

ANPR Lumo

license plate camera for vehicle access control

Key features:

- ✓ all-in-one license plate camera
- ✓ barrier-controlled and free-flow applications
- ✓ captures number plates from 2 - 10 meters (6.5 to 33 feet)
- ✓ object speeds (freerun) up to 130 km/h*
- ✓ no additional software required
- ✓ classifiers from countries worldwide available
- ✓ supports industry-standard communication interfaces
- ✓ REST API for seamless third party integration
- ✓ built-in vehicle access control features
- ✓ OSDP v2, including secure channel communication

The ANPR Lumo is an all-in-one license plate camera, including embedded software, analyzer and IR illuminator. With a range of action of 2 to 10 meters (6.5 to 33 feet), the advanced camera ensures a smooth recognition of vehicles.

Typical applications include vehicle access control, automatic toll collection, free flow applications at parking facilities or other situations in which it not desirable to issue RFID tags. If vehicles need to be granted access temporarily or incidentally, the license plate camera is the perfect solution.

High accuracy

Deep learning algorithms enable a high accuracy in both regions with common license plate formats, like Europe, and regions with non-standardized license plate formats, such as the USA and Pacific. In addition, the ANPR Lumo is able to recognize ADR Hazard Identification Numbers (HIN), also known as Kemler Codes, that are used for road transport of dangerous goods.

Stand-alone solution

The ANPR Lumo offers built-in vehicle access control features. The option to configure time-based access control lists (white list, black list, ignore list, etc.) in the web based software enables the camera to be used as a stand-alone solution. An acceslist can contain up to 100.000 license plates.

User-friendly configuration

The web based software enables easy configuration of the ANPR Lumo. It allows for configuration of the output messages for RS485, Wiegand or Ethernet. In addition, digital I/O, region of interest, network settings, etc. can be defined.



Worldwide license plate coverage

The ANPR Lumo covers a broad list of world-wide countries supporting a large range of IR-reflective license plates. The camera comes pre-loaded with 5 classifiers covering plates from 28 countries. Other classifiers can be easily downloaded and installed.

Third party integrations

The ANPR Lumo is equipped with a REST API that allows third parties to easily integrate the camera. The REST interface enables third party systems to request the last read license plate, add license plates to the white list, etc.

Easy installation

A mounting bracket is standard included with the ANPR Lumo to ensure easy installation. With this bracket, the license plate camera can be mounted onto a wall or pole. It also enables adjusting of the camera at the desired angle to ensure reliable reading.

Communication interfaces

The ANPR Lumo supports the industry-standard communication interfaces: RS485, Wiegand and Ethernet. This enables seamless integration into any existing or new access control or parking system.

Supporting security protocols

As most access control panels support Wiegand. The ANPR Lumo converts license plate numbers into Wiegand ID strings. The builtin Wiegand option ensures easy and seamless integration into any new or existing access control panel.

The ANPR Lumo supports the Open Supervised Device Protocol (OSDP v2) for automatic vehicle identification application. OSDP enables advanced and secure communication between the ANPR Lumo and the controller.

Technical information	ANPR Lumo
Part number	9986138 ANPR Lumo
Dimensions	221 x 131 x 126 mm (8.7 x 5.2 x 5 in)
Color	RAL9006 chassis and RAL5011 cover
Weight	2.5 kg (5.5 lbs)
Protection class	IP65 (approx. NEMA4x)
Material	Cover HIBS, Housing Die-casting Silafont 3
Operating temperature	-20 ... +55°C (-4... +131°F)
Storage temperature	-30... +55°C (-22... +131°F)
Relative humidity	10% ... 93% relative humidity, non-condensing
Power supply	24 VDC +10% linear supply recommended or POE PoE (802.3af) or PoE+ (802.3at)
Power consumption	8 Watt
Read range	Distance: 2 to 10 meters (6.5 to 33 feet) Width: Up to 3,5 meters (11.5 feet)
Object speed	Freerun: Up to 130 km/h* Triggered: Up to 250 km/h
Supported license plates	IR reflective number plates, (non)standardized license plates, ADR HIN
Camera optics	12 mm (½ inch)
Image sensing resolution	1/1.8" CMOS sensor, 1280 x 1024 pixel, SXGA
Camera illuminator	IR (850 nm)
Communication interfaces	1 line half duplex selectable baud rate, cable distance 1200 meter (3937 feet) 10/100 Mbps, TCP, UDP, FTP, HTTP, DHCP Wiegand 26 SHA1, Wiegand 64, Custom Wiegand, OSDP v2, including secure channel communication
Relay output	2 relay outputs
Input	2 digital inputs (opto-isolated)
Output	Read results from number plates and/or images taken by the camera
Cable specifications	Network (CAT5E) Power + IO: (LiCY) 8 x 2 x 0.14 mm ²
Cable length	Network: 5 meters (16.4 feet) Power + IO: 5 meters (16.4 feet)
Data message customization	RESTful interface (API) and String syntax fully configurable for integration with access control systems and third party software
Storage	10 GB
Standards	CE, FCC, UL Listed, UKCA Consult your Nedap representative for country specific standards
Included accessories	Pole/wall mounting kit included
Document version number	2.0

* Depending on reader installation, software settings and external conditions.

ANPR LUMO

Quick reference guide

2022-10-19 | v1.06 | Doc. no. 5286751



Safety Precautions

The following safety precautions must be observed during normal use, service and repair.

- The ANPR shall be connected to safety ground.
- Disconnect the power supply before removing any parts.
- The ANPR shall only be installed and serviced by qualified and trained personnel.
- To be sure of safety, do not modify or add anything other than mentioned in this manual or indicated by NEDAP N.V.
- CAUTION: for continued protection against risk of fire, replace fuses only with the same type and rating.
- The ANPR can be powered from a low power, Class 2 power supply, in compliance with local regulations or through PoE (802.3af) or PoE+ (802.3at).
- The product is to be connected only to PoE networks without routing to the outside plant.
- The ANPR is equipped with an InfraRed illuminator. The human eye will not or slightly see this light coming from the illuminator. Do not look into the ANPR lens directly from close range or for more than 100 seconds. Eyes can be damaged by not taking these precautions. During normal use of the ANPR at a vehicle gate, reading plates, there is no risk to the public.

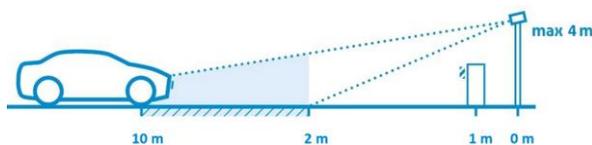
Mounting The ANPR

Determine how to mount the ANPR, onto a pole or behind the barrier. Mount behind the barrier to ensure recognition right in front of the barrier. Important mounting instructions are:

- **Best operating distance is between 2 to 10 meters.**
- **Angle between ANPR and number plate should be smaller than 25 degrees.**

Pole mounting

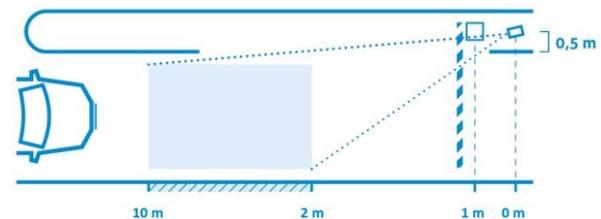
The ANPR is positioned directly behind or in front of the actual barrier onto a pole. Recommended installation height is 2m50. In this position license plates directly in front of the barrier cannot be read. When overhead installation is an option, the ANPR can at best be installed in the center of the lane, above the lane.



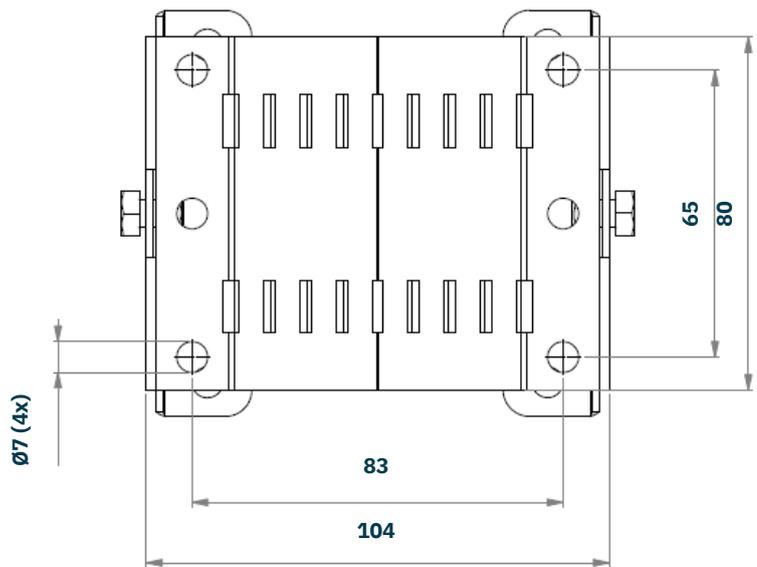
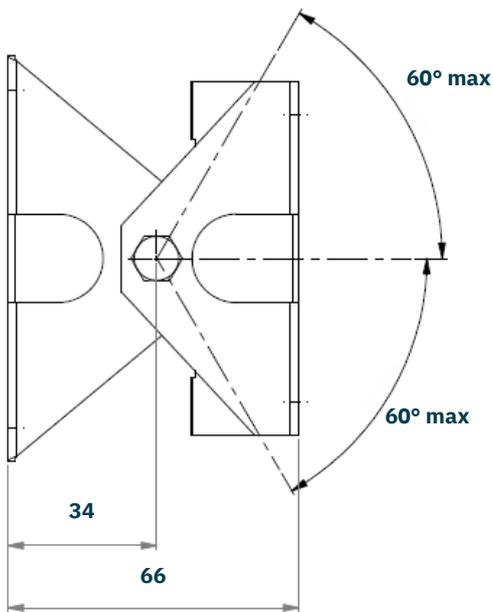
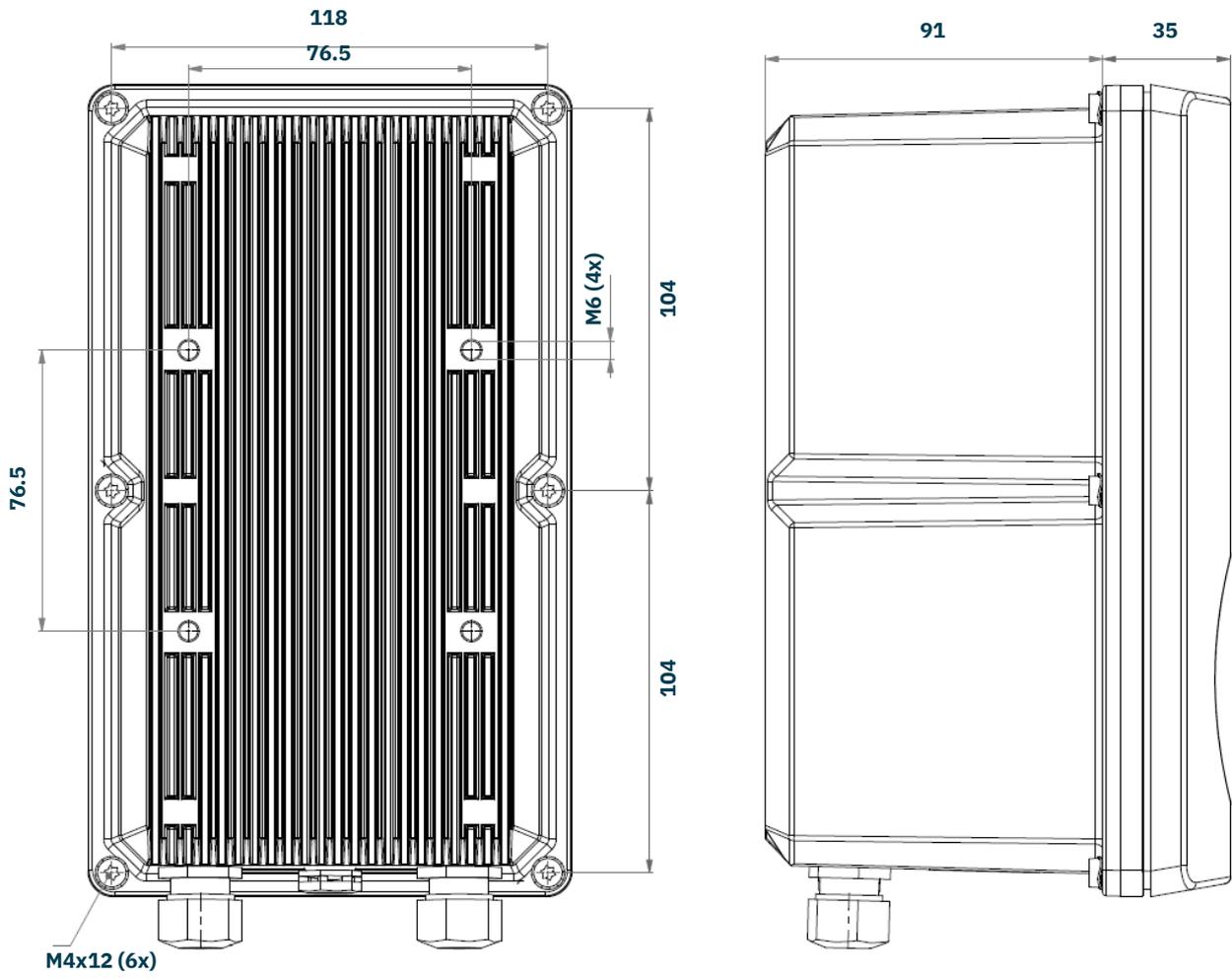
Behind barrier mounting

The ANPR is positioned behind the barrier at bumper height.

If there is space behind the barrier and the sight is not blocked, then the best place for the ANPR is at bumper height (0.5m height) about 1 to 2 meters behind the barrier. A vehicle just in front of the barrier is still recognized in that case.



Dimensions



Connections

Ethernet connection

The Ethernet communication cable (Cat5e, 5 meter) is already fitted to the RJ-45 network connector. You can also power the camera using PoE (802.3af) or PoE+ (802.3at).

Multi-wire cable

Power supply	Red	Power supply +24VDC ~ 1A
	Blue	Ground 0V
	Black	Ground 0V
Rs485 connection	Yellow	RS-485 A
	Green	RS-485 B
	Purple	RS-485/Wiegand GND
Wiegand	White	Wiegand Data-0
	Brown	Wiegand Data-1
Relay output 1	White/Green	Relay output 0 (normally open contact, $U_{max} = 24VDC, I_{max} = 2A$)
	Brown/Green	Relay output 0 (common contact)
Relay output 2	White/Yellow	Relay output 1 (normally open contact, $U_{max} = 24VDC, I_{max} = 2A$)
	Brown/Yellow	Relay output 1 (common contact)
Trigger input 1	Pink	Digital input IN+ (optocoupler positive contact, $U = 5 - 24VDC$)
	Gray	Digital input IN- (optocoupler negative contact)
Trigger input 2	Gray/Pink	Digital input IN+ (optocoupler positive contact, $U = 5 - 24VDC$)
	Red/Blue	Digital input IN- (optocoupler negative contact)

The network cable and the multi-wire cable should be placed parallel to each other.

Assign An IP-Address

Enter the default IP-address in the address bar of your web browser.

Default IP address: **192.168.3.15**

The login window appears where the user is asked to type the username and password.

Username: **admin**

Password: **secret**

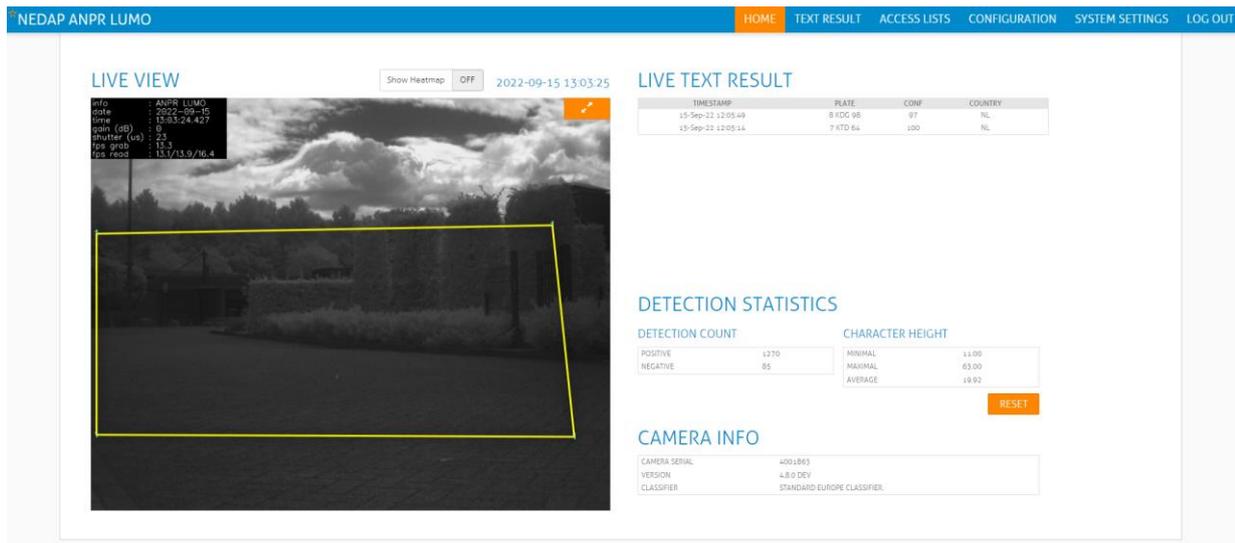
Go to the system configuration and setup the network configuration as desired. If required, now also other configuration settings may be changed.

Configure The ANPR

By default the camera's exposure settings are pre-configured to suit most situations, The following items needs to be configured after installation.

- Region of interest
- Output messages (actions)

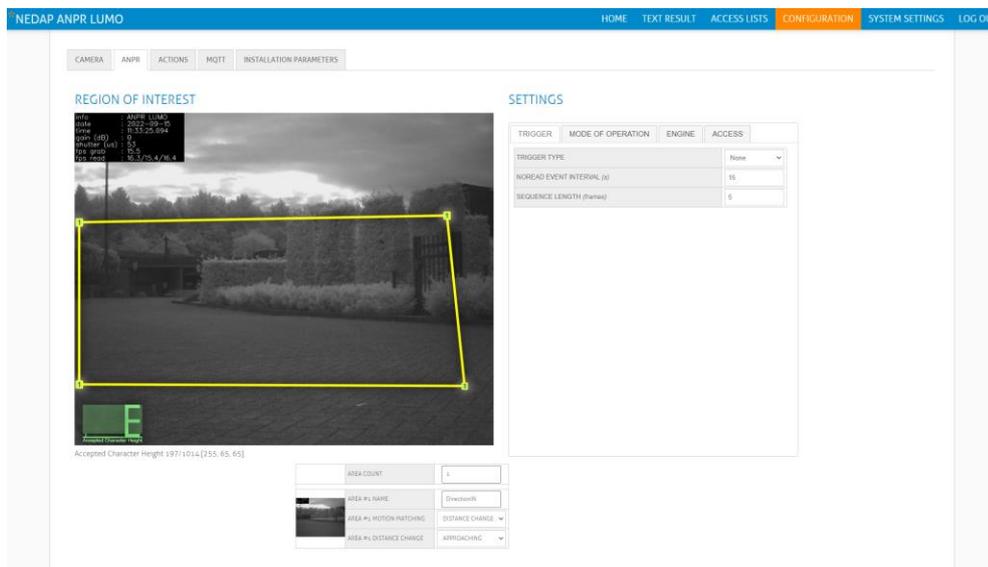
Drive the vehicle into the position where it should be possible to read it's license plate. Connect to the ANPR using your web browser and login. After a successful login you will see the live video in the menu item "HOME". On the right side of the page 'live' text results are shown. It might be necessary to adjust the ANPR alignment.



The Yellow box within the LIVE VIEW represents the region of interest, this region of interest can be changed in the configuration menu.

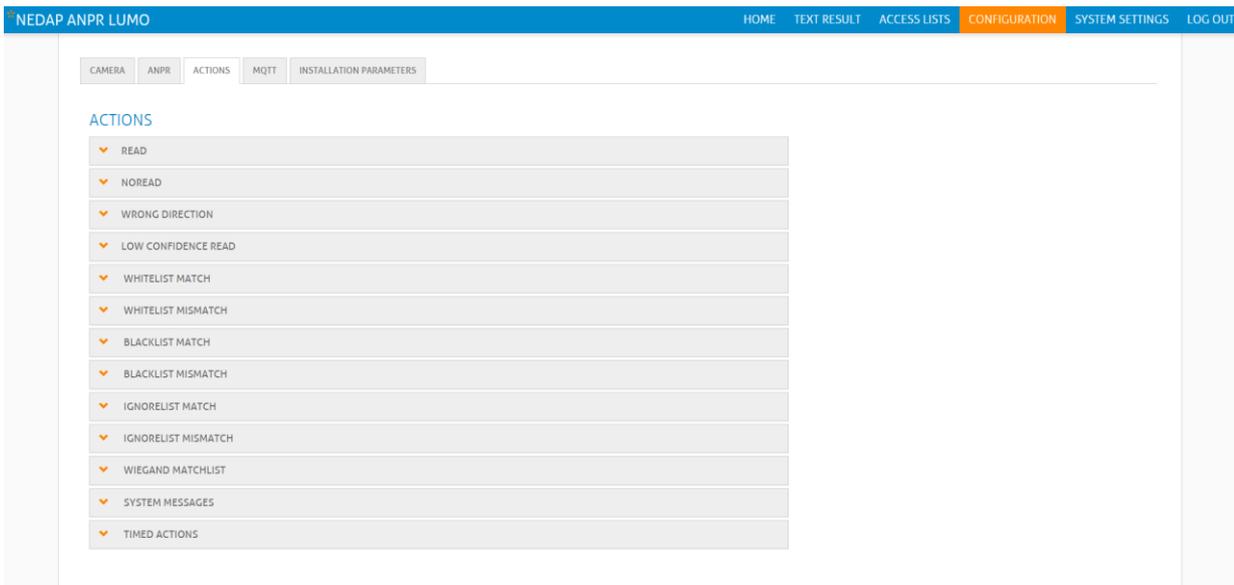
Region of interest

After correct installation of the camera, it is recommended to change the region of interest. This can be done by moving the green points to the desired position. Press the "Apply" button next to the corresponding item to permanently store the region of interest.



For more details about the menu items, see the installation guide on <https://portal.nedapidentification.com>

ACTIONS



In the actions menu, you can define what actions the camera should perform on certain events.

- READ** When ANPR recognizes a plate
- NOREAD** When there are no plates recognized between given limitations set under ALPR Configuration-Trigger (i.e. Start and Stop trigger, or Start trigger and Trigger timeout).
- WRONG DIR.** Wrong Direction occur when a new license plate is detected, but it moves in a direction which is not within the allowed direction range defined for the area in which this plate is located.
- LCR** Low confidence read event is created when a plate is read but the confidence level is lower than set in parameter “LIMIT OF LOW CONF (%)”
- LIST MATCH** The action that should be performed when the plate is found on one of the Match lists.
- LIST MISMATCH** The action that should be performed when the plate is not found on one of the lists.
- TIMED ACTIONS** Are triggered by a timer in regular intervals. For example, the Lumo can send a live image every hour to a server.

The following actions can be added to any of the events, you can also make combination of actions. Ftp Upload, Ftp Database, Store, Digital out, Serial, TCP, HTTP, HMAC_HTTP, WIEGAND26, WIEGAND64

For all actions you can define for which Area of interest the action should be performed. E.g. ALL AREAS or just one selected AREA.

An example message for a serial action is: %LP%%CR%%LF%. This will output the number plate with a CRLF.

All available patterns can be found in the installation guide.

For more details about the menu items, see the installation guide on <https://portal.nedapidentification.com>

A Disclaimer

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B Document revision

Version	Date	Comment
1.06	2022-10-18	Created in new style