

# M402

MOBILE SURVEILLANCE  
CAMERA FOR ANPR/LPR



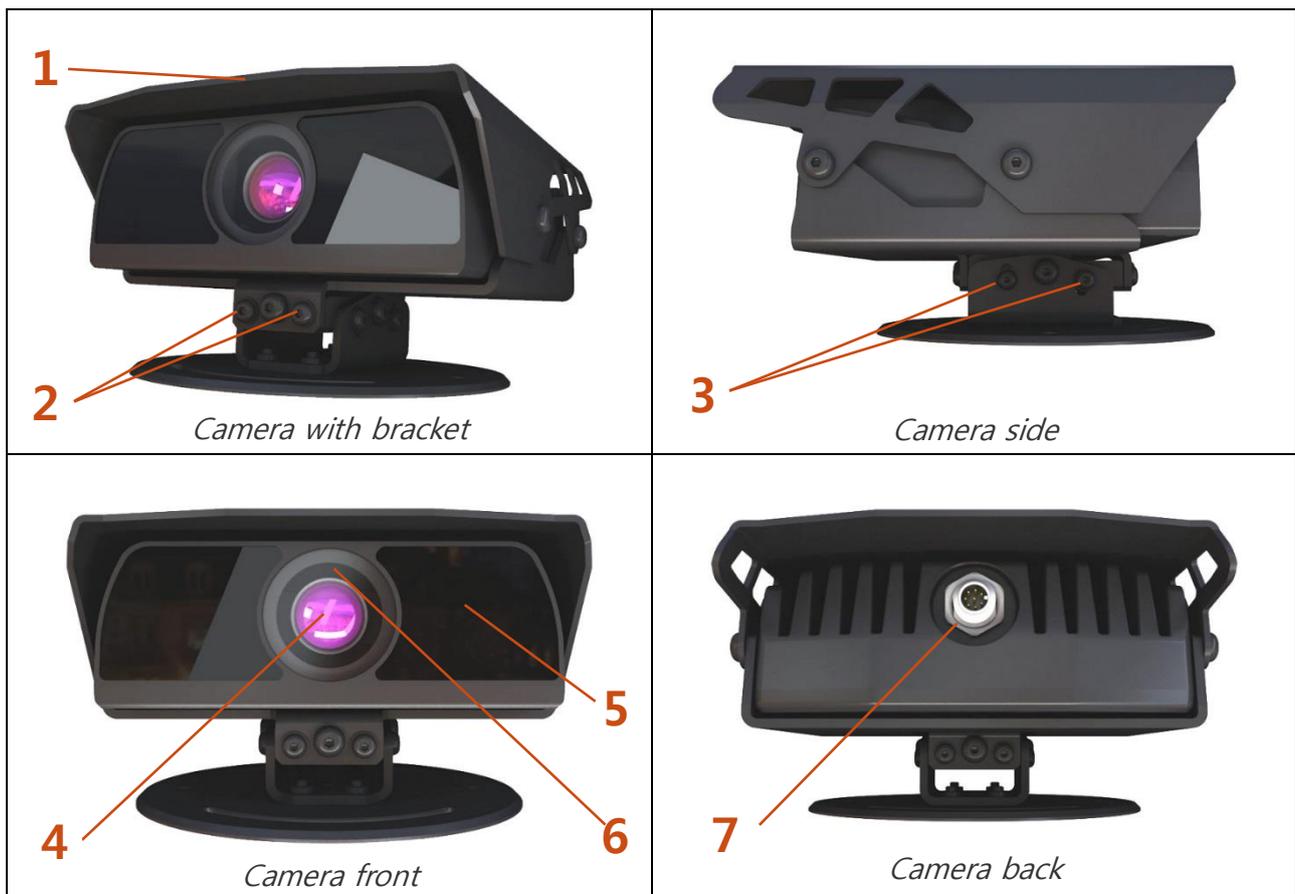
## INSTALL GUIDE

Document version: 2016.09.28

## Table of Contents

HARDWARE OVERVIEW.....	3
INSTALL THE HARDWARE .....	4
1. MOUNTING .....	4
CONNECT THE CABLES.....	5
1. CABLE LAYOUTS.....	5
SOFTWARE REQUIREMENTS .....	6
ACCESSING THE CAMERA.....	7
RECOMMENDED CAMERA POSITION.....	9
MAINTENANCE / STORAGE.....	11
APPENDIX.....	12
CONTACT INFORMATION .....	14

## HARDWARE OVERVIEW



1	Sunshield	
2	Bracket	Adjustable. Can be rotated horizontally right or left (+/-5°) using the adjustment screws, to keep the camera horizontally.
3	Tilt adjustment screws	Used when tilting the camera to set the field of view (+5/-15°).
4	Lens	With fixed zoom and focus.
5	Infrared LEDs	8 SMD IR LEDs behind the protecting plates.
6	Red status LED	Software configurable.
	Green Status LED	Software configurable.
	Light / Color Sensor	Senses the level of ambient light to determine when to switch day/night mode. Do not cover the light sensor otherwise the automatic brightness control will not operate properly.
7	Combined connector	POE Network connection (more details at the <a href="#">Cable Layouts</a> section).

## INSTALL THE HARDWARE

### Note

Remove protective film from the protecting plate (on the camera front) before using the camera.

### ADJUST THE BRACKET:

1. Place the camera on the roof of the vehicle and slightly tighten the bracket plate at the curve slots of the plate designed for this purpose.



2. Adjust the bracket into the desired position. Beware, fingers may be trapped and an injury may occur.
3. Tighten the screw back.

### Note

It is recommended to secure the camera by a cable (carabiner) to the roof of the vehicle or to the vehicle roof rack.  
Do not overtighten the screws.

## 1. MOUNTING

The bracket can be mounted onto different surfaces. Use appropriate screws for installation according to the mountable surface.

### Note

Failures due to inappropriate installation void the warranty.

# CONNECT THE CABLES

## Note

Technical specifications are subject to change without prior notice.

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.

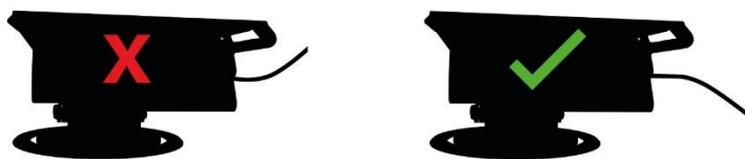
## 1. CABLE LAYOUTS



### POWER SPECIFICATIONS:

Please use the proper input according to the specification and consider voltage drop if you use cables.

Power requirement	POE+
Power consumption	14 – 25 W



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

## SOFTWARE REQUIREMENTS

The standalone M402 is developed to operate without any kind of special software. That means that it does not require any special ARH software to be installed by the customer.

### Note

ANPR is delivered separately. It has to be installed by the customer after purchase.

### SOFTWARE REQUIREMENTS:

- For network setup, administrator (root) privileges are necessary on the OS.
- Web browser: Mozilla Firefox 47, Internet Explorer 10-11, Google Chrome 51 or later editions. It is recommended to update your browser (Firefox or Chrome) to the newest available version to reach highest performance.

### Note

To enable all camera functions, enable JavaScript and ActiveX control in your browser.

# ACCESSING THE CAMERA

STEPS OF ACCESSING THE WEB INTERFACE OF THE CAMERA FROM A BROWSER:

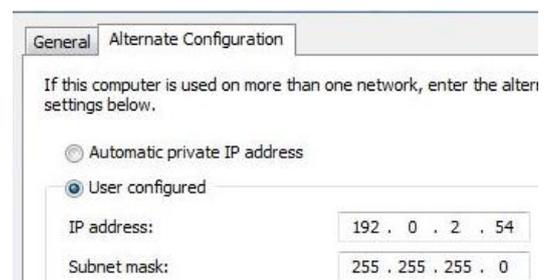
1. Connect the camera to a computer or network switch, then power on the camera.

## Note

Make sure that the connection is capable to provide POE.

After it is turned on, both status LEDs (red and green on the camera front) are turned on while the camera is booting. After finished, the green status LED flashes two times while the red one turns off signaling that the camera is ready for operation.

2. Enter an alternate IP address (or set your computer's IP) in the 192.0.2.x subnet – where x is an integer number between 1 and 254 **except 3** – with the subnet mask of 255.255.255.0. For more information, see [Appendix](#).



3. Use the ping command to test the communication with the camera:

**Windows:** C:\>ping -t 192.0.2.3

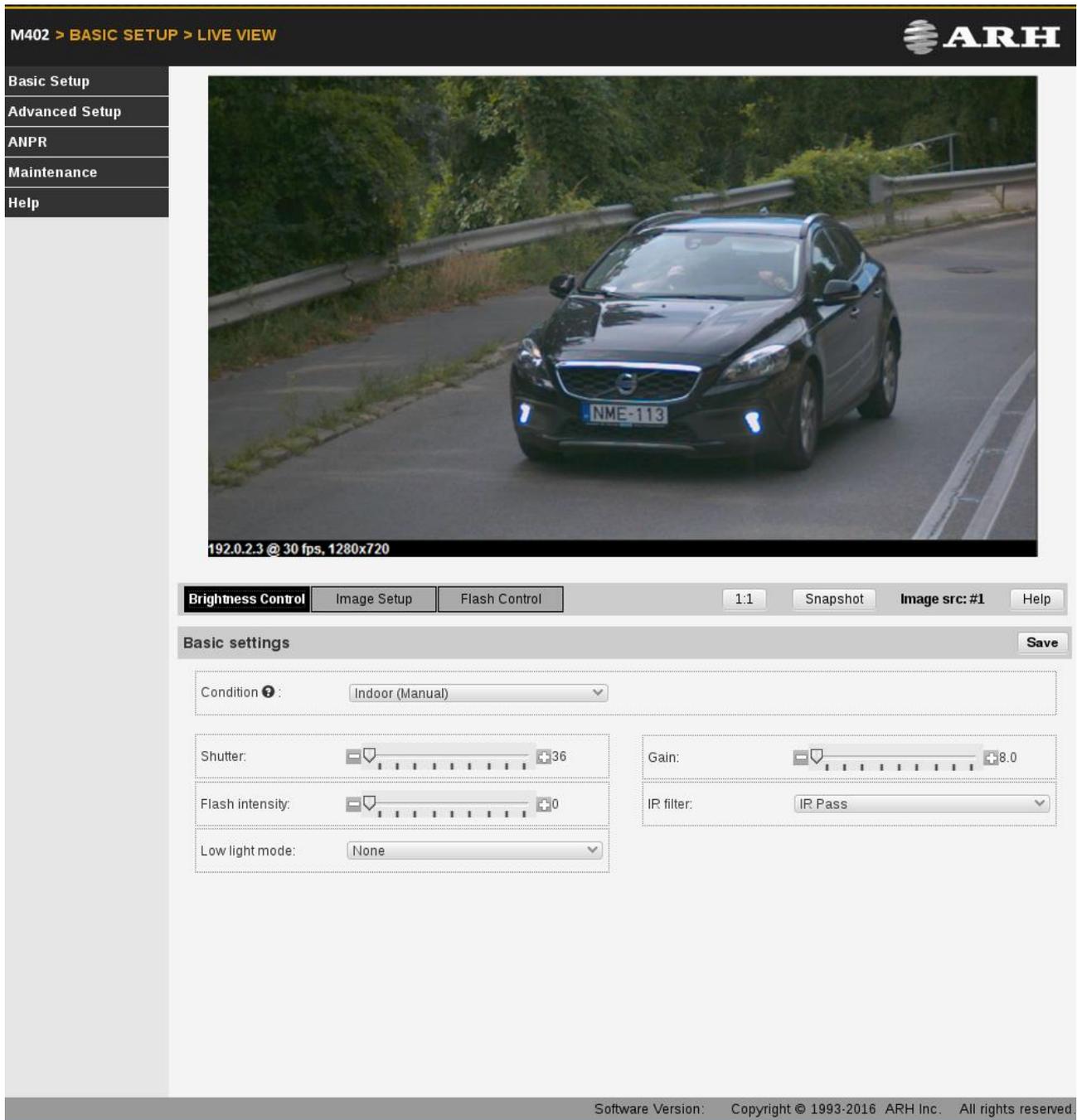
**Linux:** username@mylinux:~\$ ping 192.0.2.3

4. Soon, the ping package returns: **Reply from 192.0.2.3**. If not:
  - o first check the Ethernet LEDs at the PC or the switch side
  - o check whether the IP address is set correctly; the own IP address of the PC can be pinged.
  - o proxy is set in the browser or the browser is not set to offline.

If these obstacles are checked and there is still no reply, power off then on and enter the previous ping command again.

5. Start a browser then enter the default IP address of the camera into the address bar (**http://192.0.2.3**). After this, the camera starts with administrator privileges, ready to be set up and configured.

After the first start the following window will appear:



The screenshot displays the ARH camera web interface. At the top left, the breadcrumb navigation reads "M402 > BASIC SETUP > LIVE VIEW". The ARH logo is in the top right corner. On the left side, there is a vertical menu with the following items: "Basic Setup", "Advanced Setup", "ANPR", "Maintenance", and "Help". The main area shows a live video feed of a dark-colored car driving on a road. Below the video feed, there is a status bar displaying "192.0.2.3 @ 30 fps, 1280x720". Below the video feed, there are several control panels: "Brightness Control", "Image Setup", and "Flash Control". To the right of these panels are buttons for "1:1", "Snapshot", "Image src: #1", and "Help". Below these is a "Basic settings" section with a "Save" button. The settings include:
 

- Condition: Indoor (Manual)
- Shutter: 36
- Gain: 8.0
- Flash intensity: 0
- IR filter: IR Pass
- Low light mode: None

 At the bottom right of the interface, the text reads "Software Version: Copyright © 1993-2016 ARH Inc. All rights reserved."

The firmware version of the camera can be seen on the right lower side of the screen.

New firmware versions are regularly released. If update is necessary, do not hesitate to contact the support team of ARH.

## RECOMMENDED CAMERA POSITION

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.

Please observe the following hints to achieve the best position:

1. Recommended to monitor the oncoming traffic
2. The camera has to be mounted on the vehicle corresponding to the direction of the travel, panned to the left ( $\sim 25^\circ$  relative to the longitudinal direction of the oncoming vehicles) and slightly tilted down (inclined  $\sim 3^\circ$  down relative to horizontal):

### Note

Height of the vehicle rooftop may change the tilt angle ( $\sim 2^\circ$  difference).



### Note

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

- Two lanes has to be covered on the live image and the entire vehicle has to be seen on the image on the farther lane:



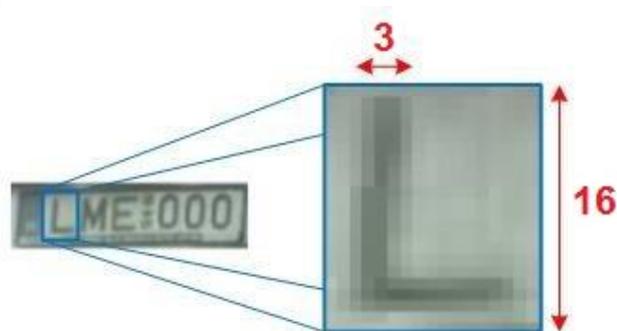
From the point of ANPR/LPR the most important is the size of the characters on the image. For English characters it is recommended to have at least 16 pixel average character height, for Arabic or other special characters it is recommended to have 20 pixel height (due to they are more calligraphic than the English characters). 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. A line width of a character on the image should be at least 2 pixels.



A properly set camera should provide a similar image:



*A proper sample image for ANPR*



*Proper character sizes (in pixels) on the sample image*

## MAINTENANCE / STORAGE

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.

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

The cameras should be stored in low humidity environment in temperature range of -35 °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:

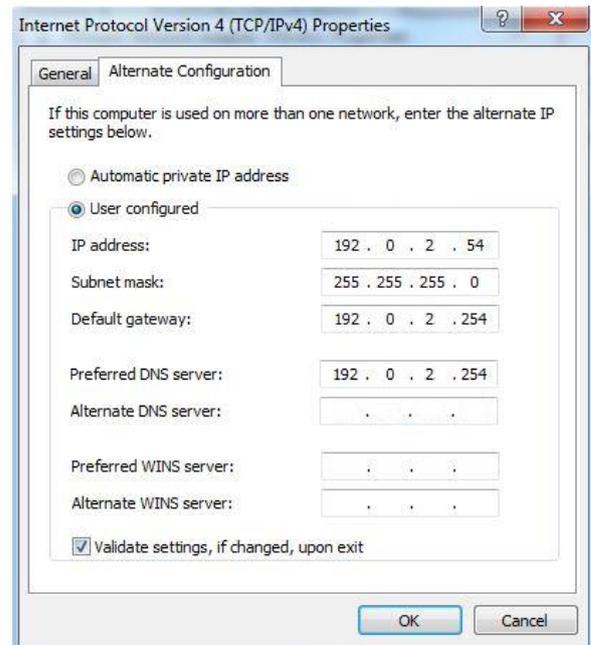
- the camera operates properly,
- it is facing to the previously set direction,
- the fastening is not slack,
- the front of the camera and the camera itself is clean (no spider webs or any other contaminants inhibit the visibility),
- there are no strange circumstances (vapor, damage).

# APPENDIX

## ADDING ALTERNATE IP ADDRESS

### WINDOWS VISTA/WINDOWS 7

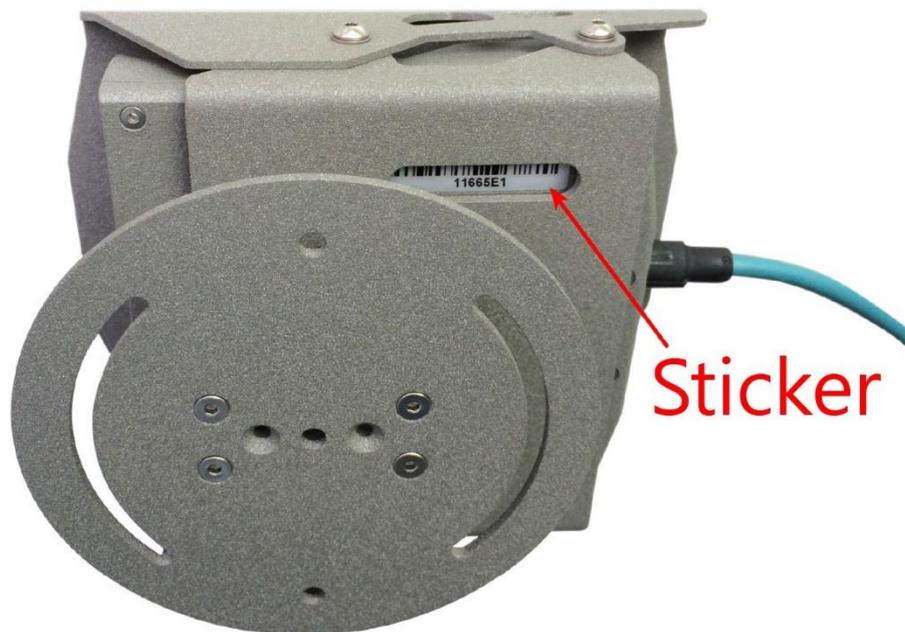
1. Click **Start** and select **Control Panel**.
2. Make sure you are in Classic View by clicking **Classic View** on the left of the Control Panel.
3. Open **Network and Sharing Center**.
4. Click **Manage Network Connections** on the left side of Network and Sharing Center.
5. Right click on the network connection you want to add an IP address for (to which the camera has been connected) and select **Properties**.
6. Select **Obtain an IP address automatically** and click on the **Alternate Configuration** tab.
7. 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 the figure.
8. 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.

## POSITION OF THE STICKER



The sticker, indicating the Name, IP address, MAC address and the Serial Number of the camera, can be found on the bottom of the device, under the sunshield.

### ! Important

The M402 is equipped with an 850nm InfraRed illumination unit. The human eye will not or slightly see this light coming from the LED's. Do not look into the illumination unit directly from close range or for more than 100 seconds. Eyes can be damaged by not taking these precautions.

## CONTACT INFORMATION

### HEADQUARTERS:

ARH Inc.  
Alkotás utca 41  
HU-1123 Budapest  
Hungary  
Phone: +36 1 201 9650  
Fax: +36 1 201 9651  
Web: [www.arh.hu](http://www.arh.hu)

### ARH AMERICA:

ARA Corp.  
28059 US Highway 19 North Suite  
203  
Clearwater, FL 33761  
Phone: (727) 724-4219  
Fax: (727) 724-4290  
Web: [www.adaptiverecognition.com](http://www.adaptiverecognition.com)

### SERVICE ADDRESS:

ARH Inc.  
Ipari Park HRSZ 1113/1  
HU-2074 Perbál  
Hungary  
Phone: +36 1 2019650

ARH 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 hardware, software, manuals and FAQ are easily accessible for customers who previously registered to enter the dedicated ATSS site. Besides offering assistance, the site is also designed to provide maximum protection while managing your business information and technical solutions utilized.

### NEW USER

If this is your first online support request, please create an account by clicking on this [link](#).

### 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.

If you need assistance with login or registration, please contact [atsshel@arh.hu](mailto:atsshel@arh.hu) for help.