PAL ELECTRONIC SYSTEMS

VERSION 1.1

INSTALLATION GUIDE

LPR Camera

License plate recognition camera for parking management, access control and traffic monitoring. Powered by advanced AI, the LPR camera now recognizes plates faster and more accurately, even in challenging conditions.



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Safety instructions

Read this section before you install the camera.

Power supply
Use one of the following power options: a 12 VDC ±5%, 2 A power supply, or PoE (802.3af). An incorrect power input can permanently damage the device.

- Do not point the camera at strong light sources, such as direct sunlight or headlights.
- Install the camera only on a solid surface that can support its weight.
- Keep all cables away from sharp edges, vibration and moving parts.
- When installing outdoors, make sure that all connections are properly waterproofed.
- Follow local electrical codes and regulations.

Warranty
Any physical modification, including cutting the cables, voids the warranty.

CHAPTER 1

Introduction

The PAL LPR (license plate recognition) camera provides high-accuracy vehicle identification for parking management, access control and traffic monitoring. This guide explains how to install, wire, align and maintain the camera. For best performance, follow the instructions carefully. The camera uses an advanced AI algorithm for fast and accurate license plate recognition, even at night.

THIS GUIDE COVERS

- Electrical and network requirements
- Mechanical installation and mounting
- Cable connections
- Alignment and testing
- Troubleshooting



CHAPTER 2

Specifications

PARAMETER	SPECIFICATION
Power supply	12 VDC ±5%, 2 A, or PoE (802.3af)
Power consumption	4 W (standby); 5 W (active / recognition)
Network	10/100 Mbps Ethernet (RJ45) or 4G LTE Cat 4
Outputs	1 relay output
Operating temperature	−20 °C to +70 °C (−4 °F to +158 °F)
Ingress protection	IP66
Mounting	Wall or pole mount
Camera type	LPR (license plate recognition)
Resolution	8 MP (8 megapixels)
Part number (Europe)	CAM1003
Part number (USA)	CAM1003_G

CHAPTER 3

Dimensions

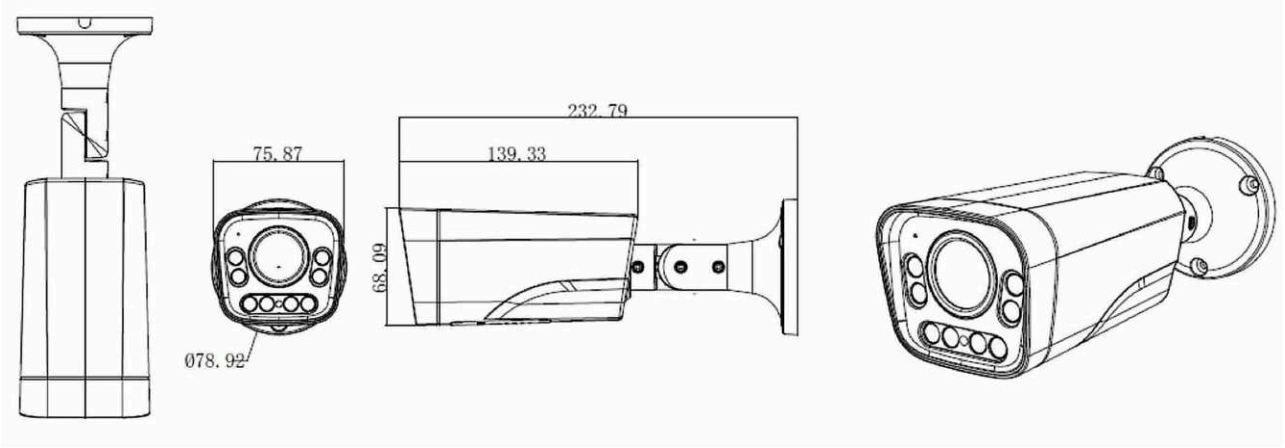


Figure 1 · Camera dimensions (mm)

CHAPTER 4

Package contents



PAL LPR camera



Waterproof RJ45 connector



Screw and anchor kit



Two cellular antennas

The package also includes the user documentation.

4.1 Optional accessories

The following accessories are sold separately.



Pole



Mounting base bracket



Enclosure



Pole with enclosure

CHAPTER 5

Installation requirements

MOUNTING HEIGHT

1 – 2 m 3.3–6.6 ft

Recommended camera height above the road

DISTANCE TO VEHICLE

3 – 12 m 10–39 ft

Recommended distance from the camera to the target vehicle

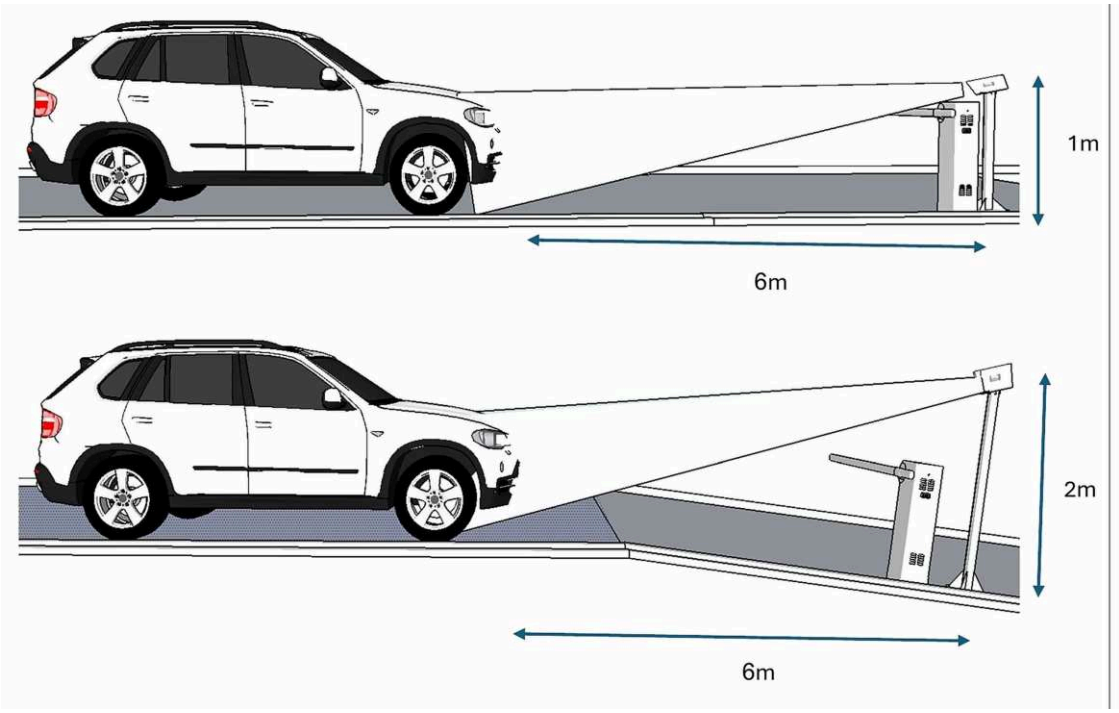


Figure 2 · Installation examples: camera at a height of 1 m (3.3 ft) and 2 m (6.6 ft), 6 m (20 ft) from the vehicle

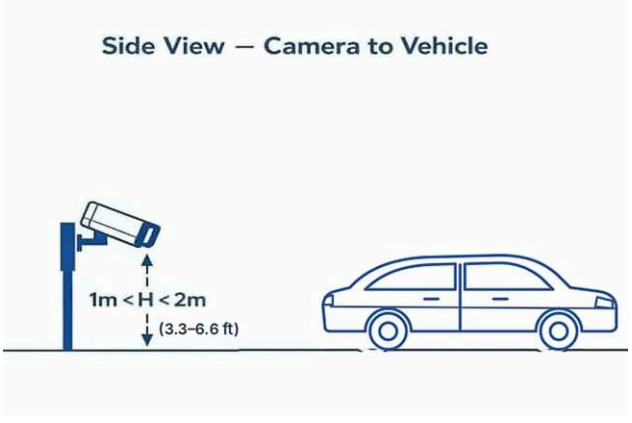


Figure 3 · Side view: mounting height

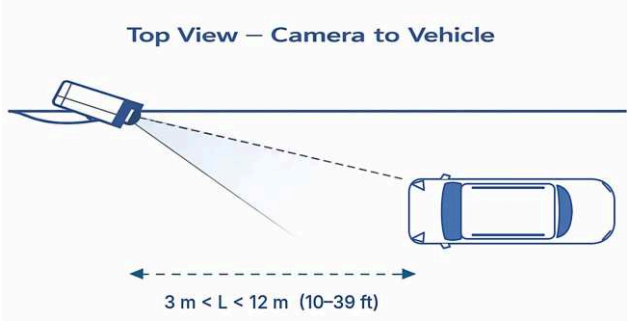


Figure 4 · Top view: distance to the vehicle

CHAPTER 6

Mounting the camera

6.1 Bracket assembly

The camera is supplied with one of two mounting base types: a round base with 3 screws, or a square base with 4 screws.

1. **Route the cable**
   Pass the camera cable through the large center hole of the bracket (green arrow).

2. **Align the mounting base**
   Align the camera mounting base with the matching screw holes on the bracket (blue or orange arrows).

ARROW KEY

- Green: cable hole
- Blue: square base, 4 screws
- Orange: round base, 3 screws

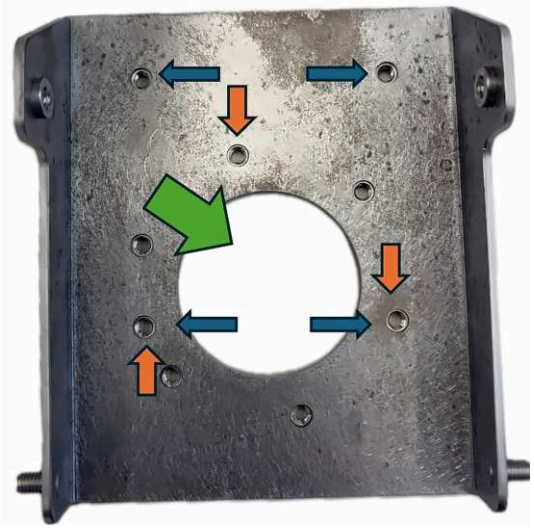


Figure 5 · Mounting bracket

6.2 Pole assembly

Two bolts protrude from the sides of the bracket, one on each side. These bolts hold the camera arm (camera base plate).

1. **Align the keyhole slots**
   Align the keyhole slots on the arm with the two side bolts on the bracket (Figure 6).
2. **Slide the camera into place**
   Slide the camera and bracket down until they lock onto the two bolts (orange curved arrow, Figure 7).
3. **Tighten the nuts**
   Tighten the nuts on the bolts to secure the arm firmly (red arrow, Figure 7).



Figure 6 · The two side bolts on the bracket

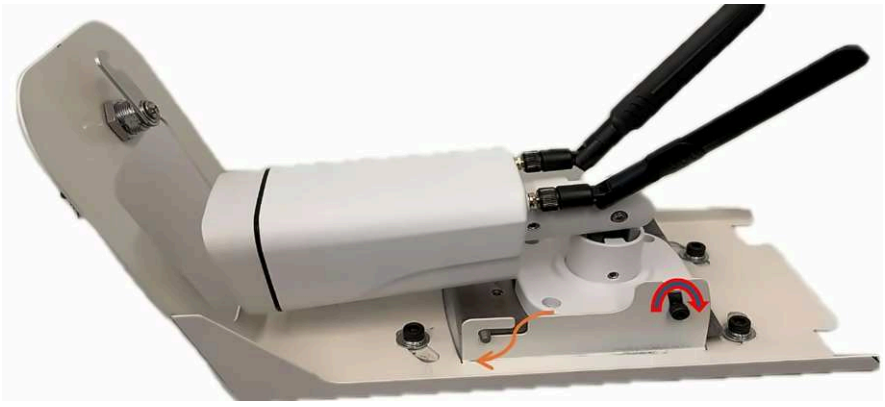


Figure 7 · Camera arm locked onto the bolts

> **Note**
> Until the nuts are fully tightened, you can tilt and adjust the camera arm.

Tip: before you fully tighten the bolts

1. Aim the camera. 2. Adjust the vertical and horizontal angles. 3. Tighten the bolts.

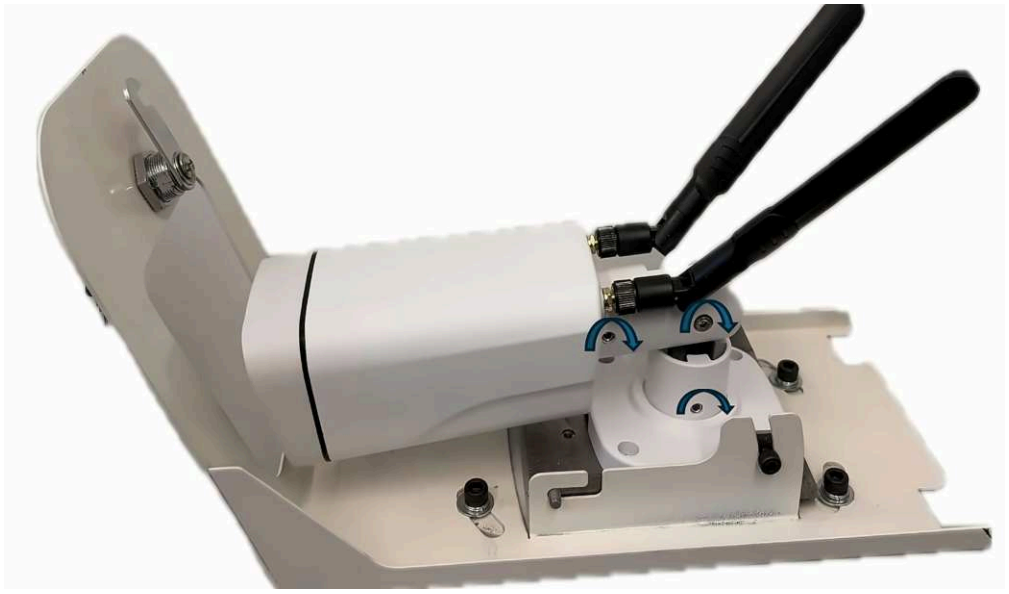


Figure 8 · Adjusting the camera before tightening the bolts

6.3 Final assembly: bracket and pole



Figure 9 · Side view



Figure 10 · Top view



Figure 11 · Rear view

Important

Before you close the enclosure, set the antennas one click upwards. If the antennas are not positioned correctly, they may be damaged.

CHAPTER 7

Cable connections

7.1 Power options

Power-on indication
When power is connected, the red LED around the lens lights up faintly and turns off after 10 seconds.



12 VDC

Connect a 12 VDC power supply to the DC jack.



PoE (802.3af)

Alternatively, power the camera over the Ethernet cable through the RJ45 connector.

7.2 Ethernet connection

- Use a Cat5e or Cat6 cable.
- Fit the waterproof RJ45 connector.

7.3 Gate / barrier control (“Alarm out”)



Alarm out

Dry-contact relay output: normally open (NO) and COM. Connect it to the barrier’s open input.

7.4 Connection schemes

OPTION 1 12 VDC power supply

- **Alarm out** – to the barrier (opens the barrier)
- **Power in** – 12 VDC from the power supply
- **Network (optional)** – external Ethernet network, through the RJ45 connector

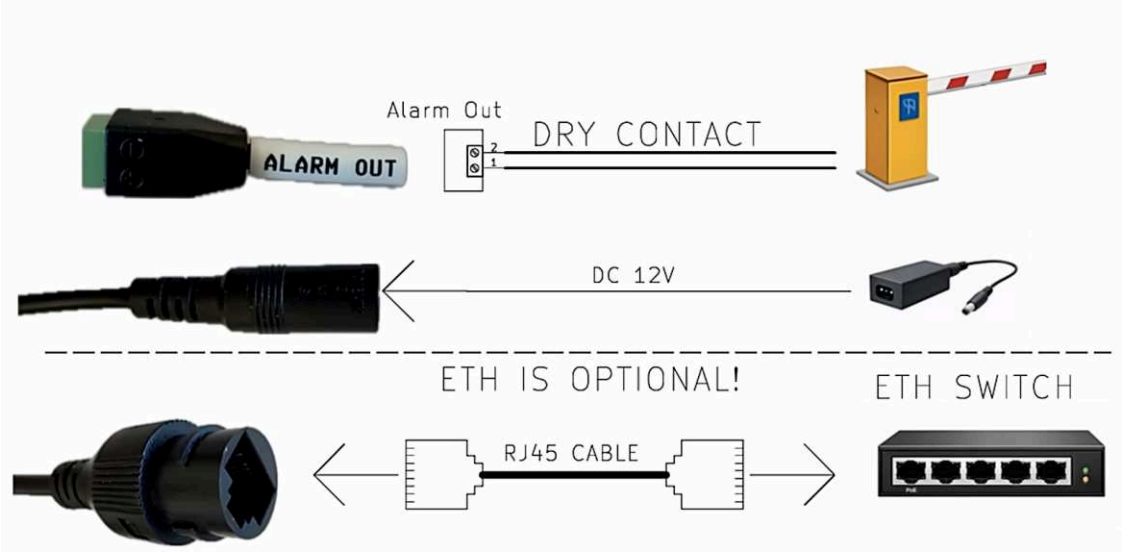


Figure 12 · Connection scheme, option 1

OPTION 2 PoE power

- **Alarm out** – to the barrier (opens the barrier)
- **Power in** – PoE, through the RJ45 connector
- **Network (optional)** – external Ethernet network, through the RJ45 connector

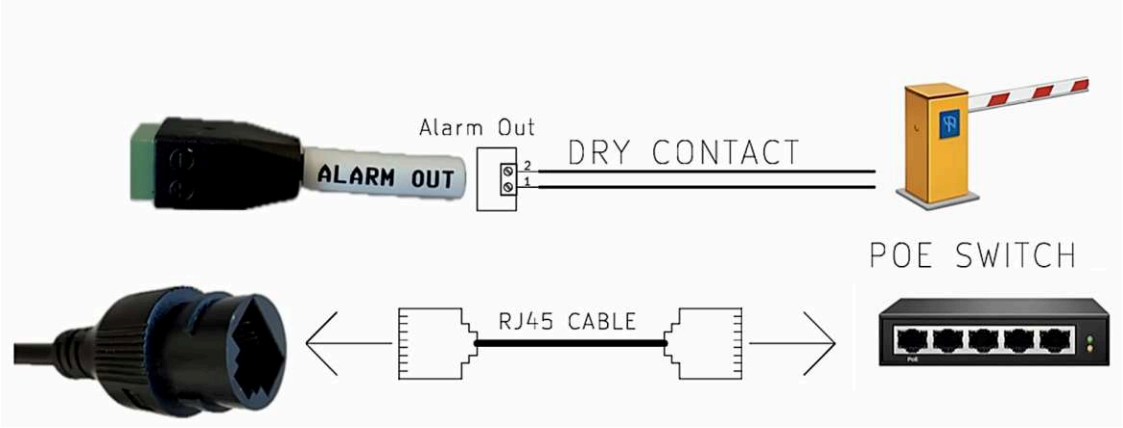


Figure 13 · Connection scheme, option 2

CHAPTER 8

Closing the enclosure

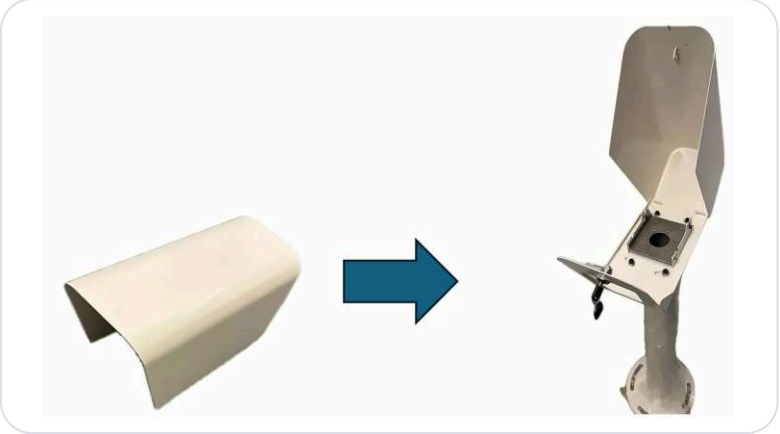


Figure 14 · Before closing, make sure that no cables protrude from the frame



Figure 15 · Lock the enclosure; the lock must engage in the hole (blue arrow)

1. **Place the enclosure on the mount**
   Make sure that no cables protrude from the frame.

2. **Close and lock the enclosure**
   Check that the lock engages in the hole (blue arrow, Figure 15).

CHAPTER 9

Performance checklist

- [ ] Power supply is connected
- [ ] The camera shows “Connected” in the PAL Web Portal
- [ ] The distance to the vehicle is within the recommended range
- [ ] Plate image clarity is verified by day and at night
- [ ] The PAL Web Portal is receiving events

CHAPTER 10

Troubleshooting

The camera does not power on

- Try a different power supply.
- Try powering the camera from a PoE power supply.

No network connection

- Check that the SIM card is inserted correctly.
- Check the RJ45 connector.

The plate is not detected

- Adjust the zoom and focus in the PAL Web Portal.
- Adjust the horizontal angle.
- Adjust the vertical angle.
- Adjust the installation height.
- Clean the camera lens.

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