $\frac{1}{4}$ of the image width.

The camera angle must be perpendicular (less than 20°) to the plate plane. No plate rotation is permissible and skewing must be minimized as seen by the camera side.



This specification can be accomplished with a combination of “d” and “l” as they are defined in the above figure.



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License Plate lighting and embedded-IR housings for “box” cameras

In order to get the best image from reflecting-background plates, the light source must be mounted as close as possible to the camera lens. The light also allows the camera to read at nighttime and improve the reading at daytime.

An infrared light is preferable to visible light in order to illuminate a license plate in order to avoid driver disturbance or blinding.

An infrared band-pass filter helps the App improve accuracy of plates reading.

For box cameras Arteco can provide an outdoor housing “CAS00-LPR828” with the features detailed as below:

- power supply 110/220Vac
- 10° narrow spotlight light at 850nm
- front lowpass IR filter glass
- internal PSU provides up to 500mA @ 12Vdc for supplying camera
- Maximum outer external lens diameter: 40mm

Lens for “box” cameras

The correct plate size can be fitted through a proper lens zooming (often a 5-50mm or 8-80mm varifocal, autoris, megapixel lens, with IR-correction is suitable), while the contrast can be achieved through a proper light.



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Software Installation

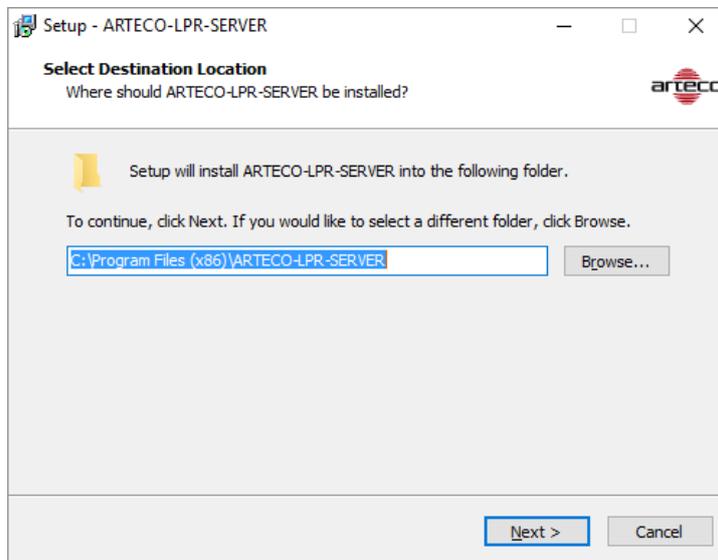
SET CORRECTLY THE DATE&TIME ON THE CAMERA BEFORE PROCEEDING.

Open the installation file received from Arteco.

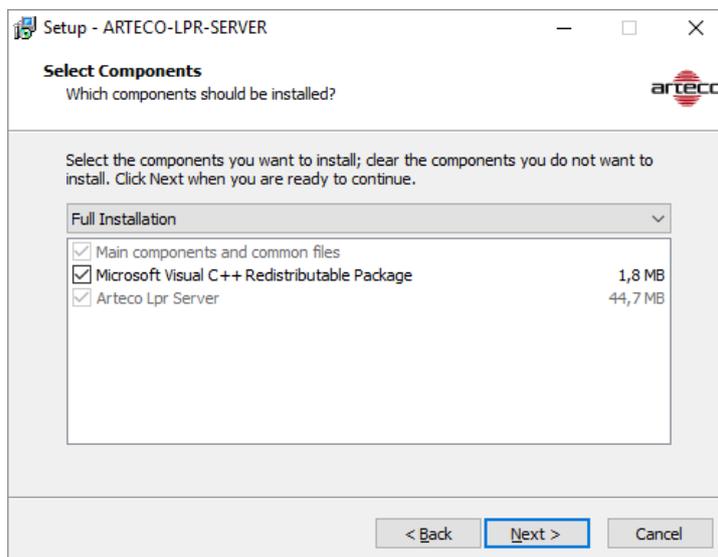
A screen will appear, on which you will need to choose the language to be used during the installation.

Once selected between Italian and English, click on "Next".

You will be asked in which folder to install the application. We recommend not to modify the suggested folder.



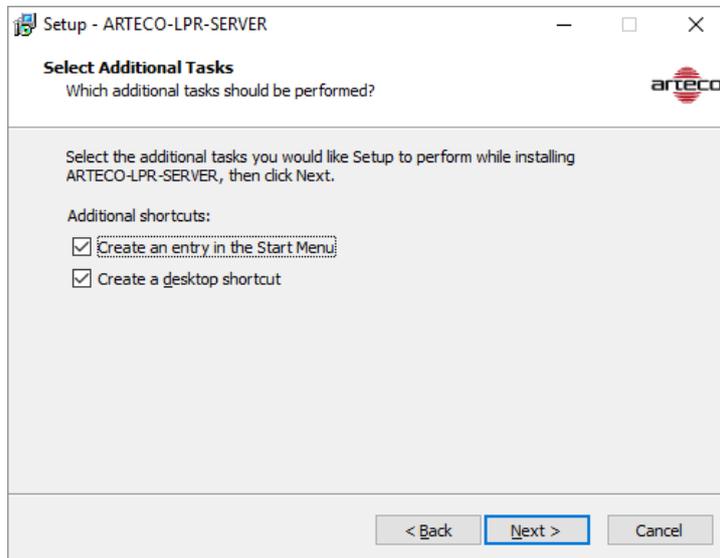
After that, you will need to select the components to install and/or to choose between a Complete, Minimal, or Custom installation. If this is the first time the application is installed, please select to install all components (or Complete Installation).





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On the next screen, you can decide whether to create shortcuts in the Start Menu and on the desktop. Select what you think is appropriate.



Once the installation is complete, the following screen will appear, which will allow you to launch the application.

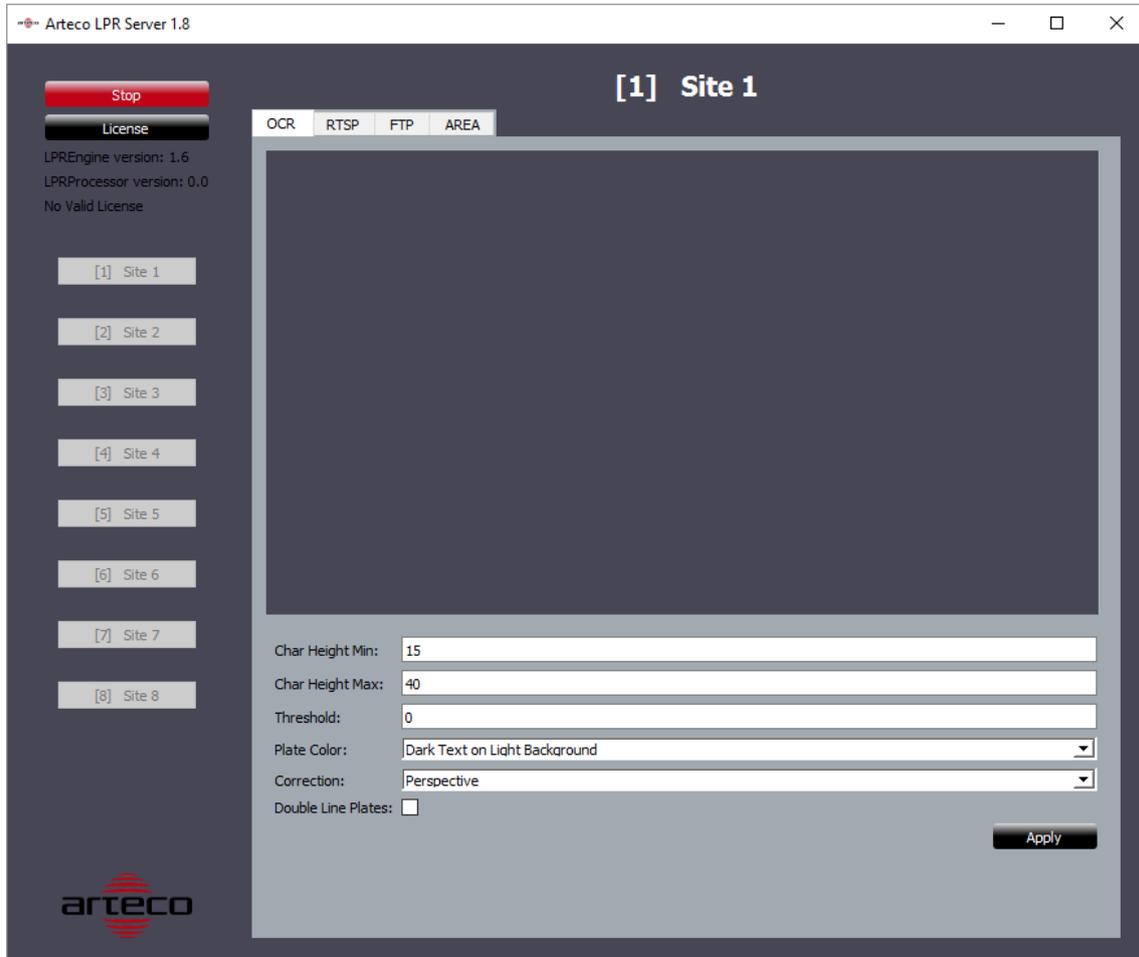




ARTECO LPR SERVER

Licensing

After installing the Application as described in the previous pages, the Arteco LPR Server GUI will appear.



To activate the license, click on the “License” button.



A window will open, allowing you to license Arteco LPR Server.



ARTECO LPR SERVER

Copy the alphanumeric code next to the "Code" field, using the "Copy" button, then send it to Arteco via email / Reserved Area on the website.

Arteco will respond with a "license key" to be placed in the box below. After doing this, click on "OK".

A screenshot of a software dialog box titled "License key". The dialog has a standard Windows-style title bar with a question mark icon and a close button (X). Inside the dialog, there is a text field containing the code "Code: SN: 1A56009DF2D4FFB FW: 1.06". To the right of this text is a "Copy" button. Below the code field is a label "Enter license key:" followed by a large, empty text input area. At the bottom of the dialog are two buttons: "OK" and "Cancel".

If the license is valid, Arteco LPR Server can be started with the "Start" button.



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Configuration

Arteco LPR Server has only one main windows, which allows to configure the whole solution.

On the left, there are buttons that let you launch / stop the application, manage the license and configure the various channels, whose configuration consists of four main entries in the tab menu: OCR, RTSP, FTP, and AREA.



OCR Menu

Char Height Min:	<input type="text" value="15"/>
Char Height Max:	<input type="text" value="35"/>
Threshold:	<input type="text" value="50"/>
Plate Color:	<input type="text" value="Dark Text on Light Background"/>
Correction:	<input type="text" value="Perspective"/>
Double Line Plates:	<input type="checkbox"/>
<input type="button" value="Apply"/>	

Before changing the following settings, set lens focus properly, minimize camera rotation and skew, and point the camera to plate perpendicularly (+/-20°).

- The parameter “MinCharH” means minimum character height [pixel] expected by software, while “MaxCharH” is the maximum character height [pixel] expected by software. You can change these parameters if your lens cannot reach the plate width as $\frac{1}{4}$ of image width. Minimum acceptable height for a plate character is 15 pixels.
- By opening the “Correction” drop-down menu you will be allowed to select one of two distortion corrections: Perspective or Rotation. Choose for the dominant image distortion, if any, otherwise select “none” to preserve CPU resources.
- “Threshold” will allow to cut-out readings which trustiness is weak in order to avoid fake readings. A bright, clear and well sized plate image generate a score = 100. A misreading will fall below 50. A good tradeoff for this threshold is = 70.



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- "Plate color" will speed up read time when set properly according to plates you may need to read. Three options are available:

Dark text on light background

Light text on dark background

- Both light and dark text

- The "Double line plate" option, if enabled, will allow OCR to read plates split over 2 lines like the following example



RTSP

On this menu it is possible to define the RTSP strings that video streams need to deliver to the system.

First you need to click on the channel you want to configure, by selecting it from the left column, and then enter the data related to it.



- In "Location" you can type-in a specific channel name, which usually "reflects" the location where the camera is installed.
- In "URL", enter the RTSP MJPEG string as specified. This is usually provided by the camera manufacturer, so you need to know the data in advance.
- The "Use KeepAlive" field is to be selected to allow Arteco Server LPR to maintain connection with the streaming device, such as Wisenet Samsung cameras, Arteco Mobile, etc.
- In "Protocol" you can indicate which communication protocol, between TCP and UDP, to transmit the video stream between Arteco LPR Server and the device.

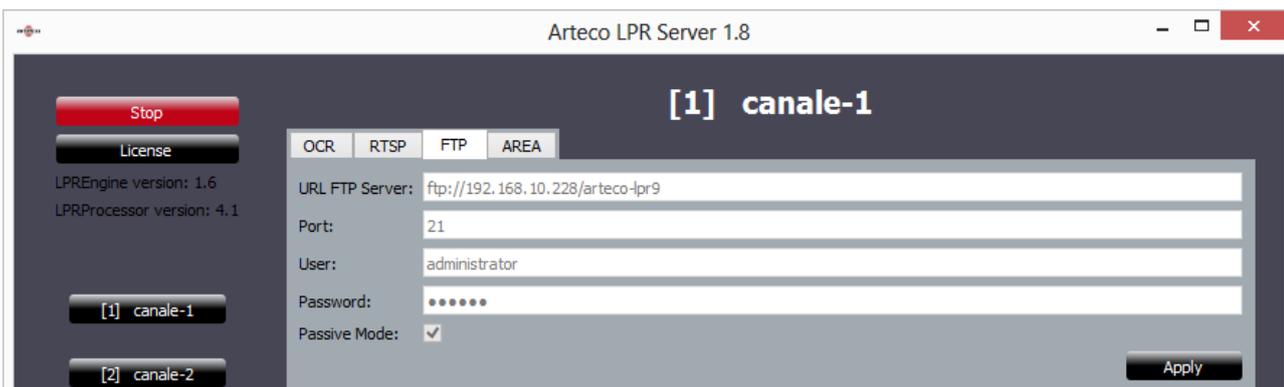


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FTP

This menu defines communication parameters between the Arteco LPR Server and the FTP Server, capable of receiving images of decoded license plates from the system, including metadata.

First, you need to click on the channel you want to configure, select it from the left column, and then enter the data in the right part.



For each channel, it is necessary to indicate:

- URL FTP Server: The IP address of the system on which the FTP server is installed.
- Port: the communication port used between the two systems
- User: Authorized User Name
- Password: Authorized user password
- Passive Mode: active

Such data must be known in advance.

If the system is integrated with Arteco NEXT see the next chapter.



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Area

Arteco LPR Server provides this menu in order to define active zones for plate readings. You will be able to set more than one (green) area where the software reads plates or define (red) masking areas where ARTECO LPR will not read plates.

In order to enable this feature select main switch to "On". Define if you want to draw a "detection" or "non detection" zone and click on "New".

Click and drag your mouse on the camera image in order to define the area contour and right click with mouse when done.

If you want to remove an area, click on area in order to select it and then hit the button "Delete".



This feature might be useful when the camera is pointing to a double-lane, and you do not want readings from either of the two directions (incoming or outgoing vehicles) or if there are any disturbance elements.

After changing the parameters, click "Apply" to confirm the changes.



ARTECO LPR APPLICATION

Connecting ARTECO LPR Server to “Arteco NEXT” VEMS

Arteco NEXT is the VMS provided by Arteco. In order to manage a license plate archive you can use Arteco NEXT. To do so, it is required to save the credentials displayed in the Arteco interface and apply the credentials to camera menu.



Remember then to have enabled the plug-in for the LPR recognition from the Plug-in menu as well. If the configuration is successful, Arteco NEXT will begin receiving license plate events from the Arteco LPR Server system.



ARTECO LPR APPLICATION

Arteco LPR technical specifications

Frequency of plate reading: max 1 plate per second

APPLICATION	Min FPS provided	Min. Readable Frames
High speed (> 70 up to 120 km/h)	15 FPS	3 frames
Average speed (> 30 up to 70 km/h)	10 FPS	3 frames
Low speed (< 30 km/h)	5 FPS	3 frames

The software is trained in order to read plates from the following countries: Albania, Australia, Austria, Belgium, Bulgaria, California, Czech Republic, Denmark, Estonia, Finland, Indonesia, France, Germany, Greece, Holland, Hungary, Italy, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Norway, Poland, Romania, Slovakia, Slovenia, Spain, San Marino, South Africa, Sweden (new plates), Switzerland, Texas, Ukraine, United Kingdom.

Other types of rear and front plates outside of this list can be read as long as they use UNICODE standard characters. In some cases, a specific integration period may be required by the Producer.

Arteco LPR software integration

FTP image

Arteco LPR Server can transmit read plates snapshots through the FTP client system.

The file name format is "20140826113939-DV680JB.jpg" where "20140826" is the date and "113939" is the camera timestamp; "DV680JB" is the decoded plate string.

If no readings occurs the App sends a keep alive image named as "KA.jpg" containing the current image taken at the time of generating the file. The keepalive period if no reading occurs is a file every 10 seconds.



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ARTECO Sede Italia

Via Gentili, 22 48018 Faenza (RA) Italy –
Ufficio: +39 0546 645777 - Fax: +39 0546 645750

ARTECO US HQ

14515 North Outer Forty, Suite 150 Chesterfield, Missouri 63017 - 5798 USA
PH: +1 (314) 434-5331 - Fax: +1 (866) 462-1323

Arteco South Africa

Johannesburgh - PH: +27 81 443 8583

www.arteco-global.com

Customer care

<mailto:support@arteco-global.com>

Note
