

## USER MANUAL

Install and exploitation the  
NumberOK EDGE LPR application at  
the Axis IP-cameras

## Table of content

1.	Description and specifications of NumberOK EDGE LPR application .....	2
2.	Installation of NumberOK EDGE LPR application .....	3
3.	License installation for NumberOK EDGE LPR application .....	5
3.1	Automatic installation of application license .....	6
3.2	Manual installation of application license.....	7
4.	Adjusting the NumberOK EDGE LPR application .....	8
4.1	Application functional window .....	9
4.1.1.	Events .....	9
4.1.2.	Search.....	10
4.1.3.	Settings.....	11
4.1.4.	NumberOK.....	13
4.1.5.	Axis A1001 .....	14
4.1.6.	FF-Events .....	15
4.1.7.	Axis A91xx.....	16

## 1. Description and specifications of NumberOK EDGE LPR application

NumberOK EDGE LPR application designed for automatic recognition of vehicles license plates caught in the camera with installed software, record the events and creating their database, search in created database, direct control by the camera of the vehicles access system actuators.

### SPECIFICATIONS OF AXIS NumberOK EDGE LPR APPLICATION

Parameters	Volumes
Supported browsers	Microsoft Internet Explorer, Mozilla Firefox, Opera, Google Chrome
Security system	Electronic keys, automatic or manual activation
Amount of recognition zones, psc	2
Frame recognition speed (1920x1080), fps	0,5-10
License plates recognized from countries	According to purchased license: EU countries, CIS countries, Israel, Turkey.
License plate recognition accuracy, %	>95
Maximum vehicle's speed, km/h	Up to 80 (MIPS), Up to 160 (ARM)
Amount of recognized license plates in the frame simultaneously	Not limited
Number of controlled actuators (gates, barriers), psc.	1

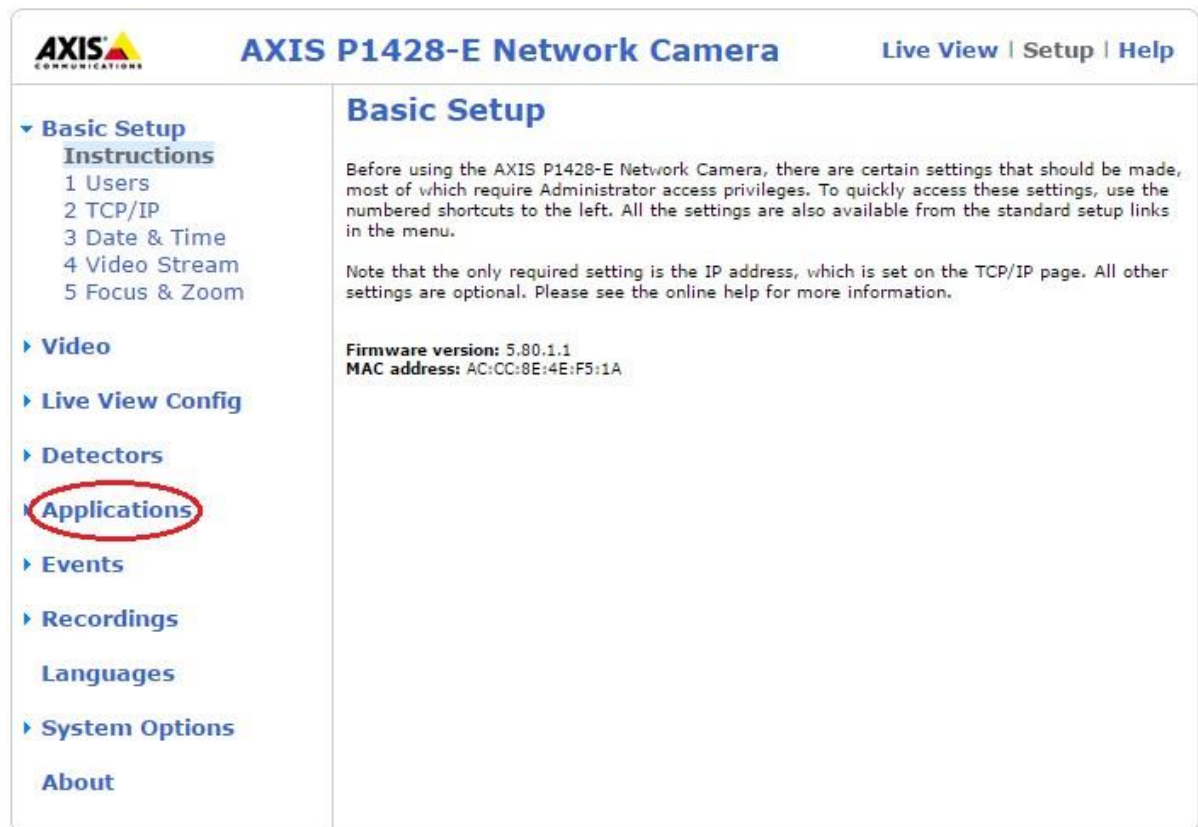
## 2. Installation of NumberOK EDGE LPR application

To install the NumberOK EDGE LPR application to AXIS camera, you have to perform the next sequence:

- Launch the camera web-interface by insertion the camera's IP-address in the browser address string;
- Insert the login/password pair to achieve the access to camera's web-interface;
- Press the **Setup** button in the upper string of web-interface window and go to the camera's setup page;



- Click on the **Applications** item in camera's setup page and open the installed applications window;



- Installed applications section will opens. By default, the active item is **Overview**. It contains a window with information about all installed applications in the camera, click on "**Choose file**" and select the file of installed software in the \*.EAP format, hosted on a local computer. Then click "**Upload package**" to start the download and install process of the selected software to the camera;

The screenshot shows the web interface of an AXIS P1428-E Network Camera. The left sidebar contains a navigation menu with items: Basic Setup, Video, Live View Config, Detectors, Applications (with sub-items Overview and Motion Detection 3), Events, Recordings, Languages, System Options, and About. The main content area is titled 'Application Packages' and includes an 'Upload Application' section with a 'Choose File' button and an 'Upload Package' button. Below this is a table titled 'Installed Applications' with the following data:

Application	Version	Vendor	Status	License
AXIS Video Motion Detection	3.1-1	Axis Communications	Idle	None

At the bottom of the table are buttons for 'Start', 'Stop', 'Remove', and 'Log'.

The application will be loaded and installed to the camera. Before the license activation the application stay stopped, its status will shows as "**Stopped**". To run it you have to activate the license:

Installed Applications				
Application	Version	Vendor	Status	License
AXIS Video Motion Detection	3.2-1	Axis Communications	Stopped	None
AXIS Video Motion Detection	4.0-2	Axis Communications	Stopped	None
NumberOK EDGE LPR	2.4-3-5	FF	Running	Valid

### 3. License installation for NumberOK EDGE LPR application

To install the NumberOK EDGE LPR application license you have to:

- Double click by left mouse button the «**NumberOK EDGE LPR**» string in installed applications table of installed application window. Or single click left button on its name, added to the installed software menu:



- In the opened submenu select and click **License** to open the installation window of the NumberOK EDGE LPR application:

A screenshot of the 'License: NumberOK EDGE LPR' installation window. The window has a header with the AXIS logo, 'AXIS P1428-E Network Camera', and links for 'Live View', 'Setup', and 'Help'. On the left is a sidebar menu with items: Basic Setup, Video & Audio, Live View Config, Detectors, Applications (expanded), Events, Recordings, Languages, System Options, and About. Under 'Applications', 'NumberOK EDGE LPR' is expanded, and 'License' is highlighted with a red rectangle. The main content area is titled 'License: NumberOK EDGE LPR' and contains three sections: 'Installed license key' with a text input field and a 'Remove' button; 'Manual installation' with instructions to go to www.axis.com, a text input for the license key file, a 'Choose File' button, and an 'Install' button; and 'Automatic installation' with text inputs for 'License code' and 'Email', and an 'Install' button.

The license installation can be performed in two ways: **Automatic installation** or **Manual installation**.

### 3.1 Automatic installation of application license

This method requires a permanent Internet connection. For automatic license installation of NumberOK EDGE LPR application, you have to:

- Enter purchased license code in the “**License code**” window, existing e-mail address to the “**Email**” window and press the “**Install**” button;
- The license key will be achieved and installed automatically, its strings will appears in the “**Installed license key**” window;
- Go to the camera’s installed software setup window and click by the left button on the **NumberOK EDGE LPR** string in the installed software table. The application stopped status «**Stopped**» will be displayed in **Application settings** form;



- Click the «**Start**» by left mouse button. NumberOK EDGE LPR application became active, its status will change to «**Running**»;
- The installation of NumberOK EDGE LPR application to Axis IP-camera is completed.

### 3.2 Manual installation of application license

The manual license installation needs the next actions, can be performed at the third-party computer connected to the Internet. At the same time, the camera, where a manual license installation performed, may not have access to the external network, only to the LAN. The license manual installation procedure is the next:

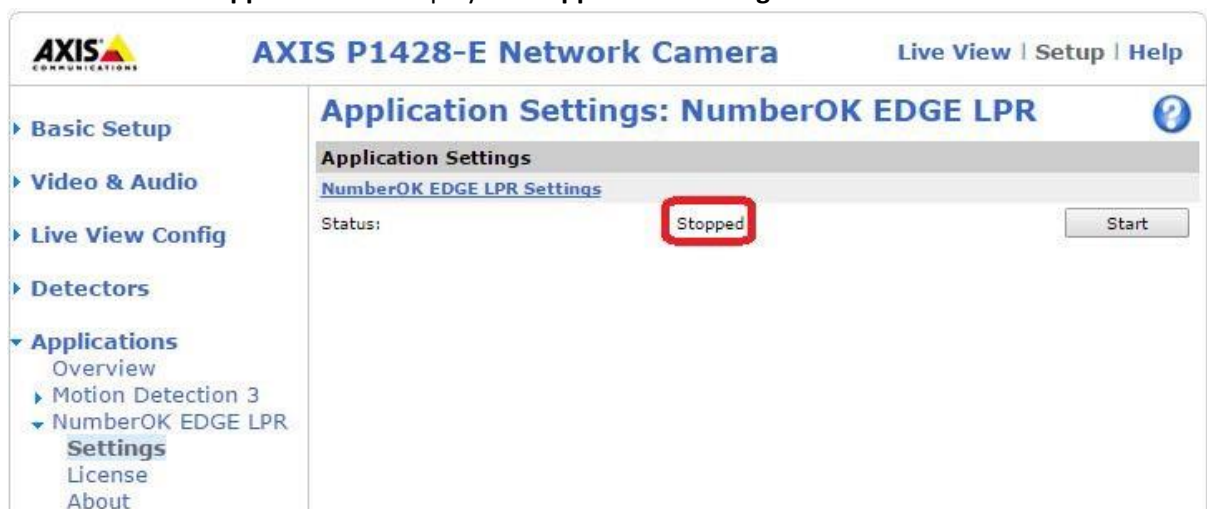
- Go to the license keys registration page at the [www.axis.com](http://www.axis.com) site ([www.axis.com/ru/ru/products/camera-applications/license-key-registration](http://www.axis.com/ru/ru/products/camera-applications/license-key-registration)) by left mouse click at the [www.axis.com](http://www.axis.com) string in the license activation window of camera's web-interface. Perform the authorization sequence and register the camera, where the NumberOK EDGE LPR application installed. The required device number is written by bold in the license manual installation section after «**This device's serial number is:**»:

#### Manual installation

To retrieve a license key for this application, go to [www.axis.com](http://www.axis.com) and enter your license code together with the serial number of this device. **This device's serial number is:** **AXIS000000000000**

License key file to upload:  No file chosen

- After camera registration, the license key file will be sent to a specified e-mail. Copy it to the computer, where the manual license installation for
- EDGE LPR application on the camera would take place;
- Press the «**Choose File**» button in the license installation window and specify the received license key file, then press «**Install**» button;
- The license key would be installed automatically; its strings will appear in the «**Installed license key**» window;
- Go to the camera's installed software setup window and click by the left button on the **NumberOK EDGE LPR** string in the installed software menu. The application stopped status «**Stopped**» will be displayed in **Application settings** form:



- Click the «**Start**» by left mouse button. NumberOK EDGE LPR application became active, its status will change to «**Running**»;
- The installation of NumberOK EDGE LPR application to Axis IP-camera is completed.

#### 4. Adjusting the NumberOK EDGE LPR application

To configure the NumberOK EDGE LPR application and adjust its parameters for maximizing the accuracy of license recognition it is necessary:

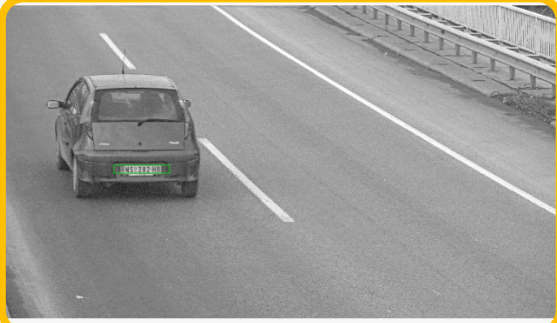
- Go to web-interface of camera, where NumberOK EDGE LPR application installed;
- Enter the camera setup menu by clicking the **Setup**;
- Open the installed application item: **Applications**;
- Enter to the sub-item **NumberOK EDGE LPR** by left mouse button click or by left mouse button double click at **NumberOK EDGE LPR** name in the installed applications table;
- Select **NumberOK EDGE LPR Settings** in the opened window:



- – The application settings page will opens in addition browser sub-tab:

Camera live  
view window

**NumberOK EDGE License Plate Recognition application**



Date / Time	Plate	Zone	Direction	Time	Access	Photo	Country
2017-12-12 14:51:12	NS282HB	1	UNK	388.0	Not opened		SRB
2017-12-12 14:51:06	NS242CZ	1	OUT	298.0	Not opened		SRB
2017-12-12 14:51:04	ZR058WD	1	OUT	265.0	Not opened		SRB
2017-12-12 14:51:03	NS188PL	1	OUT	467.0	Not opened		SRB
2017-12-12 14:51:02	NS289IM	1	UNK	467.0	Not opened		SRB
2017-12-12 14:50:55	SU037LV	1	OUT	320.0	Not opened		SRB
2017-12-12 14:50:53	NS168PF	1	OUT	436.0	Not opened		SRB
2017-12-12 14:50:39	NS101WU	1	OUT	236.0	Not opened		SRB
2017-12-12 14:50:37	NS302PP	1	UNK	344.0	Not opened		SRB
2017-12-12 14:50:36	NS218VM	1	UNK	300.0	Not opened		SRB
2017-12-12 14:50:36	NS202SS	1	OUT	372.0	Not opened		SRB
2017-12-12 14:50:33	NS051WC	1	OUT	315.0	Not opened		SRB
2017-12-12 14:50:31	NS140BF	1	OUT	186.0	Not opened		SRB

**Last event:**

2017-12-12 14:51:12   NS282HB   Not opened     SRB

Application  
functional window

Last recognition event

It contains the next main blocks:




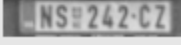

- **Camera live view window** – filled with camera live view, where the NumberOK EDGE LPR application installed;
- **Last recognition event** – block contains data from last license plate recognition event;
- **Application functional window** – contains several sub-tubs:

#### 4.1 Application functional window

Application functional window of NumberOK EDGE LPR application contains sub-tabs: **Events**, **Search**, **Settings**, **NumberOK**, **Axis A1001**, **FF-Events**, **Axis A91xx**. Let see they closer:

##### 4.1.1. Events

Events

Date / Time	Plate	Zone	Direction	Time	Access	Photo	Country
2017-12-12 14:51:20	NS056DX	1	OUT	303.0	Not opened		SRB
2017-12-12 14:51:19	BG1061AG	1	UNK	270.0	Not opened		SRB
2017-12-12 14:51:12	NS282HB	1	OUT	388.0	Not opened		SRB
2017-12-12 14:51:06	NS242CZ	1	OUT	298.0	Not opened		SRB
2017-12-12 14:51:04	ZR058WD	1	OUT	265.0	Not opened		SRB

It is recognition results table. It includes data about last recognition events, has the next parameters columns:

- **Date/Time** – date and time when the event occurs;
- **Plate** – recognized vehicle's license plate;
- **Zone** – number of recognition zone, where license plate was recognized;
- **Direction** – detected direction of car movement;
- **Time** – time of license plate recognised, in milliseconds;
- **Access** – the action made by actuator, linked to the camera;
- **Photo** – the part of picture, participating in recognition process;
- **Country** – the country, where the recognized license plate registered.

#### 4.1.2. Search

It is the tool to perform the search in recognition events database. It allows to specify search parameters and to view search result in the multiple page format. You can specify the next search filters:

- **DateTime From** – The date and time of the search beginning. To set it you should click at that field and select date and time from the opened table:

- **DateTime To** – The time and date of the search end. To set it you should click at that field and select values from opened table;
- **Plate** – Recognized car's license plate. It is necessary to accurately convey the sequence of letters, digits and spaces in the searched room;
- **Action** – The action, made by the linked actuator. You can set: «**Opened**» or «**Not opened**»;
- **Country** – The code of country, where recognized plate registered

Filters parameters are united with the logical '**AND**', i.e. the search result has to match to all specified parameters simultaneously. Press «**Search**» button after the filing of all filters. Search results would be demonstrated in a table form below the filters list.

Date / Time	Plate	List	Action	Photo	Country
05/07/2016 17:10:15	B206F		Not opened		DEU
05/07/2016 17:09:22	B206F		Not opened		DEU
05/07/2016 17:09:06	BN18CTL		Not opened		ROU
05/07/2016 17:09:01	FM4763		Not opened		PRT
05/07/2016 17:08:55	BL976AA		Not opened		SVK
05/07/2016 17:08:42	2533XQ		Not opened		PRT
05/07/2016 17:08:18	ERA87TL		Not opened		POL
05/07/2016 17:08:10	B206F		Not opened		DEU
05/07/2016 17:08:00	BL97P		Not opened		
05/07/2016 17:07:33	B206F		Not opened		DEU
05/07/2016 17:07:15	R706F		Not opened		DEU

2018-02-04 14:13:17	9S39103	89.0	Not opened		CZE
2018-02-04 14:13:13	4SB4387	84.0	Not opened		CZE
2018-02-04 14:13:11	5E47510	151.0	Not opened		CZE

Export

You can save the result of search to CSV file by clicking to the «**Export**» button.

### 4.1.3. Settings

The screenshot displays the 'Settings' tab of the NumberOK EDGE LPR application. The interface includes a top navigation bar with tabs for 'Events', 'Search', 'Settings' (selected), 'NumberOk', 'Axis A1001', 'FF-Events', and 'Axis A91xx'. The 'Settings' panel is divided into two main columns: 'Black list' and 'White list'. The 'Black list' is currently empty, while the 'White list' contains the entry 'AA3979AB'. Below these lists, there are several configuration fields: 'Barrier mode' (set to 'do not open barrier'), 'Barrier priority' (set to 'Internal white/black list'), 'Min plate width, pix' (set to 130), 'Max plate width, pix' (set to 300), 'IPC login' (set to 'root'), 'IPC password' (masked with '\*\*\*\*'), 'Relay Type' (set to 'Internal'), 'Relay IO output #' (set to 2), 'Resolution' (set to '1920x1080'), 'Save Full Frame' (unchecked), 'Rotate frame' (set to 180), and 'Roi Count' (set to 2). At the bottom left, it indicates 'SD-Card : INSERTED'. A 'Save' button is located at the bottom right of the settings panel.

It is the panel for adjusting the NumberOK EDGE LPR application working. It allows to define the recognition zone size and position, 'Black' and 'White' lists, to set up the reaction of the actuator, linked to the camera, to set the minimal horizontal size in the frame of the recognized plate. The size and position of recognition zone are set by the mouse on the Camera live view window. You can set the following fields in Settings tab:

- **Black list** – the plates list with restricted barrier (gates, etc.) passage, controlled by linked to the camera actuator;
- **White list** – the plates list with agreed passage throw the barrier (gates, etc.), controlled by linked to the camera actuator;
- **Barrier mode** – the mode of actuator reaction on the recognized plate. Next options are possible:
  - **Do not open barrier** – the linked actuator will be closed when any plate detected;
  - **Open to all** – the linked actuator will be open when any plate detected;
  - **Open to whitelisted** – the linked actuator will be open only when recognizing plates from the 'White' list;
  - **Open except blacklisted** – the linked actuator will be open when recognizing any plates, except included in the 'Black' list.
- **Barrier priority** – the priority of implementation black\white lists
- **Min plate width, pix** – sets the minimum horizontal plate size (in pixels) that will be detected and recognized as the car license plate;
- **Max plate width, pix** – sets the maximum horizontal plate size (in pixels) that will be detected and recognized as the car license plate;
- **IPC login** – access login to the used IP-camera;

- **IPC password** – access password to the used IP-camera;
- **Relay type** – it can be camera's internal relay or relay on integrated controller
- **Relay IO output #** – the number of camera's relay output that would control the linked actuator.
- **Resolution** – change the resolution of the frame.
- **Save Full Frame** –
- **Rotate frame** – change the
- **ROI count** – change the number of recognition zone (1 or 2)
- **SD Card** – the status of SD Card presence.

Press the «**Save**» button to record all changes to the camera's application.

In this mode you can also set up the recognition zones. To change the size of the recognition zone, pull the green marker. To rotate the recognition zone, rotate the upper green marker.



#### 4.1.4. NumberOK

It is panel to connect Axis camera as an LPR sensor for NumberOK Meta software.  
Copy auth data from NumberOK Meta, set «Enable» and press «Activate»

The screenshot shows a web application interface with a top navigation bar containing tabs: Events, Search, Settings, NumberOk (selected), Axis A1001, FF-Events, and Axis A91xx. Below the navigation bar is a main content area with a dark header titled 'Activate NumberOk data'. Under this header, the text 'Activate NumberOk data' is displayed in red. A large, empty white rectangular box occupies the center of the page. At the bottom left, the word 'Enabled' is shown in red, followed by an unchecked checkbox. At the bottom center, there is a dark button labeled 'Activate'.

#### 4.1.5. Axis A1001

It is panel to set up integration with Axis A1001 controller.

You need to do the following steps to integration with Axis A1001 controller:

1. Set IP address of Axis A1001 controller, user name and password and press Connect button.
2. Select controller name from the list
3. Select IdPoint from the list
4. Set "Enable A1001 integration" and press Save

#### 4.1.6. FF-Events

It is panel to set up connection via FF protocol

The screenshot shows the 'FF-Events' configuration panel within a software interface. At the top, there is a navigation bar with tabs: 'Events', 'Search', 'Settings', 'NumberOk', 'Axis A1001', 'FF-Events' (which is selected), and 'Axis A91xx'. Below the navigation bar, the 'FF-Events' panel is displayed. It features a table with two columns: 'Current values' and 'New Values'. The table contains the following rows:

	Current values	New Values
Protocol	TCP	
Server URL	127.0.0.1:8088	127.0.0.1:8088
Latitude	50.418114	50.418114
Longitude	30.476213	30.476213
Sensor Provider ID	defaultID	defaultID

Below the table, there is a checkbox labeled 'Send data to server' and a 'Save' button.

Please refer to FF protocol documentation by the following link: <https://goo.gl/JL8wwt>

#### 4.1.7. Axis A91xx

It is panel to set up integration with Axis A91xx controller.

	Current values	New Values
A91xx URL	127.0.0.1	127.0.0.1
IPC login	root	root
IPC password pass	pass	pass

☐ Enable integration

Test the connection to the specified controller

1. Turn on Controller A1961(88) to network and make sure that it works and Available online
2. Start ACAP application on the Axis camera and open Tub Axis A91xx
  - Enter controller - IP address with port
  - Enter Login and password
  - Set "Enable integration"
  - Click "Save"
3. Open Tub Settings
4. Add license plate to White list
5. Choose barrier mode
6. Choose relay type as A91xx
7. Choose relay type from 0 to 5