



# LYNET

## Installation Guide



This guide contains an overview of the hardware and required components, suggested scenarios and step-by-step guide for installation, and safety and maintenance instructions.

# LYNET

## INSTALLATION GUIDE

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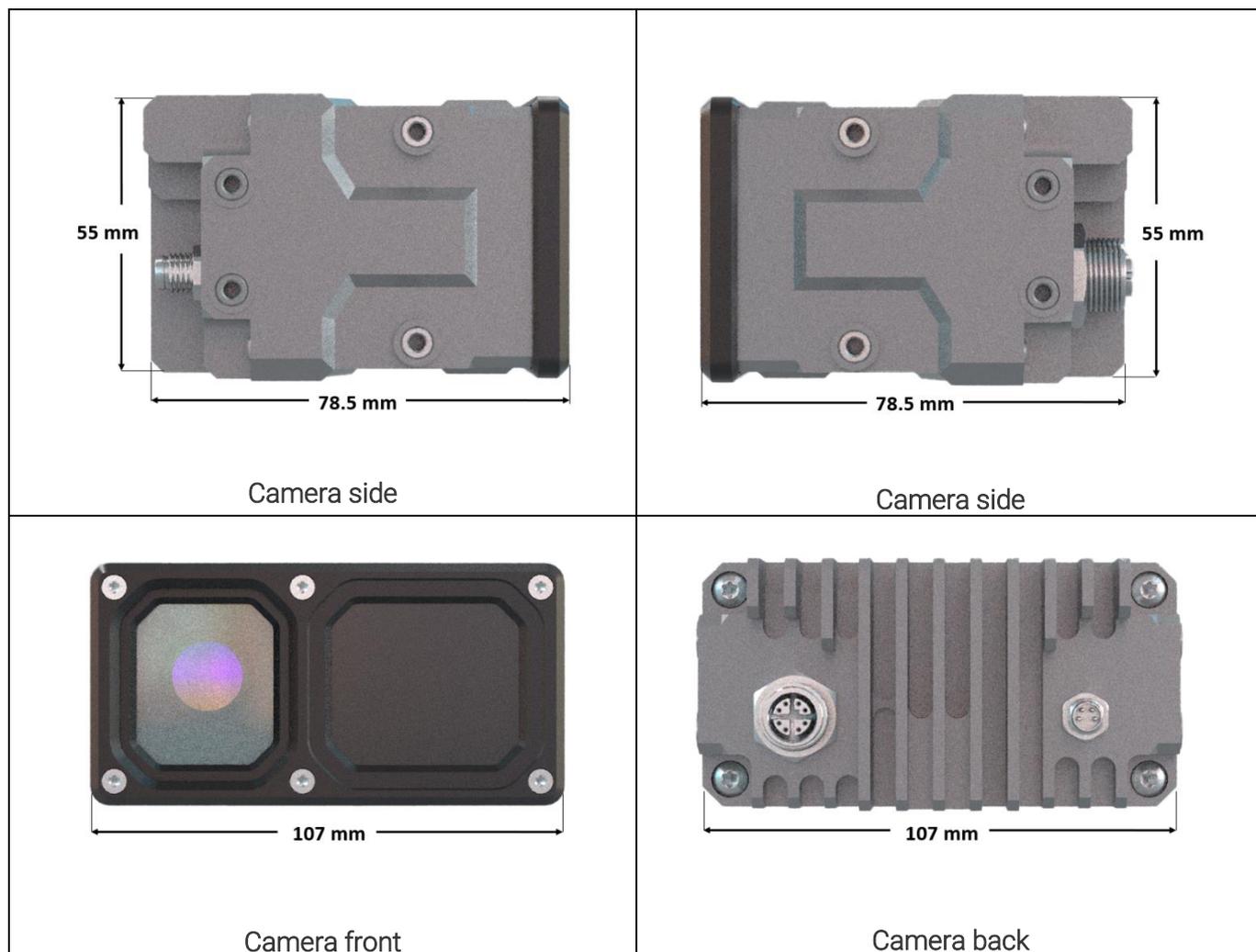
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# 1. HARDWARE OVERVIEW



Model	Lynet Wide	Lynet Tele
<b>Lens</b>	<b>Motorized zoom and focus</b>	<b>Fixed</b>
<b>Light sensor</b>	Day/night switch, configurable quick auto-switching day/night mode, automatic brightness control	
<b>Shutter</b>	Color, Global Shutter	
<b>Power requirement</b>	PoE+ (IEEE 802.3at)	
<b>Maximum power consumption</b>	15 W	
<b>Typical power consumption</b>	8 W	
<b>Connectivity</b>	Power & Data: 1 × M12, X-coded, 8-pin (female) GPIO: 1 × M8, 4-pin (male)	
<b>Dimensions (L x W x H, without bracket)</b>	82 mm × 107 mm × 55 mm (3.2" × 4.2" × 2.2")	
<b>Weight (without bracket)</b>	0.6 kg (1.3 lbs)	
<b>Optional accessories</b>	RJ45-M12X (Ethernet & Data) cable, M8 (GPIO) cable, Lynet Starter Kit (for demo purposes) which contains shield, bracket options, magnetic and suction-cup roof mounts, PoE+ Router and inverter	

## 1.1. COMPONENTS

### 1 Lynet Mobile ANPR Camera

OPTIONAL

### 2 RJ45 - M12 PoE+ Cable

### 3 Lynet Starter Kit



The box contains:

- Lynet Mobile ANPR Camera

Must have for operation:

- RJ45 – M12 PoE+ cable

## Optional:

- Lynet Starter kit, which includes the following:
  - 12V to 220V inverter
  - PoE+ GPS/4G Router
  - Magnetic mounting bracket
  - Suction-cup mounting bracket
  - Shield
  - Power/Data cable (2-meter long)
- M8 GPIO cable

## Required tools:

- 8mm wrench
- Hexalobular socket X20 (for M4 screws)
- Hexalobular socket X10 (for M3 screws)
- PC to reach web interface
- Setting the camera to recovery mode: recommended strength of the magnet is 1.2-1.3 T (tesla).

## 1.2. BRACKET (OPTIONAL)

### Important!

Bracket is not included; it can be purchased separately as part of the Lynet Starter Kit!

### Magnetic mounting bracket:

For secure and robust solution, magnetic mounts are a superior alternative, providing the necessary stability and resistance against movement and vibrations.



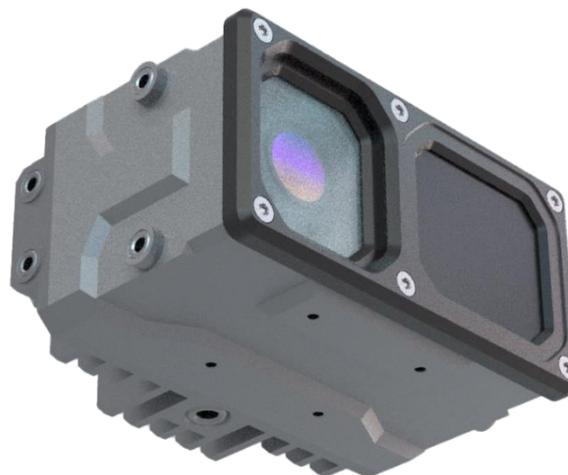
### Suction-cup mounting bracket:

Suction cup mounts are used as a quick fix and permanent solution.



#### Note

- Additional accessories and mounting accessories may be required depending on the actual vehicle. See an extra bracket option below – contact your sales person for further details & availability.
- We highly recommend using the camera shield in hot environments, as it is essential for protecting the device from direct sunlight and supporting temperature regulation. Be sure to purchase and install the shield for optimal performance.

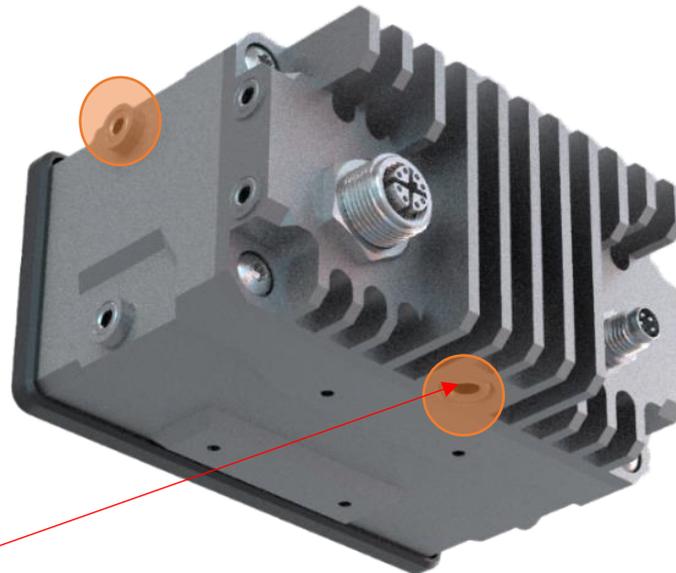


## 2. INSTALL THE HARDWARE

### ! Important!

By default, the camera is shipped without a bracket or shield to allow our partners to mount the camera based on their needs. The 3D CAD files of the camera are available through sales or support!

The bracket can be mounted into different part of the vehicle. By using this bracket, the camera can be mounted on a vehicle roof rack or on a flat surface. We recommend to use the marked hole as an anchor hole.



1/4"-20 UNC

The camera can be mounted on a tripod using the thread shown in the picture.

## 2.1. MOUNTING

Adjust the bracket (in case of purchasing Lynet Starter Kit)



To prevent personal injury, mount the camera according to the instructions below:

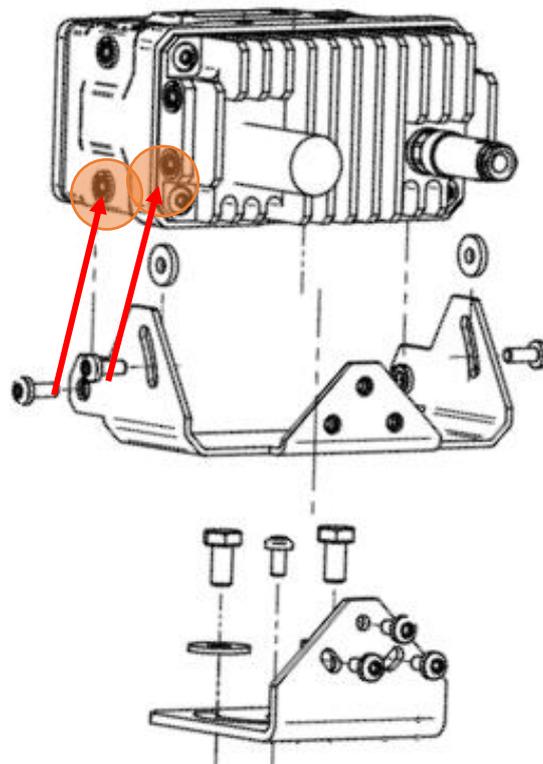
Tools and screws for assembly:

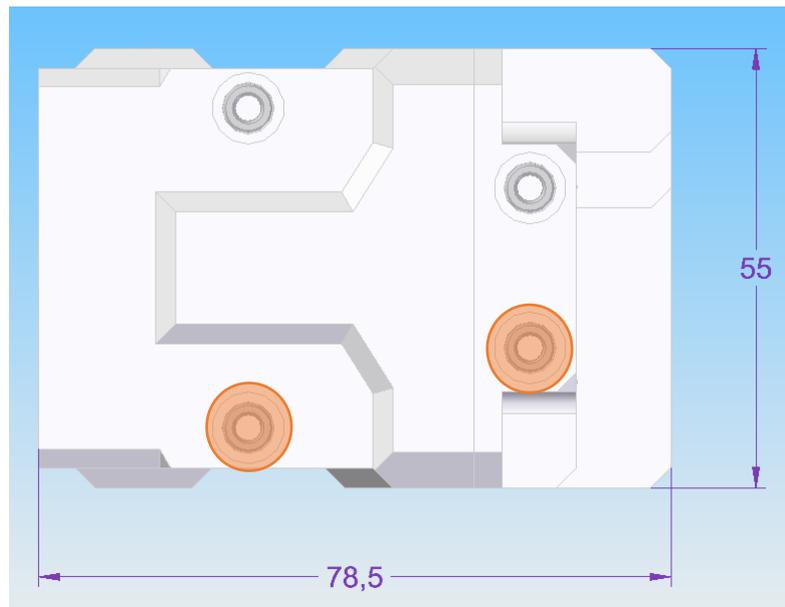
- 8mm wrench for the bracket
- Hexalobular socket X20 (for M4 screws)
- Hexalobular socket X10 (for M3 screws)

1. Place the camera on the bracket.
2. Tighten the screw completely, then tighten it to 2.8 Nm torque.

### ! Important!

We strongly recommend using **thread-locking adhesive** for the bracket screws! The recommended adhesive is **Loctite 222**. It is suggested to use the **50ml** or **250ml** version, as this allows the use of the following manual dispenser (**Loctite EQ Pro Pump**), which significantly simplifies the application of the adhesive to the screw!





3. Place the camera on the roof or trunk of the vehicle with the magnetic roof mount.
4. Adjust the bracket into the desired position. Tighten the screw back.

It is recommended to secure the camera by a cable (carabiner) to the roof of the vehicle or to the vehicle's roof rack, in the unlikely case the bracket fails.

**! Important!**

- Do not overtighten the screws.
- Additional accessories and mounting elements may be required depending on the actual vehicle.
- Secure mounting is the responsibility of the user.

### 3. CABLE LAYOUTS



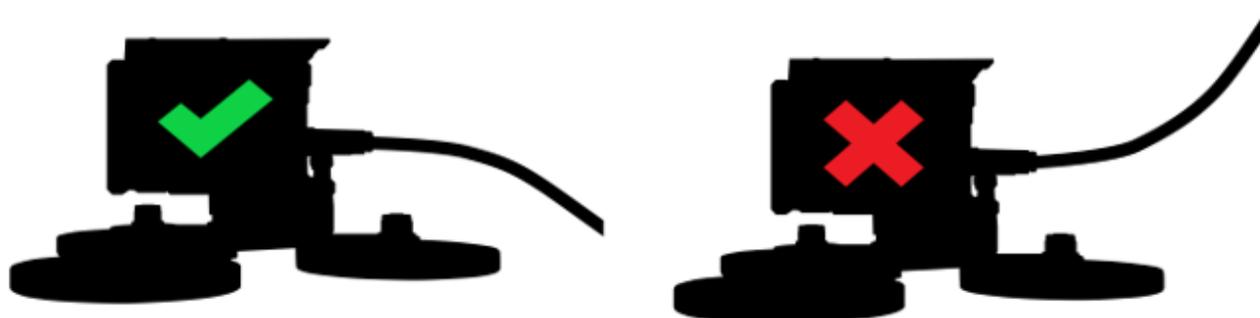
Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source.

First connect the cable to the camera and after that, to the **PoE+** router. **The power supply must meet IEEE 802.3at PoE+ standards.** Must purchase the cable for the operation! Unit can be purchased with a 2-meter (6.5 feet), 5-meter (16.4 feet) or 10-meter (32.8 feet) PoE+ cable.



#### Note

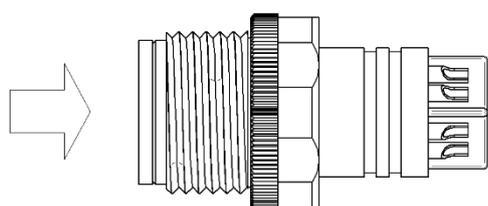
Technical specifications are subject to change without prior notice.



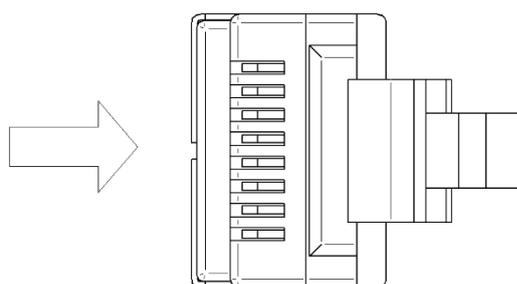
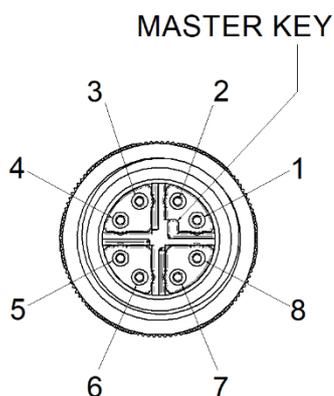
Route the cable according to the image to avoid collecting rainwater at the socket.

### 3.1. CONNECT THE POE+ CABLE

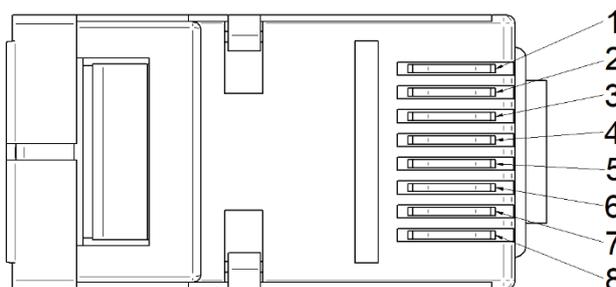
1. Make sure to attach the cable in only one way, paying attention to the small groove that should be in the upper right corner of the connector. Do not force the cable into the connector!
2. If the cable is plugged correctly to the connector of the camera, the fastening ring of the plug should be turned clockwise to keep it tight and waterproof.
3. Water may enter into the camera inside through not properly sealed connectors. To maintain the camera's watertightness please make sure that connected cables are tightened properly and the unused connectors are capped.



Cable side M12 male X coded circular connector

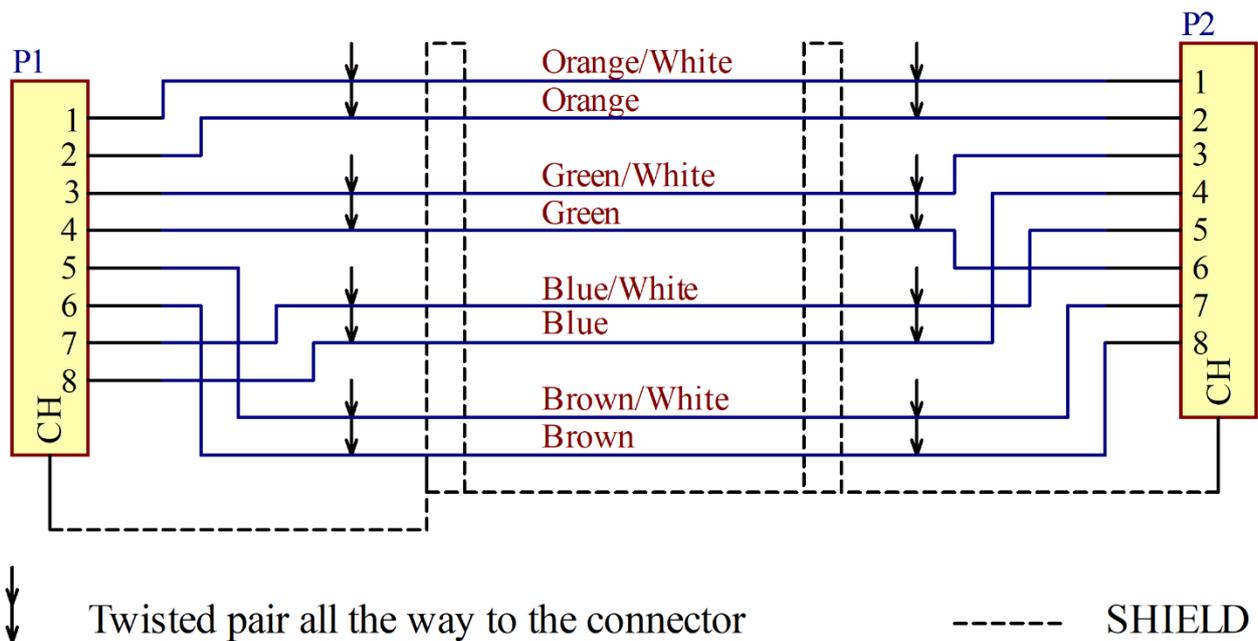


RJ 45 Ethernet connector



Camera PIN	1 Gigabit mode B, DC & bi-data	1 Gigabit mode A,DC & bi-data	1 Gigabit mode A+B (4PPoE),DC & bi-data	Color	Eth pos
1	TxRx A +	TxRx A + / DC +	TxRx A + / DC +	white/orange	1
2	TxRx A -	TxRx A - / DC +	TxRx A - / DC +	orange	2
3	TxRx B +	TxRx B + / DC -	TxRx B + / DC -	white/green	3
4	TxRx B -	TxRx B - / DC -	TxRx B - / DC -	green	6
5	TxRx D + / DC -	TxRx D +	TxRx D + / DC -	white/brown	7
6	TxRx D - / DC -	TxRx D -	TxRx D - / DC -	brown	8
7	TxRx C - / DC +	TxRx C -	TxRx C - / DC +	white/blue	5
8	TxRx C + / DC +	TxRx C +	TxRx C + / DC +	blue	4

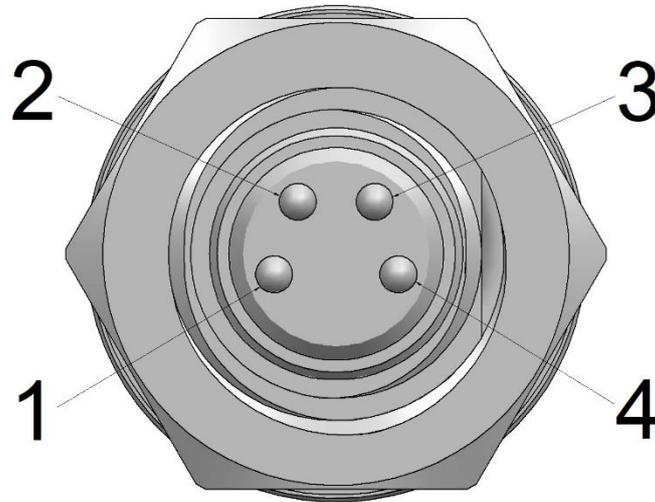
This is how the Ethernet T568B wiring scheme should be made:



M12 PoE+ connector cap:

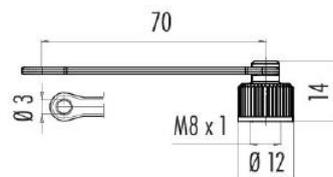


3.2. M8 GPIO CONNECTOR:



Pin	Function
1	OPTO_IN_G
2	OPTO_OUT_G
3	OPTO_OUT_S
4	OPTO_IN_S

Connector cap:



## 4. SOFTWARE REQUIREMENTS

The cameras are developed to operate without any kind of special software.

Software requirements:

- For network setup, administrator privileges are necessary.
- Web browser: Mozilla Firefox 52, Microsoft Edge, Google Chrome 51.X.X.X or later editions. If it is possible, update your browser (Firefox or Chrome) to the newest available version.

## 5. ACCESSING THE CAMERA

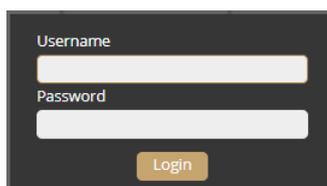
### Finding Cameras

- You can find the camera on the network using the [Harbard Device Tool](#). Double-click on the selected camera, and the Lynet camera web interface will open in the default browser. While running, the program continuously looks for detectible cameras on the network and displays them in a list with their current IP addresses. If the camera does not appear, ensure that the firewall does not block the multicast protocol on the network and that the camera and the PC are in the same network range.
- The camera initially starts in DHCP mode, meaning the router will automatically assign an IP address to the camera. To access the camera, you need this IP address. You can find the camera's IP address by logging into your router and checking under Status > Network (the exact location varies by router) or by downloading Adaptive Recognition's Device Tool (Harbard Device Tool) [here](#). This application lists all your Lynet and some other Adaptive Recognition products on your local network!
- Start a browser and enter the camera IP address into the address bar of the browser.
- Type the username and the password on the displayed login interface and click on **[Login]**.

The default user account is the following:

**Username:** admin

**Password:** admin



- After signing in, the web interface of the camera is displayed on which the required settings can be performed.

### Link-Local IP Address

The link-local IP address of the camera can be calculated using the device's MAC address or serial number. The last four characters are two hexadecimal numbers that can be converted into the last two parts of a link-local address (169.254.XX.YY).

Example: the camera with the MAC address 00-19-B4-01-42-1A ends with 42 and 1A, representing the decimal values 66 and 26. The link-local address of this camera is 169.254.66.26.



## 6. RECOMMENDED CAMERA POSITION

After you have connected your computer directly or via switch to the camera, you should be able to see the web interface in your browser. You may now follow the steps below to set your camera properly. This section intends to provide recommendations to achieve the best setup for both vehicle mounted and fixed Lynet installations.

A good ANPR engine can read the plates from images taken in various conditions. However, to achieve the highest recognition rate possible with short recognition times, you should carefully select the most ideal camera position.

### 6.1. MOBILE DEPLOYMENTS

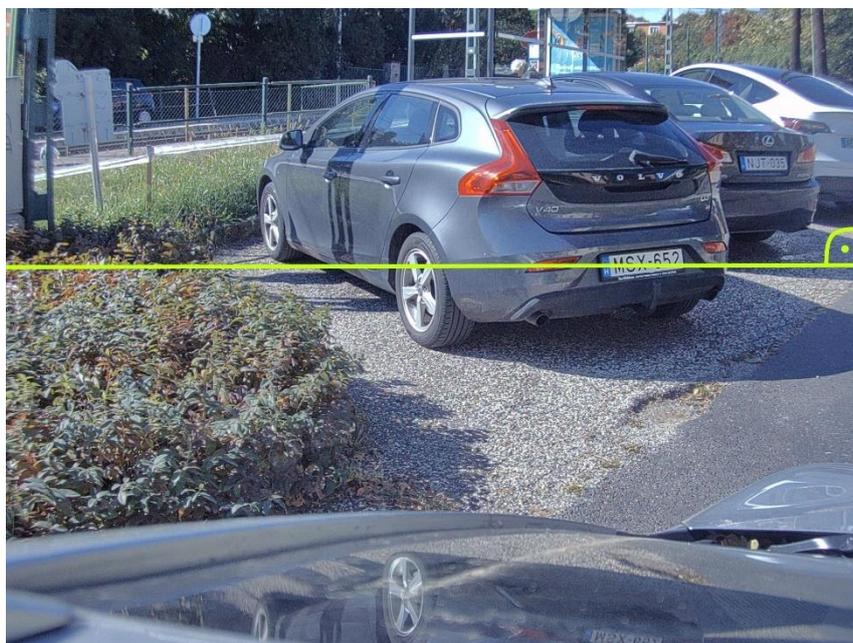
To use the Lynet camera on your vehicle, it can be mounted in different ways depending upon the purpose of the use case. A couple of common use cases (and installations) are as follows:

- Parking application (Wide): camera is turned 80°-90° from the longitudinal axis of the car towards parked cars, and tilted down (max. 35°) to reduce background interference (e.g. horizon, signs, fences).
- Traffic monitoring (Tele): camera is turned approx. 0°-25° from the longitudinal axis of the car towards the monitored lane (left or right) and tilted down 5°-15°.

### 6.1.1. PARKING APPLICATION:

Ensure that you have mounted the camera in a way that allows target license plates of parked vehicles to remain at approximately 2-4 meters / 6-12 feet from the device (if possible) as your vehicle patrols the parking area, and that the camera's view of the vehicles is not blocked. The most important factor is to capture the vehicle plate and have a workable license plate size with characters around 20-60 pixels tall, as explained in the [Imaging for Carmen Brief Guide](#).

Sample images:



In case of trunk or roof installation, the camera should provide similar images:



### 6.1.2. TRAFFIC MONITORING (OFTEN DIRECTED AT ONCOMING TRAFFIC):

The camera should be mounted on the vehicle corresponding to the direction of the travel, or the opposite, panned to the left or right (or centered) as appropriate (e.g.  $\sim 25^\circ$  relative to the longitudinal direction of the oncoming vehicles) and slightly tilted down (by  $\sim 8^\circ$  relative to horizontal position). Height of the vehicle rooftop may change the tilt angle ( $+8^\circ$  difference).

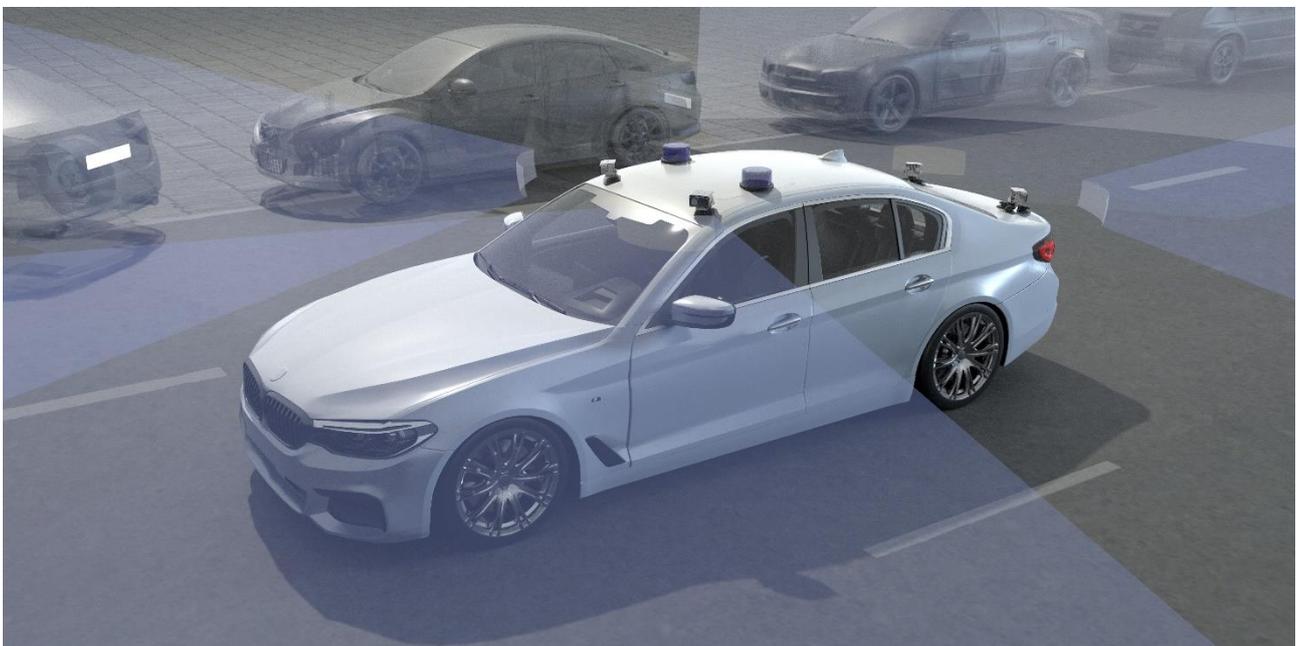
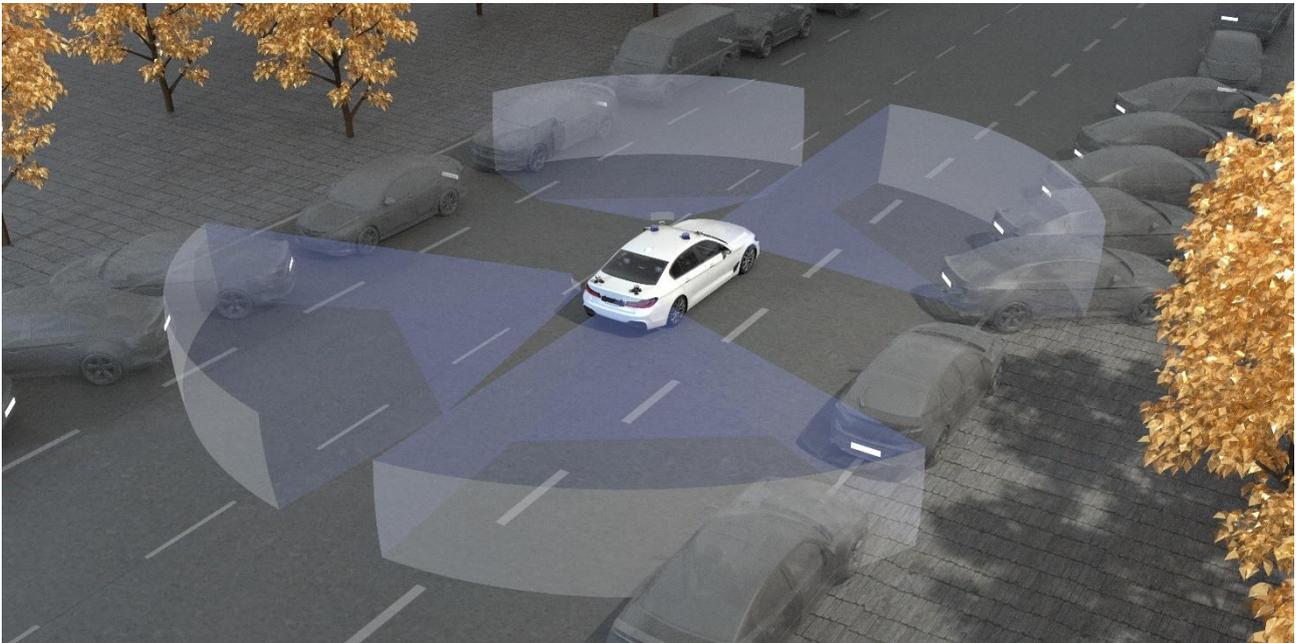
Try to keep the license plate in a horizontal position in the live view (see below image).



The camera should provide similar images, depending on the angles



Example for dual camera setup:



## 7. SAFETY

### ! Important!

All screws should be hand-tightened! Do not overtighten the screws. Failures due to inappropriate installation void the warranty.

### ! Important!

The camera must only be installed on a stable surface!

### ! Important!

For cabling use quality, outdoor-certified cables! Improper cabling causes warranty to void!

### ! Important!

To maintain the camera's watertightness please make sure that connected cables are tightened properly and the unused connectors are capped.

### ! Important!

Avoid to clean the camera with high-pressure water jets!

For detailed information see the User Manual:

<https://adaptiverecognition.com/doc/cameras/lynet-anpr-camera/>

or

Check our website: <https://adaptiverecognition.com/>

## 8. MAINTENANCE

The cameras are designed for 24/7/365 work for every weather condition and they do not need special maintenance. Please keep clean the camera front. During the cleaning process, avoid scratching the front cover.

Use only warm, soapy water for cleaning the camera! Some cleaning detergents may damage the camera, so we recommend using only common soap. Avoid to clean the camera with high-pressure water jets!

### Instruction for Cleaning Acrylic and Polycarbonate Sheets or Display Cover Glass

#### Materials Needed:

1. Synthetic microfiber wipes (without any added chemicals).
2. IPA/H<sub>2</sub>O\* mixture (details provided below).
3. Clean and dry hands or powder-free, disposable silicone rubber or PUR gloves.

*\*IPA (Isopropanol) and distilled water mixtures in ratios between 30/70% and 70/30%.*

#### Steps for Cleaning:

1. **Preparation:**
  - Wash and dry your hands or put on disposable, powder-free gloves.
  - Prepare the IPA/H<sub>2</sub>O mixture.
2. **Moisten the Wipe:**
  - Lightly spray the microfiber wipe with the IPA/H<sub>2</sub>O mixture. (Only 1-2 sprays needed).
3. **Wet Wiping:**
  - Begin cleaning by gently wiping the surface from the center towards the edges using the moistened wipe.
  - Use circular motions to cover the entire surface, moving from the center outwards.

#### 4. Dry Polishing:

- Immediately after wet wiping, use a dry microfiber wipe to polish the surface.
- Apply circular motions from the center outwards to remove any remaining streaks or stains.

#### 5. Repeat if Needed:

- If the surface remains contaminated, repeat the wet wiping and dry polishing process until the desired result is achieved.

#### Avoid using:

- Do not wash (recycle) wipes using softeners or detergents.
- Do not polish the surface using abrasive materials (glass/ceramic cleaner).
- Do not use regular 'kitchen wipes', as they might produce scratches.
- Non-woven polishing wipes similar to Katrin 45591 ([www.katrin.com](http://www.katrin.com) or ABSORMATTM ([www.crtoy.com](http://www.crtoy.com)), is also recommended.
- Do NOT apply any substances that claim to improve surface quality i.e., silicon sprays and 'lotus effect sprays'.
- It is forbidden to use solvents and detergents!

By following these steps, you should achieve a clean, streak-free surface.

Using a shield on the camera is recommended, as it can greatly help to cool the device properly in warm weather.

The cameras should be stored in low humidity environment in temperature range of -30 °C to + 55 °C. Always use the sealing caps on the connectors to keep the camera unit waterproof! If you miss to use it, the warranty will be void! The maintenance of the devices is recommended on a quarterly basis. In case of extreme weather conditions more often.

During the maintenance, make sure that:

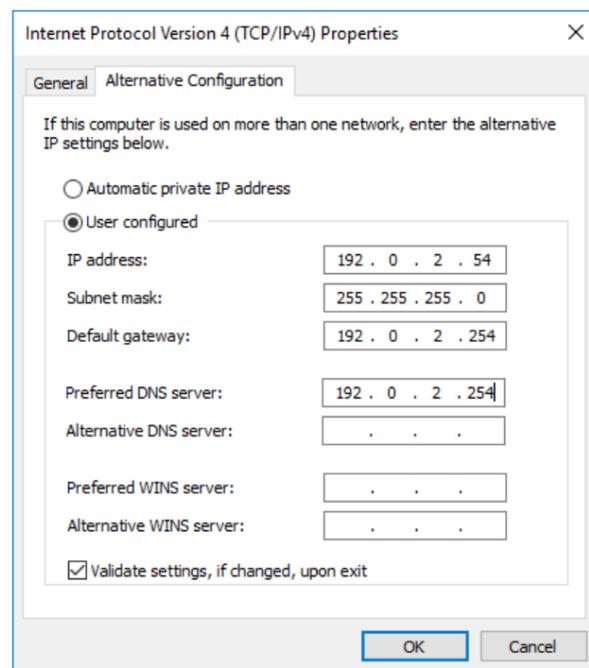
- the camera operates properly,
- it is facing to the previously set direction,
- the fastening is not slack,
- the front of the camera and the camera itself is clean (no spider webs or any other contaminants inhibit the visibility),
- there are no strange circumstances (vapor, damage).

## 9. APPENDIX

### 9.1. ADDING ALTERNATE IP ADDRESS

#### Windows Vista/Windows 7/Windows 10/Windows 11

1. Click **Start** and select **Control Panel**.
2. Open **Network and Sharing Center**.
3. Click **Manage Network Connections** on the left side of Network and Sharing Center.
  1. Click on the network connection you want to add an IP address for (to which the camera has been connected) and select **Properties**.
4. Select **Internet Protocol Version 4(TCP/IPv4)**, click on **Properties** and select the **Alternate Configuration** tab.
5. Select **User configured** and enter e.g. the 192.0.2.54 IP address and 255.255.255.0 as Subnet mask as shown on *Figure 1*.
6. Click **OK** in the opened windows.



#### Linux

1. Open a terminal.
2. Enter the ifconfig command to see the reserved Ethernets (e.g. eth0).
3. Enter the following command: ifconfig ethY 192.0.2.25 where Y is a free eth (e.g. eth1) and 192.0.2.25 is a sample IP address.

## 9.2. UNIT SERIAL NUMBER

There is a sticker on the bottom of the unit, indicating the Model, IP address, MAC address and the Serial Number of the camera.

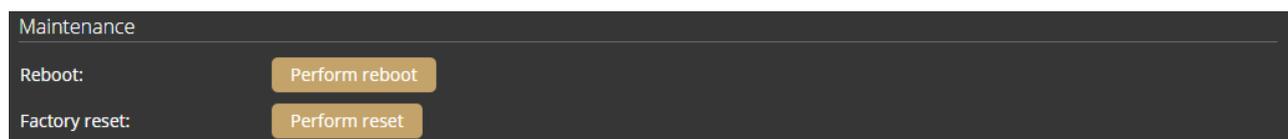


## 9.3. RESTORE FACTORY DEFAULTS

You can factory reset the device in two different ways. If you experience some malfunctions or critical errors in the camera, and the software-based reset does not help, you have the option to physically reset it.

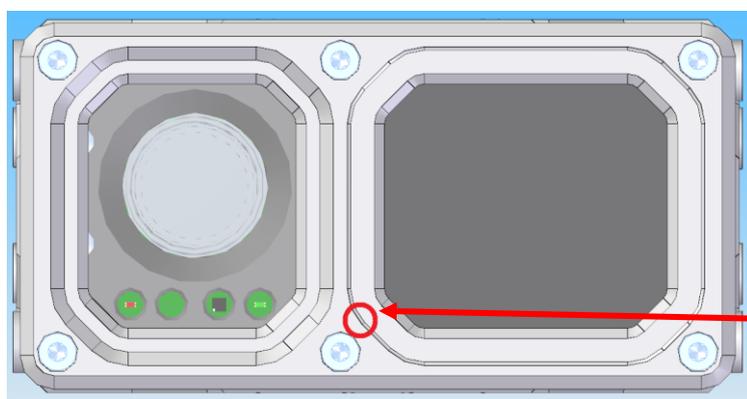
Software-based reset:

- Go to Settings -> Device -> Maintenance and first try to solve the problem with a Reboot. If it does not help, then choose Factory reset.



Physically reset by magnetization:

1. Power off the camera.
2. Touch a magnet (not included) to the back of the camera and hold it in position. See figures below.
3. Power on the camera and wait 5 seconds. If the magnet is in proper position, the green indicator led on the front of the camera will start flashing very fast.
4. Remove the magnet.
5. Reach the camera via its default (192.0.2.3) IP address.



Position of the magnet on the front of the camera.

The recommended strength of the magnet is 1.2-1.3 T (tesla).

## 9.4. MODEL VERSIONS

Lynet is available in two different versions. You can choose between two lens options – a wide and tele.

	With on-board ANPR+MMR
Zoom	Lynet M504 Zoom (Wide)
Tele	Lynet M504 (Tele)

### 9.4.1. LYNET M504 ZOOM (WIDE)

These cameras are designed mostly for urban deployments. The camera adapts very well to the traffic situations, such as monitoring parked vehicles and moving traffic. These cameras are typically mounted on the roof or trunk of the patrolling vehicle turned 75-90° to the side, tilted down slightly. Wide angle lens Lynet models have an ANPR range of 2-12 meters and a 68° angle of view.



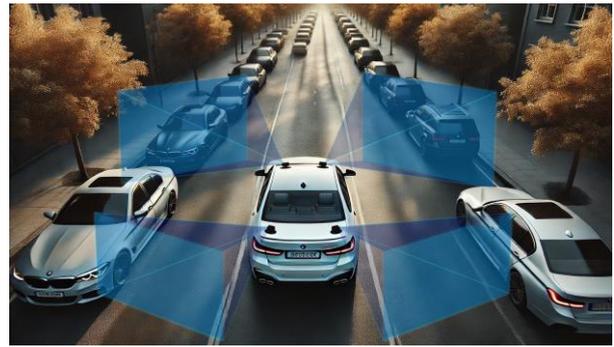
### 9.4.2. LYNET M504 (TELE)

The long-range cameras' main purpose is to monitor the farther lanes (e.g., the car is parked next to the highway and needs to view the inner and outer lanes through the shoulder lane), and often at high speeds. These cameras are typically mounted on the roof or trunk of the patrolling vehicle turned 0-25° to the side, tilted down slightly. Long-range Lynet models have an ANPR range of 5.5-18.5 meters with an angle of view of 31°.



9.4.3. MIXED CAMERAS USED

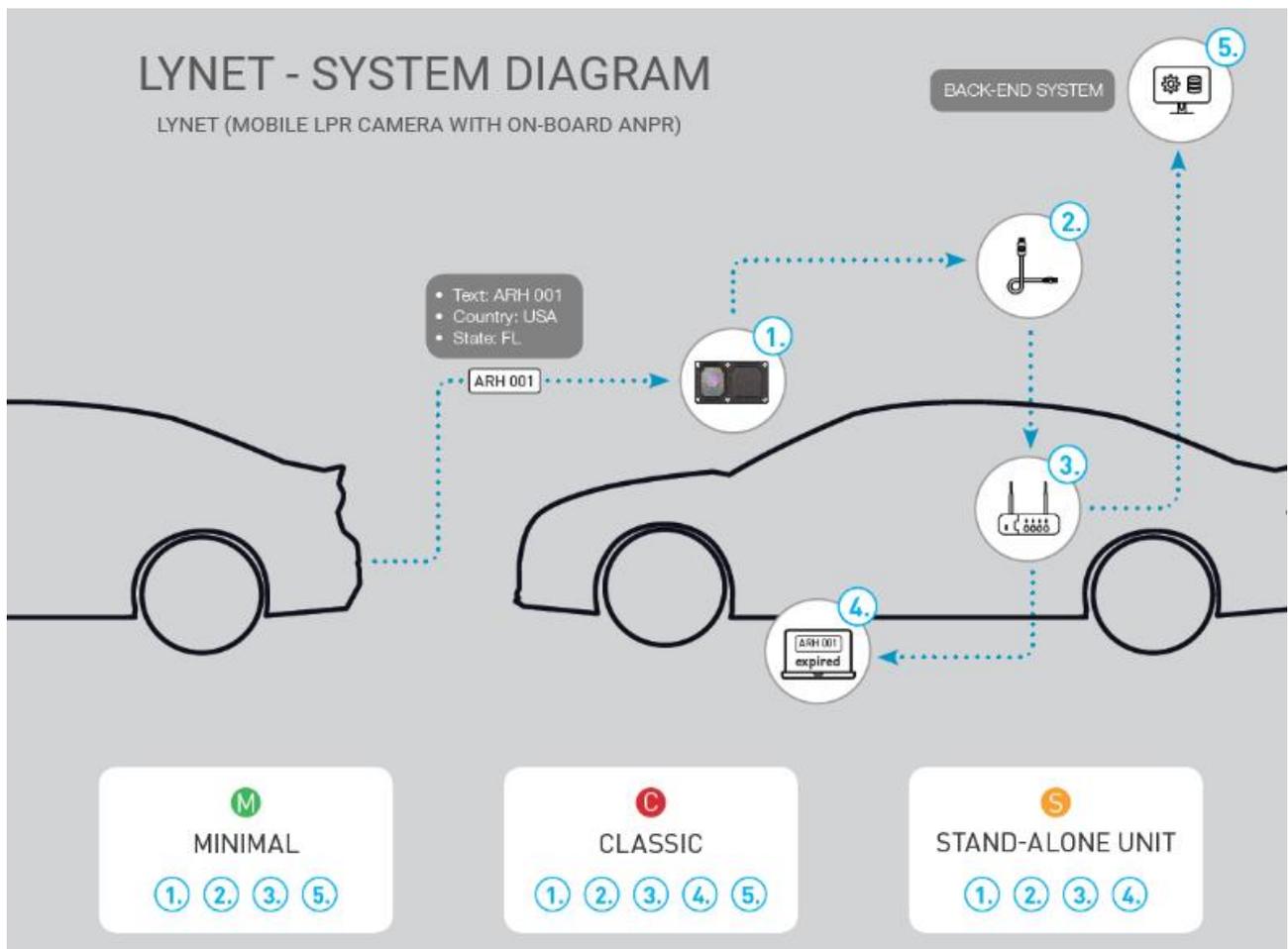
Sometimes multiple cameras are required to capture the highest number of license plates since not every US state requires front and back license plates. In addition to this, you can combine wide and tele units to increase capture rate.



9.4.4. ONBOARD ANPR/LPR OPTIONS

The Lynet ANPR/LPR camera provides on-board ANPR which keeps the system light-weight and incredibly easy to integrate. However, the limited onboard processing capacity of edge-processing units does not offer the highest detection rates.

9.4.5. TYPICAL SYSTEM STRUCTURES



## 10. REGULATORY INFORMATION

### EU Conformity Statement



This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2004/108/EC, the RoHS Directive 2011/65/EU.



2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points.

## CONTACT INFORMATION

**Headquarters:**

Adaptive Recognition, Hungary Inc.  
Alkotás utca 41 HU  
1123 Budapest Hungary  
Web: [adaptiverecognition.com](http://adaptiverecognition.com)

**Service Address:**

Adaptive Recognition, Hungary Inc.  
Ipari Park HRSZ1113/1 HU  
2074 Perbál Hungary  
Web: [adaptiverecognition.com/support/](http://adaptiverecognition.com/support/)

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.

Information regarding your hardware, latest software updates and manuals are easily accessible for customers via our [Documents Site \(www.adaptiverecognition.com/doc\)](http://www.adaptiverecognition.com/doc) after a quick registration.

### New User

If this is your first online support request, please contact your sales representative to register you in our Support System. More help [here \(www.adaptiverecognition.com/support/\)](http://www.adaptiverecognition.com/support/)!

### 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.

