

EINAR 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.

EINARINSTALLATION GUIDE

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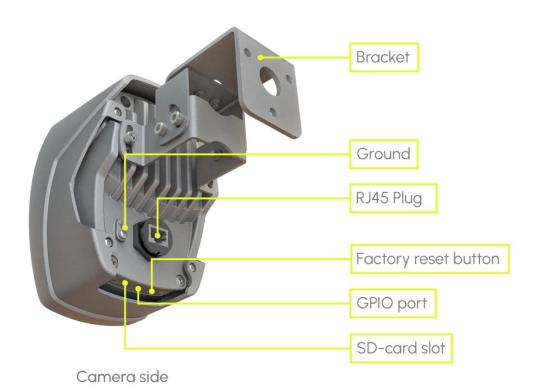
ADAPTIVE RECOGNITION

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1. HARDWARE OVERVIEW



Camera front



2. REQUIRED COMPONENTS

- 1 Einar ANPR/ALPR Camera
- 2 Bracket
- 3 IP67 Weather Cap for RJ45 Plug
- 4 Ground Terminal
- 5 MicroSD Card

- 6 ANPR License
- 7 Engine File
- 8 GPIO Cable Kit
- 9 Shield
- 10 Hidden Cable Console





















ETHERNET CABLE IS REQUIRED TO USE THE PRODUCT (MINIMUM CATS)

In the box:

- Einar ANPR/ALPR Camera
- **Bracket**
- IP67 Weather Cap for RJ45 Plug
- **Ground Terminal**
- 128GB MicroSD Card

Optional:

- ANPR and MMR license
- Engine file
- GPIO Cable Kit
- ParkIT junction box

Assets to be provided by the Customer:

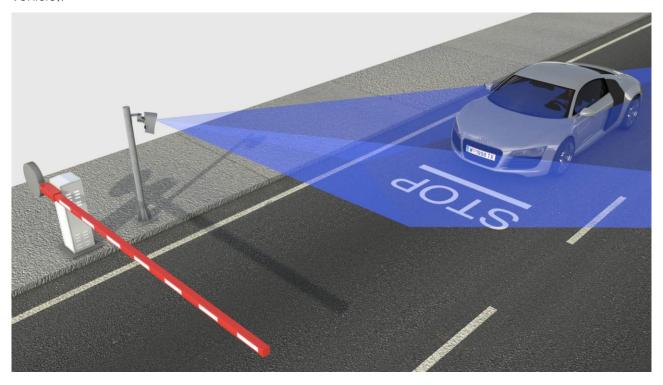


- 4 mm Allen (hex) key →
 - TX10 torx screwdriver \rightarrow
- CAT5 or CAT6 outdoor shielded cable
- RJ45 connector
- RJ45 crimping tool
- POE+ (IEEE 802.3at standard) injector or switch
- PC or laptop to configuration
- Tools for applied mounting
- Flat Head screwdriver for the junction box ightarrow
- Phillips screwdriver for the junction box →

RECOMMENDED INSTALLATION SCENARIOS 3.

A good ANPR engine can read the plates from images taken in various conditions. However, if you want to achieve over 95% recognition rate with short recognition times, you have to calculate the position of the camera accurately. The best position is if the angle between the camera axis and the direction of the vehicle movement is minimal and the camera should be installed 1 – 1,5 meters above the headlights of the vehicles.

The distance between the camera and plate is also important. If the camera is too far from the plate, the characters may not be large enough for recognizing them. In this case, zoom-in until you reach the proper size. If the distance is too short it may happen that a part of the plate is over the camera's field of view (when the vehicle is near to the side of the lane or the plate is not at the middle of the vehicle).



Try to adjust the direction of the camera so that the number plates are horizontal in the picture!

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From the point of ANPR/LPR the most important is the size of the characters on the image. It is recommended to have at least 25-pixel average character height. The too large characters are also not suitable for ANPR, therefore try to avoid settings where the character size is greater than 50 pixels in height.

For more information, check How to Install an ANPR camera video on Adaptive Recognition channel. Also check Einar User Manual on page Einar ANPR Camera for Access Control & Parking - Adaptive Recognition's documents where additional installation tips can be found.

Please note the following when mounting your camera:

- Please make sure that the camera does not roll neither to the left nor right.
- 2. 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.
- 3. Failures caused by inappropriate installation could void the warranty.
- 4. Please note that cameras installed inadequately may underperform in reading accuracy and vehicle detection.
- 5. Avoid east-west orientation of the camera. Sun can make reading difficult at certain times of
- 6. The camera should be lowered below the horizon.

4. INSTALLATION STEPS



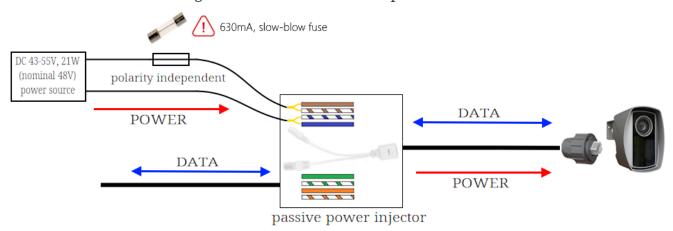
Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source.

4.1. POWERING THE CAMERA

Power the camera with an IEEE802.3at compatible POE+ switch or injector through the twisted pair cabling along with data.

If there are no available IEE802.3at power source, the camera can be powered with a nominal DC 48V (43-55V, minimum 25W) power supply. Always use power source with adequate galvanic isolation (for example certified to IEC 60950-1 or IEC 62368-1) and with short circuit protection (Limited Power Source rated). Take care of the temperature deration of the power capacity of the supply (at high ambient temperature the power supply usually cannot provide the full rated power). The installation of the power supply and cabling must be done by a qualified technical person, according to safety regulations. The power wiring is polarity independent. There must be a 630mA, slow blow (minimum 63V) fuse cartridge in series with one of the power wire between the power source and the passive power injector. Place the fuse such a place where can be accessible only by entitled person. Use IEC 60227-1 or UL62 VW-1 or FT-1 flame rated cabling.

Powering the camera with DC 48V power source



Some examples for the accessories:

Fuse: LITTELFUSE 0213.630 / EATON S506-630-R / SCHURTER 0034.3115.

Power supply: MEAN WELL SDR-75-24

Some power injector order codes: Mouser: 485-435 / Farnell: 3761249





The power consumption of the camera depends on the environment conditions and settings, according to the table below. Under -15°C the internal heater elements can turn on to maintain ideal temperature for some sensitive components (lens and SD card), which raise the power consumption to a maximum of 21W. If the user would decrease the maximum power requirements, the IR illuminator power can be lowered from the maximum 100%, at the price of a little lower illumination distance.

Power consumption in different scenarios					
Camera setting	Camera ambient temperature				
odiniora soming	Ta > -15°C	Ta < -15°C			
DAY mode	5W	9W			
NIGHT mode 50% IR	11W	15W			
NIGHT mode 100% IR	16W	21W			

(!) Important!



Power the camera with an IEEE802.3at compatible POE switch or injector, or a DC 48V power supply. Always use power source with adequate galvanic isolation and with short circuit protection.

Important!



To reduce risk of electric shock, connect the unit only to a DC power source that complies with the SELV requirements in IEC 60950-based safety standards or ES1 requirements in IEC 62368-based safety standards.

! Important!



To reduce risk of fire, in case of DC power supply use a 630mA slow blow fuse series in one of the power wires.



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After the camera has been powered up, the status LED (1) on the camera will light red/yellow, then green, then turn off, and the camera will then operate.

If during power-up, the status LED (1) is not lighted or one of the colours is continuously lit/flashing. Then follow the steps below:

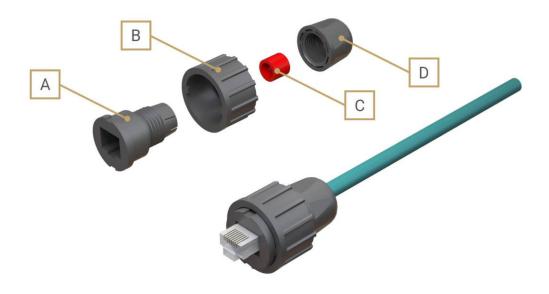
- Check that the power cable is connected correctly
- Check the PoE+ power supply, if possible, try to use a different PoE+ power supply.
- Make a Factory reset of the camera. (See: Chapter 7.6.)

If the above does not solve the issue please open a ticket in ATSS.



4.2. ASSEMBLE THE WATERPROOF COVER OF THE RJ45 CONNECTOR

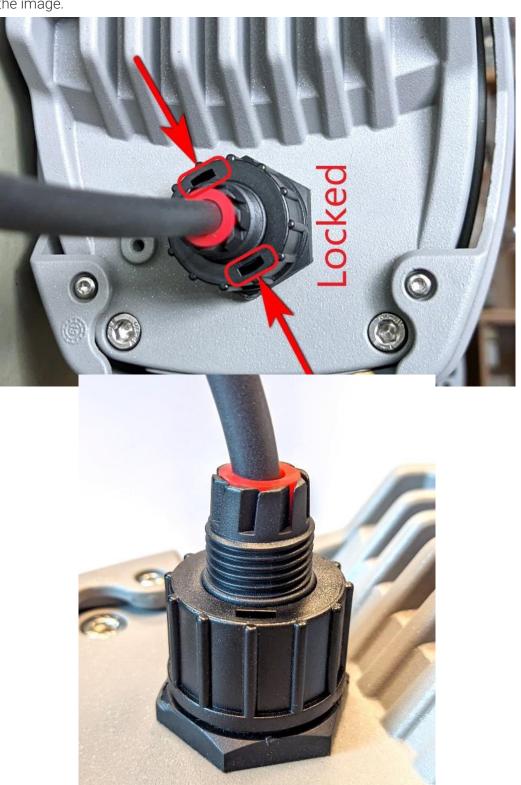
The enclosed IP67 shielded RJ45 connector housing must be assembled as shown. **Before** damaging the RJ45 insert, the components of the connector housing must be pulled onto the cable in the order shown! The crimped RJ45 insert is placed in the housing **A**. The fastener **B** is pulled onto the housing A, and then the sealing insert **C** is pushed all the way between the clamping arms of the housing **A** on the cable. The seal is then clamped to the cable with the clamping part **D**.





The proper assembled state looks like this:

The cable gland must be fully fastened (part labeled **B** in the instructions). Proper tightening is achieved after sensing **three 'clicks'** during the tightening process. The cable gland is watertight if it is properly tightened and the two inserts are positioned at the 5 o'clock and 11 o'clock positions, as shown in the image.



Disconnect the connector

The connector can only be disassembled with the cable connected to the device, otherwise the mounting tab of the RJ45 insert will not be accessible. First loosen D, then pull back on the cable, then release B so we can pull parts A and C off the cable. The RJ45 insert then remains in the connector thanks to its own retaining tab and can be removed by pressing it.

] Important!

If the waterproof cover is not used, it will result in a loss of warranty!

For more information about the detailed and proper assembly guide, see section 7.2 and section 7.3.

WWW.ADAPTIVERECOGNITION.COM

4.3. INSERT THE MICROSD CARD

You can insert a microSD card into the device by removing the service port cover as shown in the attached figure. The use of the card is described in the user manual.

The factory-installed microSD card is replaceable and can be used with a microSD card from another manufacturer.

Requirements for the microSD card:

- Maximum storage capacity: 512 Gb
- Recommended speed class: Class 10

Important!

To remove the cover, you need a TX10 torx head screwdriver. Turn the screw counterclockwise to remove. Take care when fully releasing the screw, it can be dropped. To replace the cover, turn the screws clockwise. Do not overtighten the screws!

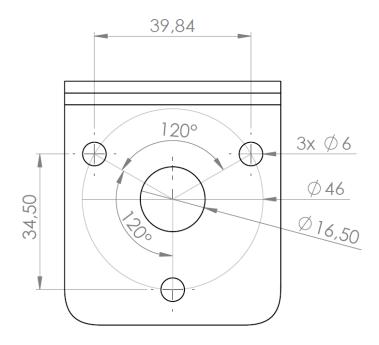


! Important!

Perform the operation in a clean, low-humidity room!

MOUNTING THE CAMERA 44

The camera can be mounted using 3 mounting holes with a diameter of 6 mm on the console. When mounting, take into consideration the weight of the camera (1540g), with the appropriate fittings.



] Important!



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

The camera bracket must be mounted through all the three holes with use of stainless-steel screws (A2 or A4 material) with a diameter between 4.5mm and 5.5mm or with metric screw size M5!

When mounting to the wall, always use the most suitable dowel for the specific wall type!

In all cases, follow the instructions of the fastener manufacturer for the specific type.

The total load-bearing capacity of the chosen mounting solution should always be greater than 0.3kN.

In the case of concrete or brick walls, the following solution is often suitable:

3x Fischer DuoSeal 6 x 38 S PH TX A2 or,

3x Fischer DuoPower 8 x 40 + Fischer FPF II PTF 5,0 x 50 BC 100

Adaptive Recognition America Adaptive Recognition Nordic Adaptive Recognition Singapore

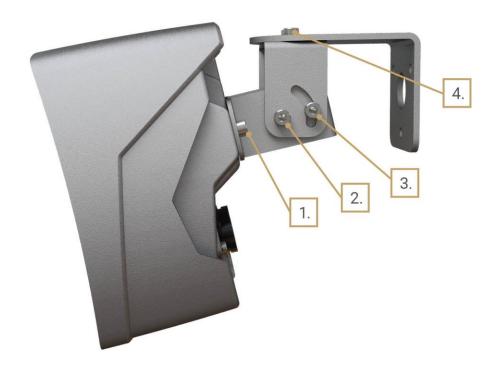
GROUND THE CAMERA 4.5.

Grounding should be done at the ground point on the camera with the bearing provided as it is shown on the picture. Make sure that the metallic contact is secured at the ground point (e.g. a metal pole) and that the ground point itself is properly led to the ground. The grounding of the STP / FTP cable is only allowed on the remote side (patch panel, PoE switch, server).



4.6. ADJUST THE VIEW DIRECTION OF THE CAMERA

Loosen the screws marked 2, 3 (tilt) and 4 (turn) by using a 4 mm Allen key, while holding the camera so that it does not "knock down", then set it to the desired position. The horizontal direction can be adjusted by loosening screw 1. If the device is in the correct direction, tighten all screws on the bracket.



4.7. GPIO CABLE CONNECTION



Steps to connect the GPIO cable:

- 1. unscrew the fixing screws of the cover plate using the TX10 screwdriver
- 2. install the sealing plate in the package
- 3. plug the connector into the port
- 4. fix it with the longer screws provided in the package.

For more information on how to connect it, see section 7.2.

4.8. SOFTWARE REQUIREMENTS

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

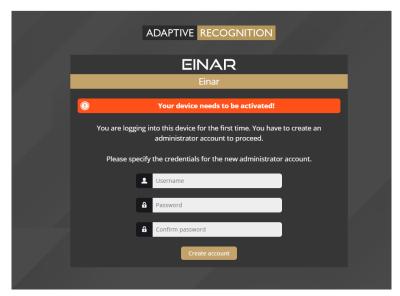
Software requirements:

- For network setup, administrator (root) 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.

4.9. ACCESSING THE WEB INTERFACE

- 1. Start a browser and enter the camera IP address into the address bar of the browser.
- 2. You are logging into this device for the first time. You have to create an administrator account to proceed.

Please specify the credentials for the new administrator account.



If the camera has firmware earlier than firmware version 1.8, this step is skipped. You will also be welcomed at the login screen.

The default user account is the following:

• Username: admin

• Password: admin

3. Type the username and the password on the displayed login interface and click on [Login].



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

Default IP Address

The camera – by default – obtains its IP address from the local DHCP server. A second link-local IP-address is always present on the primary network interface.

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.

Finding Cameras

You can find the camera on the network using the <u>AR DeviceTool</u>. Double-click on the selected camera, and the Einar 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.

REQUESTINFO@ADAPTIVERECOGNITION.COM

WWW.ADAPTIVERECOGNITION.COM

5. 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!

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.

! Important!

Care must be taken to replace the SD card cover. Improper installation can degrade the integrity of the enclosure, causing moisture penetrate into the camera.

Important!

Power the camera with an IEEE802.3at compatible POE switch, injector or DC 48V power supply.

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

For detailed information see the User Manual:

https://adaptiverecognition.com/doc/cameras/einar-anpr-camera-for-access-control-parking/

or

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

6. 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.

Instruction for Cleaning Acrylic and Polycarbonate Sheets or Display Cover Glass

Materials Needed:

- 1. Synthetic microfiber wipes (without any added chemicals).
- 2. IPA/H_2O* mixture (details provided below) or $IPA + H_2O$ or lukewarm soapy water.
- 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:

- o Wash and dry your hands or put on disposable, powder-free gloves.
- o Prepare the IPA/H₂O mixture.

2. Moisten the Wipe:

o Lightly spray the microfiber wipe with the IPA/H₂O 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:

- o 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:

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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 or ABSORMATTM (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.

Do not use the camera without its sun-shield in hot environment, because it was specially designed to provide proper air-cooling.

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

The cameras should be stored in low humidity environment in temperature range of -40 °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).

7. APPENDIX

7.1. ETHERNET CONNECTION

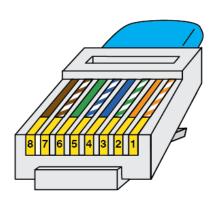
Pin#	Pin# Data		POE
	10/100BaseTX	1000BaseT	(802.3at/af)
1	TX+	TP1+	A1
2	TX-	TP1-	A1
3	RX+	TP2+	A2
4	-	TP3+	B1
5	-	TP3-	B1
6	RX-	TP2-	A2
7	-	TP4+	B2
8	-	TP4-	B2

Connector allocation standard: EIA / TIA-568B (straight cable pinout)

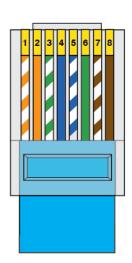


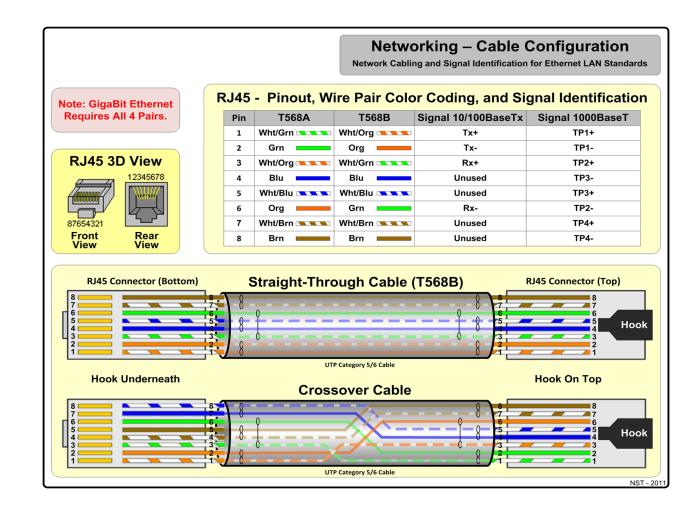
Due to the POE power supply, all 4 pairs of wires must be connected even with a 10 / 100BaseTX data connection!

RJ45 PINOUT T-568B



- 1 | White/Orange
- 2 | Orange
- 3 | White/Green
- 4 ∣ Blue
- 5 | White/Blue
- 6 | Green
- 7 | White/Brown
- 8 | Brown





7.2. ASSEMBLE THE WATERPROOF COVER OF THE RJ45 CONNECTOR

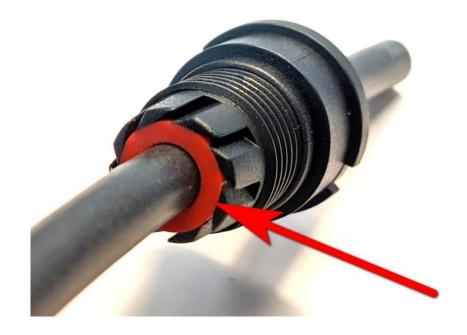
1. Thread the shielded ethernet cable through the elements of the connector housing as shown in the picture.

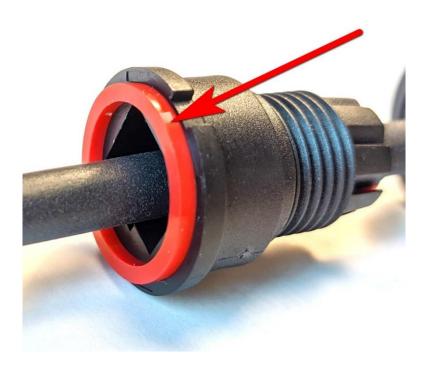


Use at least a Cat5e-rated, outdoor, UV-resistant cable.

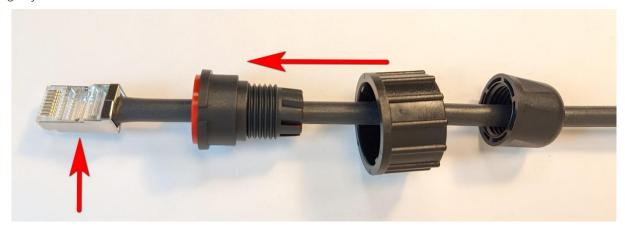


2. Check the presence of the two red sealing rubbers.





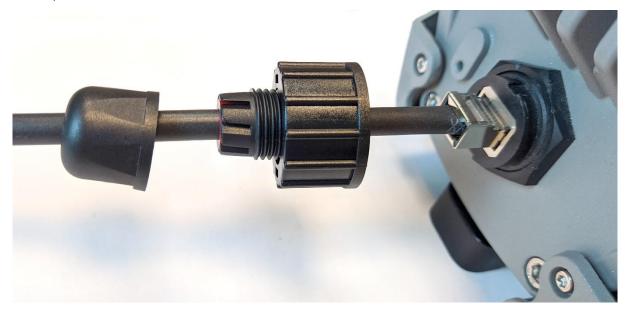
3. Mount the shielded RJ45 connector on the cable. The shading stocking should hang out only slightly.

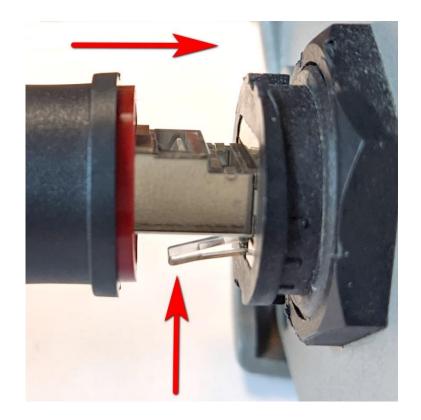


4. Push the bayonet lock onto the connector housing.

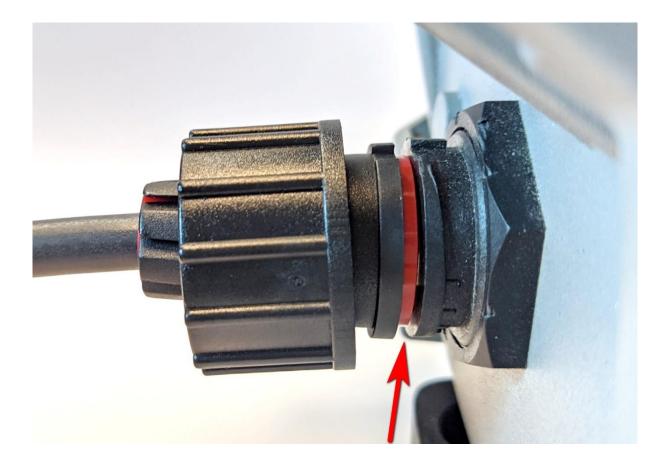


5. Connect the RJ45 connector to the camera, then push the connector housing onto it so that the RJ45 connector fits into the cavity. For this, the fixing tab of the RJ45 jack must also be slightly pushed up.

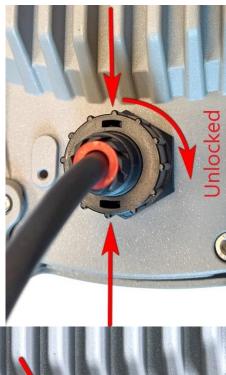


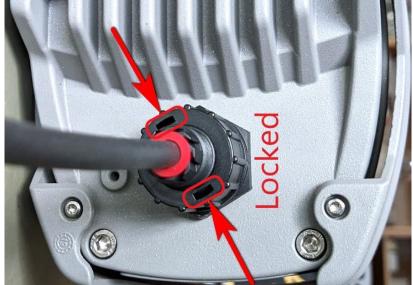


6. Check that the sealing rubber of the connector housing fits properly from all directions



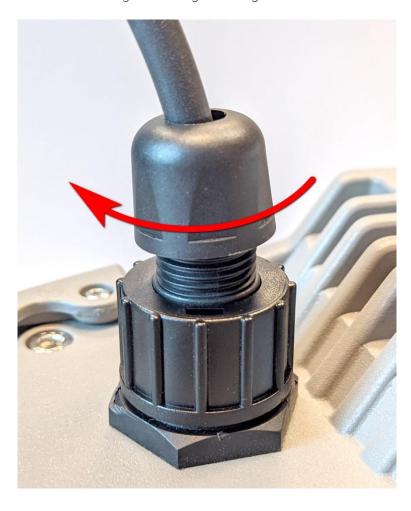
7. Secure the connector housing with the bayonet lock.



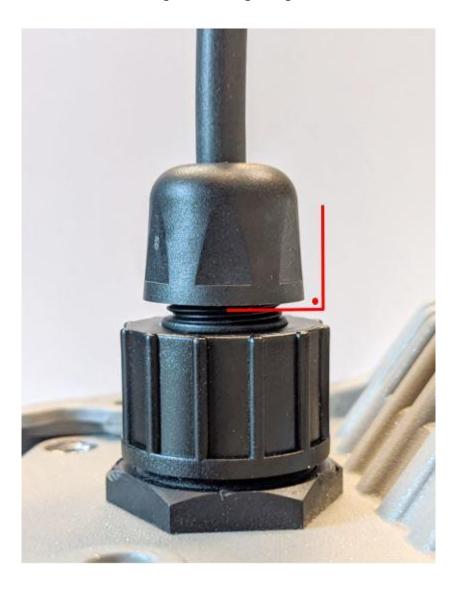




8. Fasten the cable with a sealing screw. Tighten it right!



9. Check that the connector housing closes to right angle to the back of the camera.



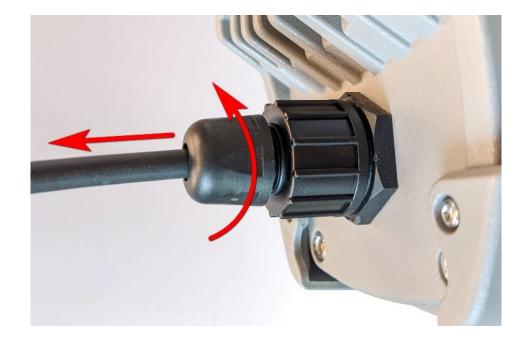


7.3. DISCONNECT THE RJ45 CONNECTOR

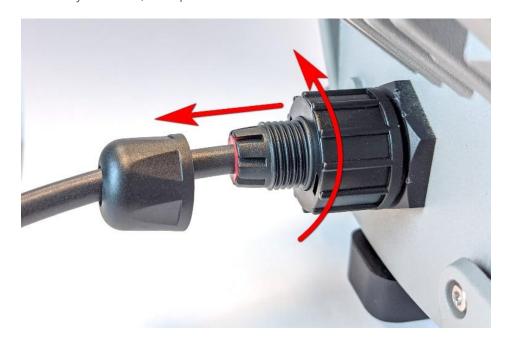


Always disassemble the connector in the following order!

1. Loosen the sealing screw and then pull it back on the cable.

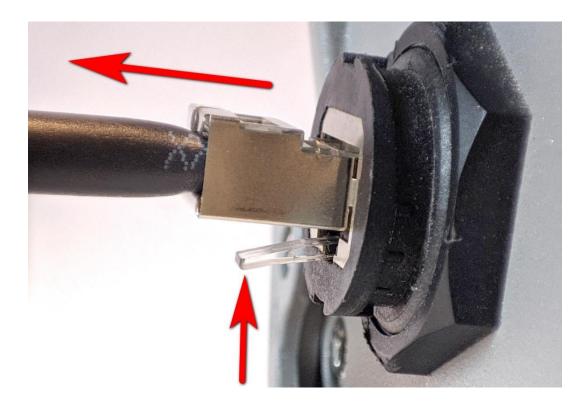


2. Release the bayonet lock, then pull it back on the cable.



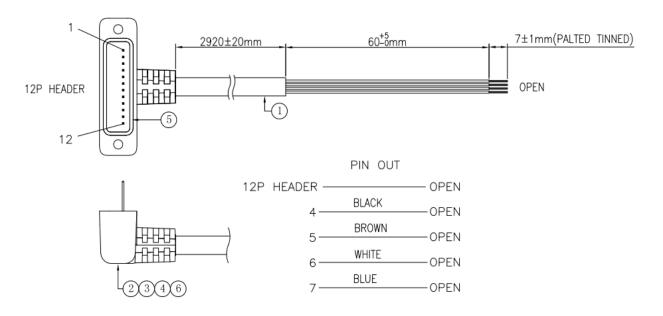


3. Remove the RJ45 connector by pressing the fixing tab.

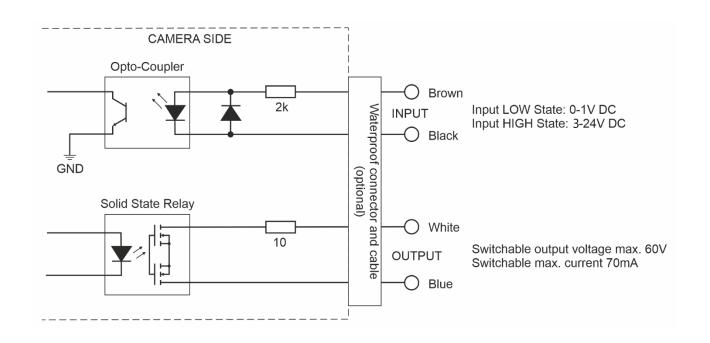


7.4. IO CONNECTION

EINAR IO waterproof connector and cable pin layout:

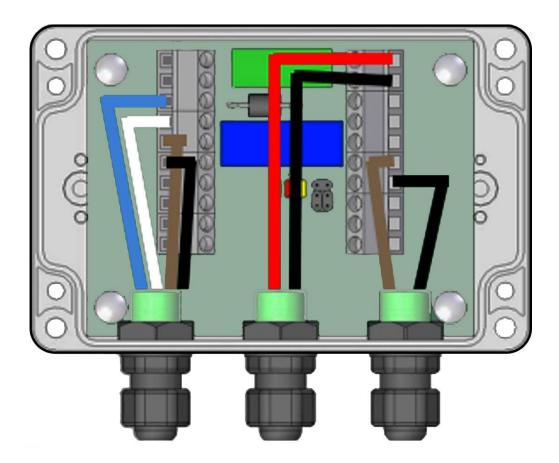


PIN4: IO_I_N (black) PIN5: IO_I_P (brown) PIN6: IO_O_A (white) PIN7: IO_O_B (blue)



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Einar camera connection diagram with IO cable and ParkIT junction box:



Camera GPIO cables:

• Blue: 3. Opto_out_G (-)2

• White: 4. Opto_out_S (+)2

• Brown: 4. Opto_in_S (+)¹

Black: 6. Opto_in_G (-)¹

User side cables:

• Red: 1. +12VDC

• Black: 2. GND

Brown: 6. Opto_in_S (+)¹

• Black: 7. Opto_in_G (-)1

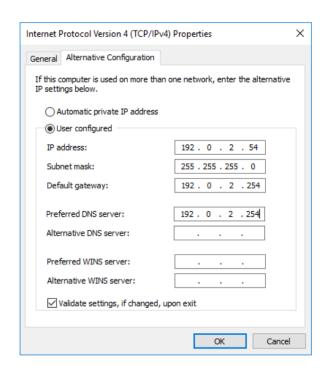
7.5. ADDING ALTERNATE IP ADDRESS

Windows Vista/Windows 7/Windows 10

- 1. Click **Start** and select **Control Panel**.
- 2. Open Network and Sharing Center.
- Click Manage Network Connections on the left side of Network and Sharing Center.
 - 5. Click on the network connection you want to add an IP address for (to which the camera has been

connected) and select Properties.

- 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.

7.6. RESTORE FACTORY DEFAULTS

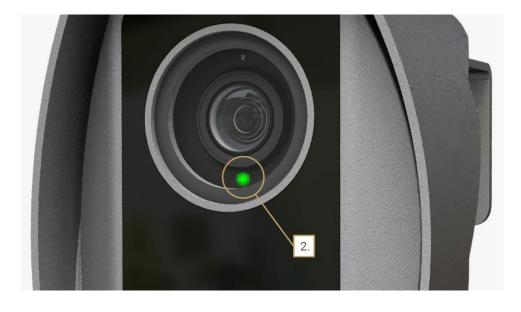
If you experience some malfunctions or critical errors in the camera, and the software-based reset does not help, you have an option to physically reset it. In this case, press and hold the **reset button** (1) until the **status LED** (2) lights up continuously (approx. 10 s) and then release the button. To access the reset button, you must first remove the service port cover with a TX10 screwdriver. Factory reset restores the factory settings, including the network settings.

(!) Important!

Perform the operation in a clean, low-humidity room!

Further disassembly of the camera is prohibited, as this may void the warranty and damage the watertight insulation!





7.7. POSITION OF THE STICKER

The device data sticker is located at the bottom of the product and contains the following information:

- Product type
- MAC Address
- Power data
- Serial Number



8. REGULATORY INFORMATION

FCC Information

FCC compliance:

This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Conditions:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference.
- 2. This device must accept any interference received, including interference that may cause undesired operation.

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 2014/30/EU, 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

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Web: 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 <u>Documents Site</u> (<u>www.adaptiverecognition.com/doc</u>) 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)!

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.