CatchCAM 2MP User Manual

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1 CatchCAM 2MP

CatchCAM 2MP is a high-end network camera specialized in quickly finding the position of a license plate. It uses a full-color sensor and Infrared illumination to produce nice-looking images during the daytime and easily readable license plate pictures in the dark.

CatchCAM 2MP can be used in car systems and mobile solutions where multiple cameras are connected to CatchKen. CatchCAM 2MP provides a user-friendly web interface to set up the various connections and adjustments.

CatchCAM 2MP can be equipped with an ANPR engine. This allows the camera to report the license plates of passing vehicles to one or more UTMC servers. When configured this way, CatchCAM 2MP camera becomes a small, low-power and low-bandwidth ANPR solution that can be used both in mobile as well as in stationary solutions.

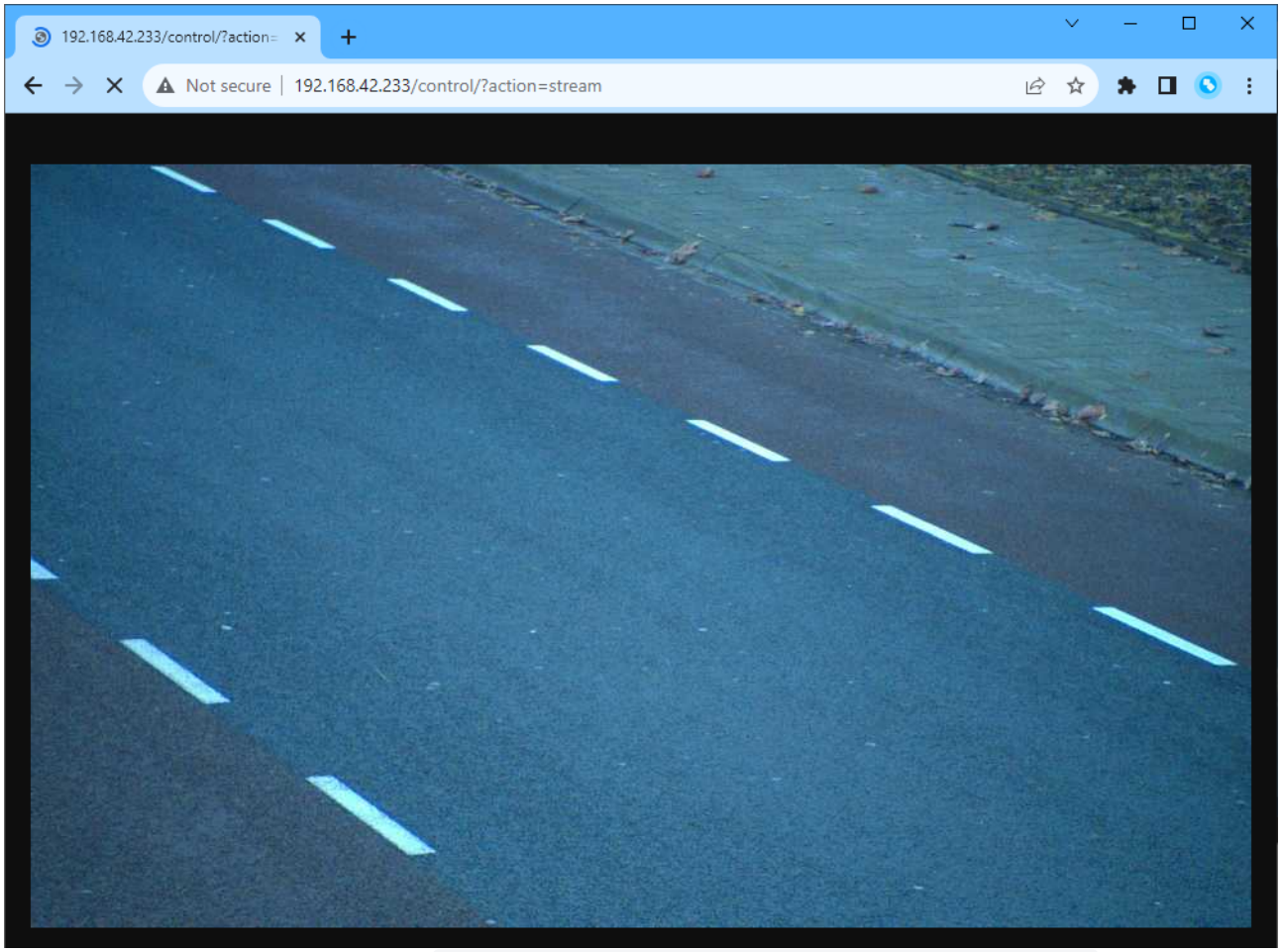
It is possible to combine CatchCAM 2MP with a Pan-tilt unit (PTU) to target the camera's view remotely.

2 Video output

2.1 Motion JPEG

This video stream of the camera is always available. The stream can be viewed with video players that support Motion JPEG, such as a browser.

> The frame rate and the image resolution of the Motion JPEG stream is reduced to 960x600 @ 12 fps



The URL to access this video stream is: `http://<camera-ip>/control/?action=stream`

2.2 RTSP

The CatchCAM 2MP camera also exports a video stream using the RTSP format. The stream uses the H.265 video encoding. The framerate and bitrate are configurable.

The URL to access this video stream is: `rtsp://admin:catch01@<camera-ip>:554/h265`

This allows the CatchCAM 2MP camera to be included in video recording servers and monitoring systems.

2.2.1 ONVIF Discovery

The CatchCAM 2MP camera supports ONVIF Discovery. This allows video recording and monitoring systems to automatically discover and configure the camera. The username and password for ONVIF are `admin` : `catch01` .

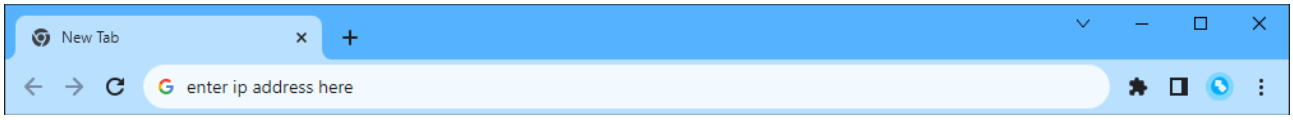
This functionality is tested and known to work with the following systems:

Product	Tested version	ONVIF discovery	LPR metadata	RTSP stream
VLC	3.0.21	ℹ️ VLC does not support ONVIF discovery	ℹ️ Not applicable	✅
Milestone XProtect	2024 R1	✅	ℹ️ Milestone does not support LPR metadata	✅ Opening the video stream might take a while
Digivod	4.2-SP6 Preview 768	✅ The ONVIF port must manually be set to 8081 after discovery.	✅	✅
Synology DS220j	DSM 7.2.1-69057 Update 5 with Surveillance Station 9.2.0-11289	✅ Strict Profile M must be disabled for PTU control	ℹ️ Surveillance Station does not support LPR metadata	✅
QNAP TS-233	QTS 5.1.8.2823 with QVR Elite 2.5.2.0872	✅	ℹ️ QVR Elite does not support LPR metadata	✅
Asustor AS1102T	ADM 4.2.5.RN33 with Surveillance Center 2.8.2.12940 and Surveillance Center Viewer 1.1.0.7727	⚠️ PTU control over ONVIF is not supported	ℹ️ Surveillance Center does not support LPR metadata	⚠️ In order for RTSP to work, RTSP keyframe interval must be set to 1

3 Web interface

The CatchCAM 2MP status and configuration is accessible through a web interface. It can be accessed by browsing to the IP address of the camera.

`http://<ip>/`



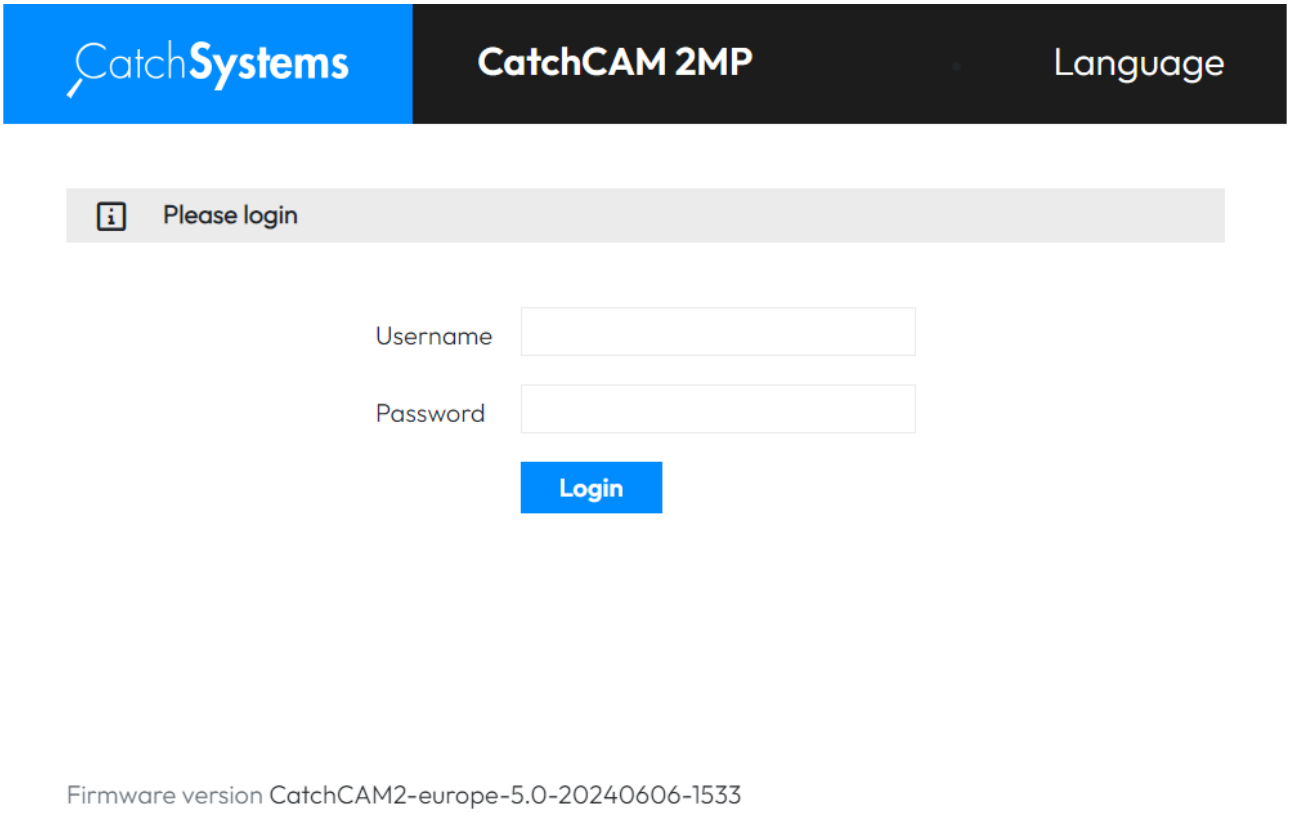
Supported browsers are recent versions of Edge, Chrome (preferred), Firefox and Safari

3.1 Login page

When accessing the web interface, the login page will be shown. By default there is one administrator account already created with the following credentials:

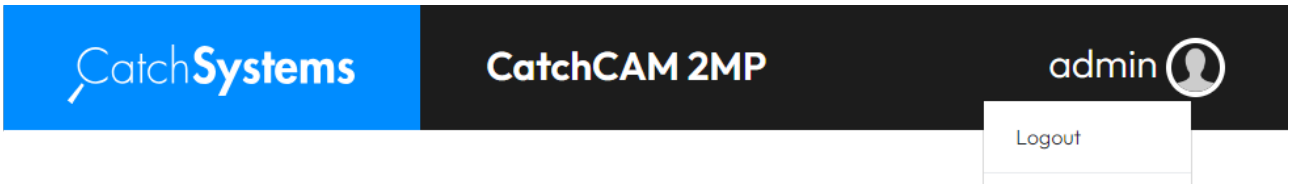
Username	admin
Password	catch01

These credentials can be changed by an administrator. It is also possible to add new users with different permission levels.



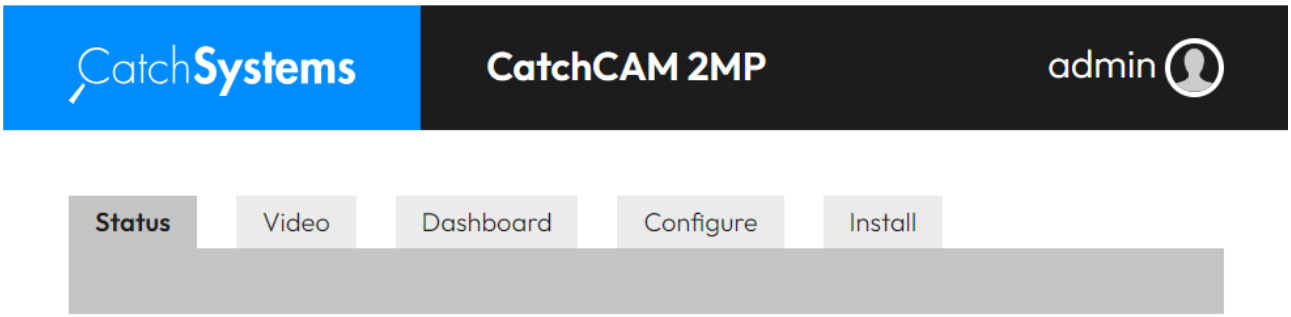
3.1.1 Logging out

When logged in, an option is available in de user menu at the top right to log out.



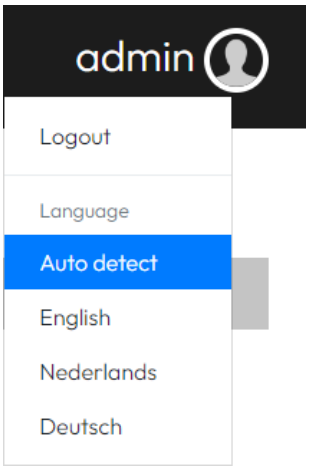
3.2 Navigation overview

After logging in, a header and five navigation sections are shown.



3.2.1 Header

The header contains the CatchSystems logo on the left. Followed by the camera name which can be configured. Lastly the current logged in user is shown, with settings in a dropdown where the website language can be configured.



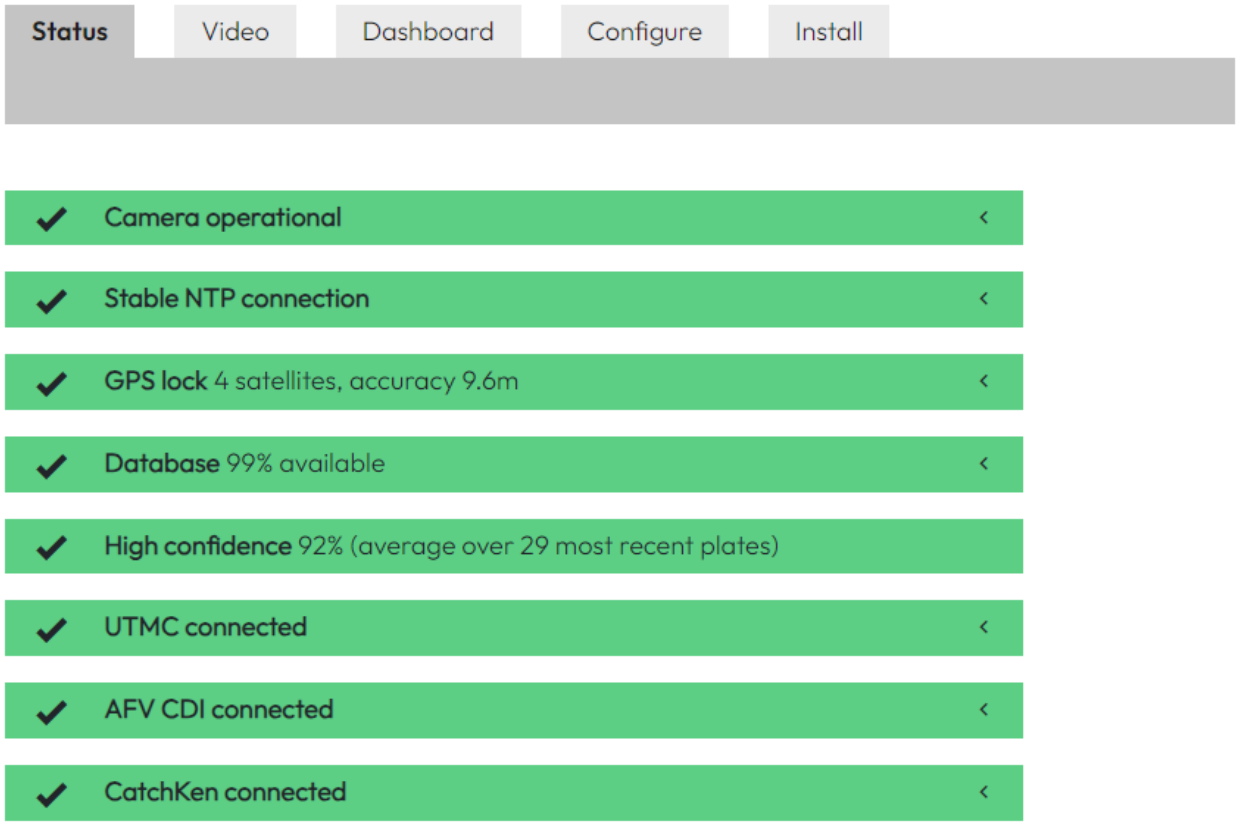
3.2.2 Navigation tabs

Page	Required Role	Description
Status	Observer	This is the default page when opening the web interface. It provides a quick overview of the current status of the camera.
Video	Observer	The video view provides a live video view of the camera image as well as pan-tilt controls when available.
Dashboard	Observer	The dashboard provides the most recently read license plates (ANPR license required).

Configure	Configurator	The configure page provides settings which may change regularly, depending on the location of the camera.
Install	Administrator	The install page provides settings which need to be filled before first use of the camera and which should not need to be updated regularly.

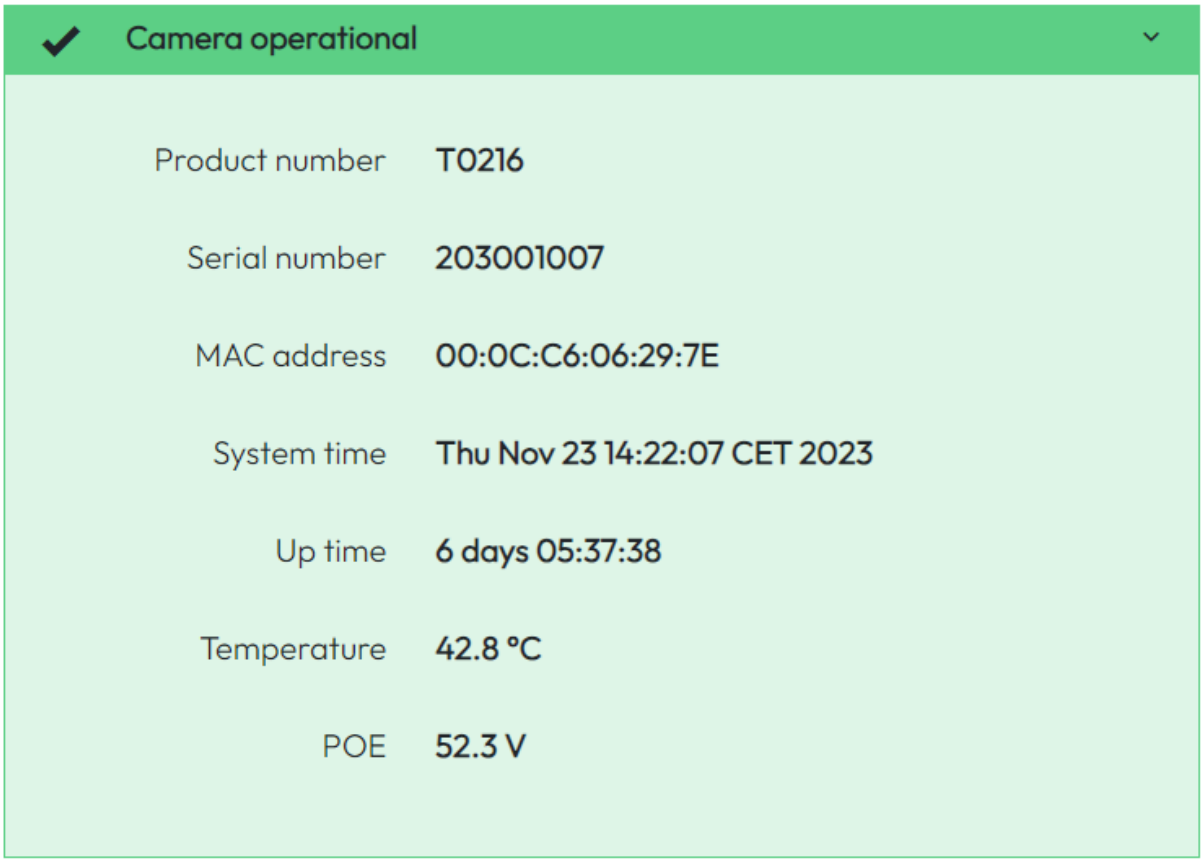
3.3 Status

The status page is intended to provide a quick overview of the current status of the camera. Depending on the current configuration and license, certain parts may not be visible. Sections with a caret on the right hand side can be expanded to show detailed information. The status bars can take on four different colors depending on the status: **GREEN (GOOD)** , **YELLOW (WARNING)** , **RED (ERROR)** and **BLUE (UNKNOWN)** .



3.3.1 Camera status

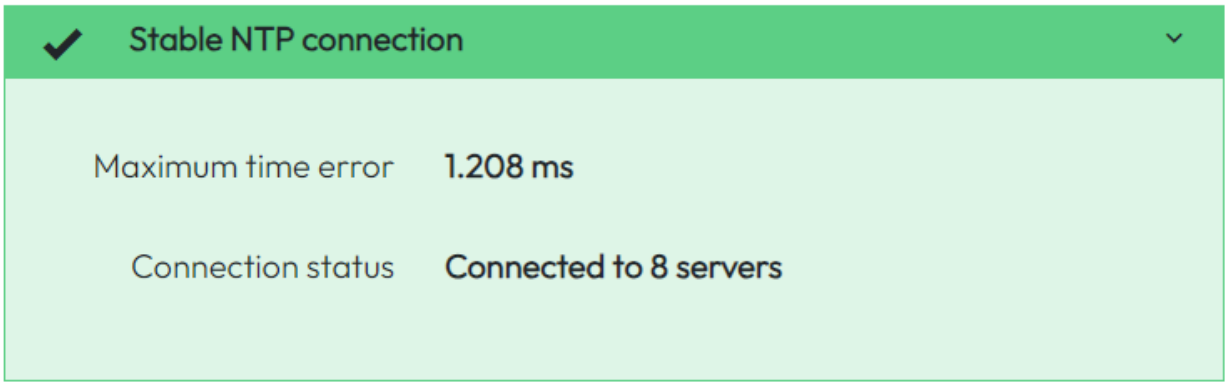
The camera status shows whether the camera software is running.



Field	Description
Product number	Camera product number (also present on sticker)
Serial number	Camera serial number (also present on sticker)
MAC address	Camera MAC address
System time	The time as the camera knows it (from server or NTP)
Up Time	Up time since last restart
Temperature	The temperature of the camera
POE	The voltage provided to the camera by POE (Power Over Ethernet)

3.3.2 NTP

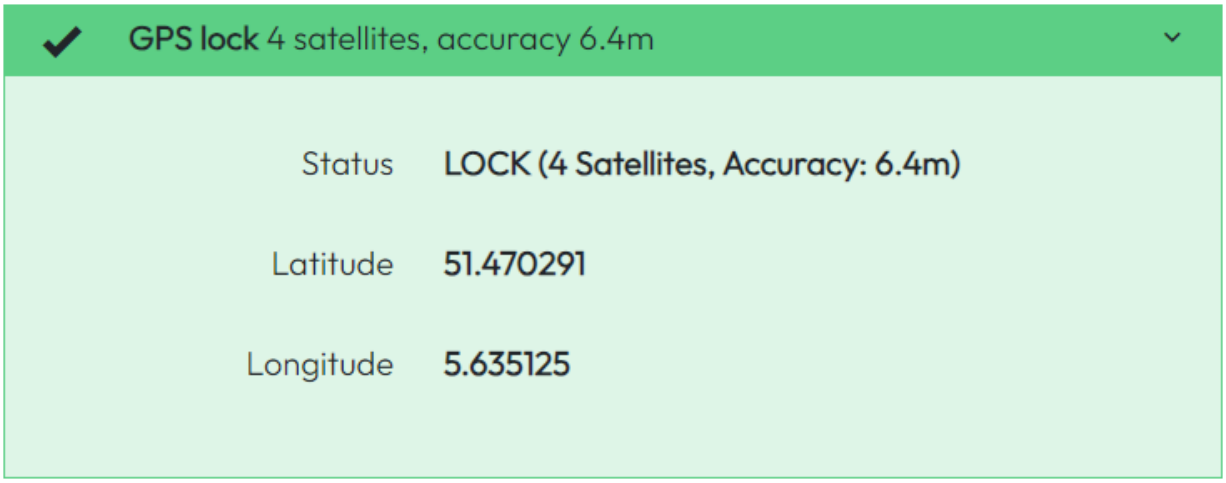
The NTP status shows whether the camera has a good time synchronization. Depending on the configuration, this status bar may not be visible.



Field	Description
Maximum time error	A calculated number based on the synchronization delay and dispersion of the configured NTP servers. This number will go down over time.
Connection status	Shows the number of connected servers. Shows more details if all servers are unreachable or unstable.

3.3.3 GPS

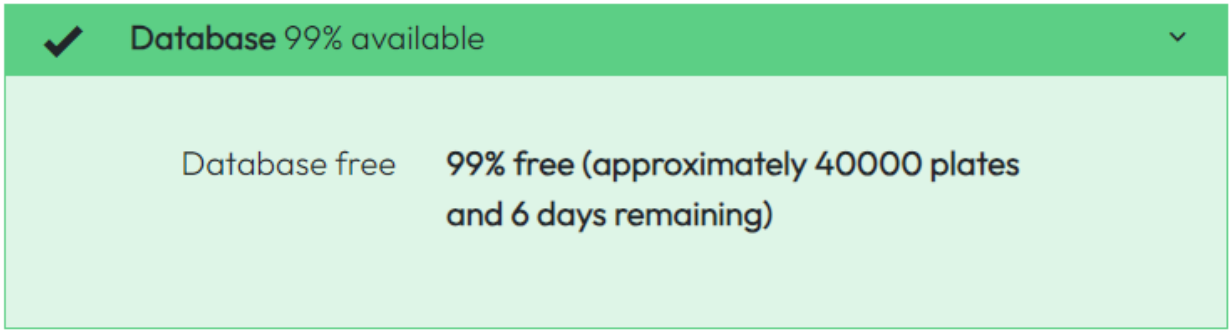
The GPS status bar is only visible when GPS is enabled.



Field	Description
Status	The current GPS status. Shows whether there is a lock or not, and how accurate the GPS position is.
Latitude	The latitude from the GPS receiver.
Longitude	The longitude from the GPS receiver.

3.3.4 Database

The camera uses a database to store recorded plates. This database can be used as a buffer if the passages cannot be delivered to the configured backend connection, e.g. UTMC. This status bar can show the remaining space in the database.



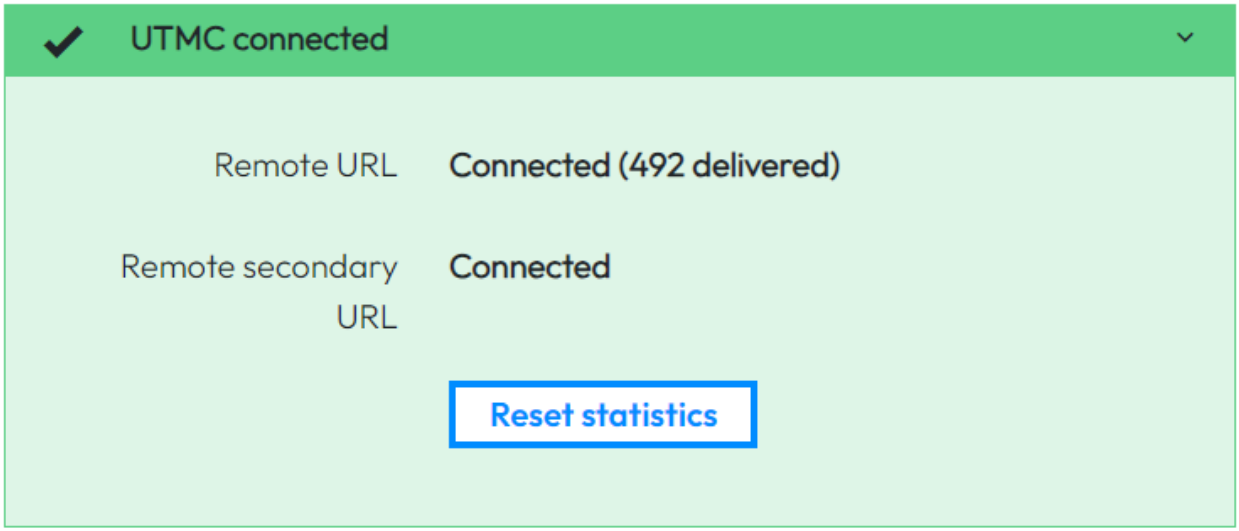
Field	Description
Database free	The percentage free space that is remaining in the database. In case an estimation can be made for the amount of plates/remaining time, then this will also be shown in parenthesis.

3.3.5 ANPR confidence

Shows the average confidence for the last read plates. Will look back at a maximum of 30 plates. This status bar may not be visible depending on the installed license. This status bar is not expandable.

3.3.6 UTMC connection status

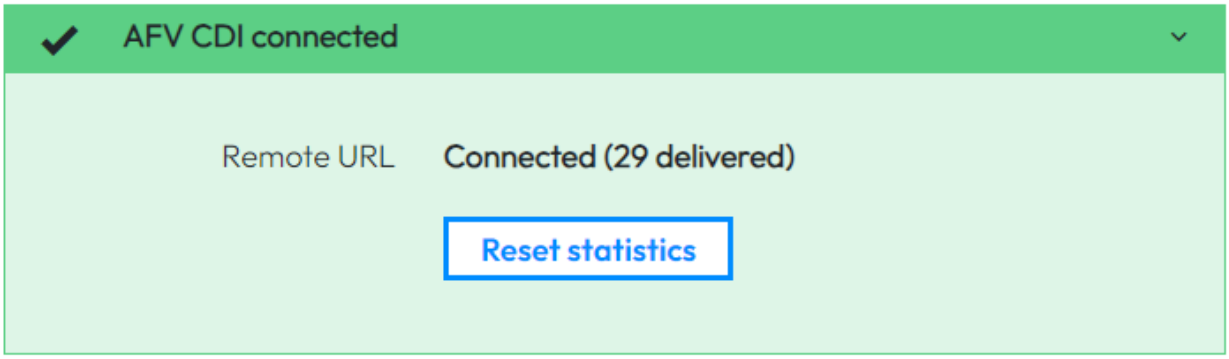
Shows the current connection status for the configured UTMC endpoints. This status bar is only visible when UTMC is enabled. UTMC may not be available depending on the installed license.



Field	Description
Remote URL	Shows the current connection status to the first configured endpoint. In parenthesis statistics will be shown.
Remote secondary URL	Same as remote URL only for the second configured endpoint. This field is not visible if the secondary URL is not configured.
Reset statistics	Resets the statistics shown in parenthesis for the above two fields. Note that this will also reset the statistics for AFV CDI (if enabled)

3.3.7 AFV CDI connection status

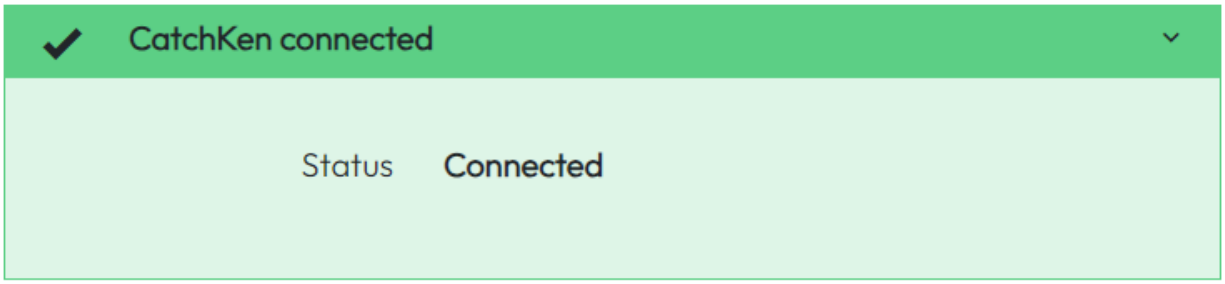
Shows the current connection status for the configured AFV CDI endpoints. This status bar is only visible when AFV CDI is enabled. AFV CDI may not be available depending on the installed license.



Field	Description
Remote URL	Shows the current connection status to the configured endpoint. In parenthesis statistics will be shown.
Reset statistics	Resets the statistics shown in parenthesis above. Note that this will also reset the statistics for UTMC (if enabled)

3.3.8 CatchKen connection status

Shows the current connection status for the configured CatchKen instance. This status bar is only visible when the CatchKen connection is enabled.



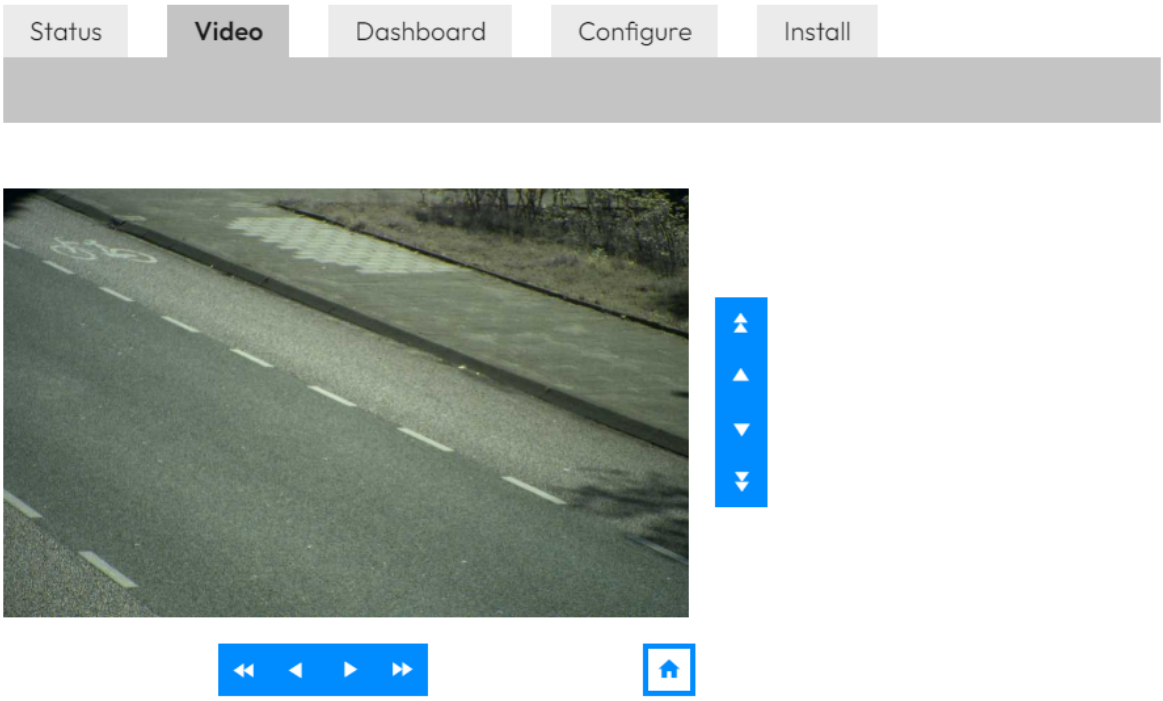
Field	Description
Status	Shows the current connection status for the configured CatchKen instance.

3.4 Video

The video page shows a live view from the camera.

3.4.1 Live view

When opening this page, a live view from the camera is shown. The configured area of interest will be overlaid on top of this view as well as the configured lanes. In case the camera has a pan-tilt unit installed then those controls will be shown as well (given that the current user has this permission).



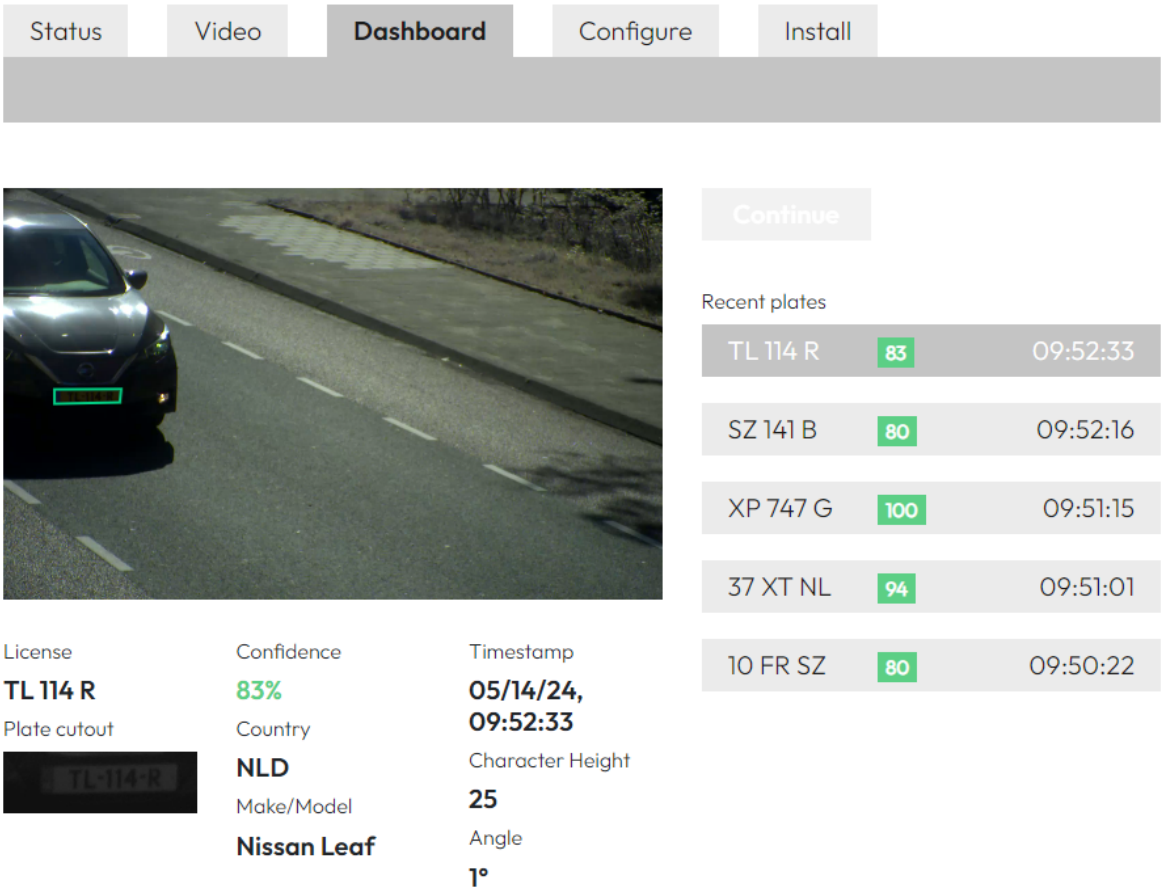
3.5 Dashboard

This page is only available when an ANPR license is installed.

The dashboard page shows the last read license plates.

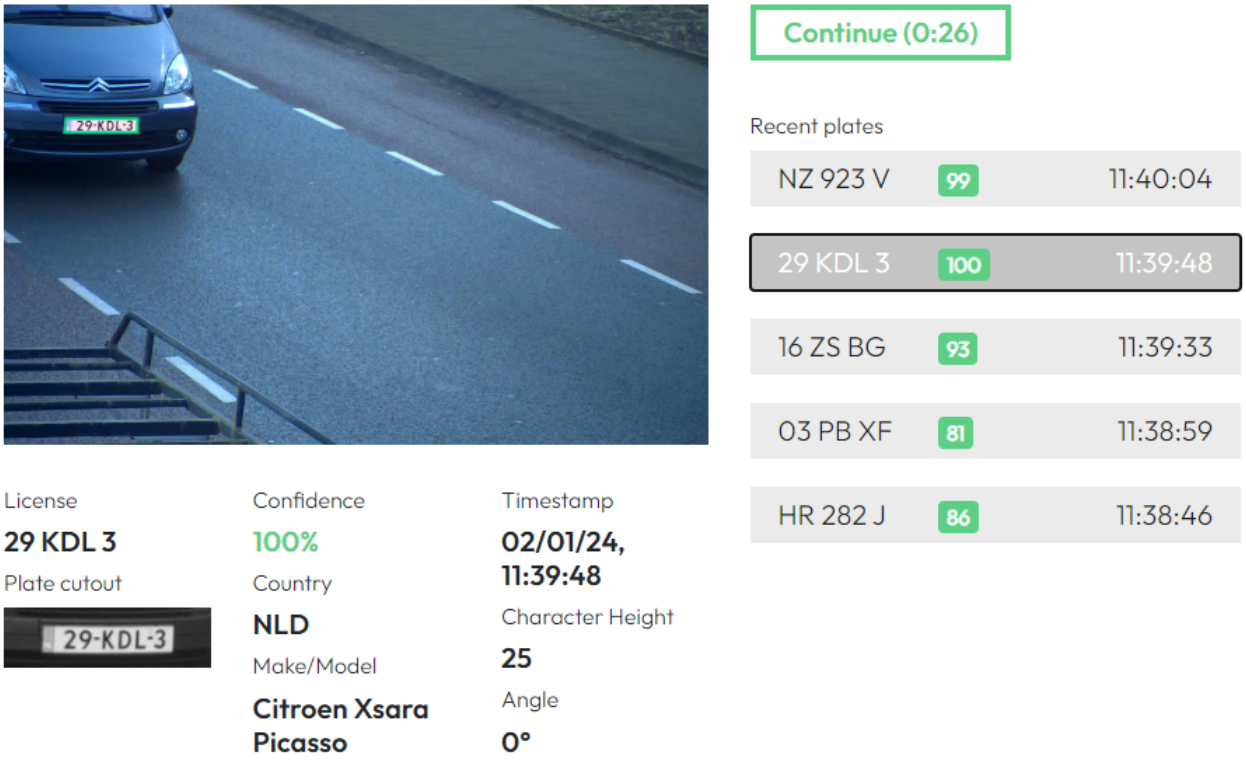
3.5.1 Last read license plate

When opening this page, by default the last read license plate is shown. When a new plate is read, the image and details will automatically be updated. In order to pause, a license plate must be selected on the right hand side.



3.5.2 Plate details

When clicking on a plate on the right hand side, the page will show the details for this particular plate. The plate list on the right hand side will stop updating. The 'Continue' button will become available and show a timer for when it will continue automatically.



Field	Description
License	Plate text of the detected plate.
Plate cutout	A cutout from the full resolution image showing only the detected plate.
Confidence	Confidence level [0-100]. Higher number indicates a higher confidence.
Country	Country code of the detected plate, in ISO-3166 alpha 3 format.
Make/Model	The detected make/model of the car. Can also include a confidence level. ⓘ This field is only available when an MMR license is installed.
Timestamp	The timestamp of the detected plate, shown in the time zone of the camera.

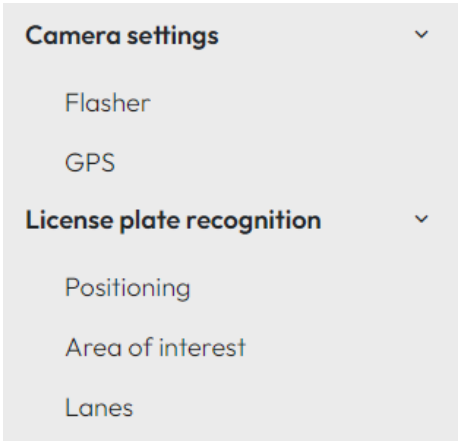
Character height	Average height in pixels of the characters in the detected license plate.
Angle	Angle in degrees of the detected license plate, relative to the horizontal axis.

When the confidence level is below the amount configured for a connection, the **GREEN** label will turn **YELLOW**. This may mean that it has not been sent to all configured connections.

3.6 Configure

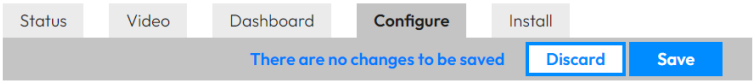
The current user must have at least the role `Configurator` to access this page.

The configure page contains settings that may be changed more often. Specifically when moving the camera to a new location. The sidebar navigation is split into two sections: Camera settings and License Plate Recognition.



The positioning page is only available when the camera is configured with a Pan-Tilt unit.

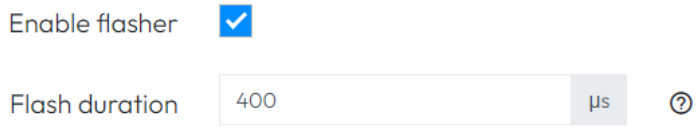
The header of the configure page shows the 'Save' and 'Discard' button. Next to these buttons a message can appear showing information when



trying to save the current page.

3.6.1 Flasher

This page allows configuring the built-in infrared flasher.



Field	Description	Default
Enable flasher	Enable or disable the built-in flasher.	Enabled
Flash duration	Duration of the flash pulse. The pulse starts together with the shutter opening. The flash pulse width is limited to the actual shutter time. Value must be between 100 µs - 1500 µs.	1000 µs

3.6.2 GPS

This page allows enabling GPS or configuring a manual location.

Field	Description	Default
Location mode	This settings selects the GPS mode: • Disabled • GPS* • Manual When selecting GPS, the GPS status bar will be visible on the status page. When selecting Manual the latitude and longitude fields will be shown.	GPS
Latitude	The manually configured latitude. Value must be between -90° to +90°.	-
Longitude	The manually configured longitude. Value must be between -180° to +180°.	-

When GPS is selected, the camera should be connected to a modem with GPS receiver. The modem should send UDP messages on port 8501 to the camera's IP address. The Forwarding Interval should be no more than 5 seconds. The status page shows the current GPS status and the current location when the GPS server is connected.

The following NMEA messages are supported:

- GPGGA
- GPGSA
- GPGSV
- GPRMC
- GPVTG

The following modems are supported:

Product	Tested version	Support
Teltonika RUT-855	6.07.5	✅

Product	Tested version	Support
Pepwave MAX BR1 Mini	7.1.1	✅

3.6.3 Positioning

ⓘ This page is only available when the camera is equipped with a pan-tilt unit (configurable in Install - General).

This page provides control of the Pan-tilt unit. The configured area of interest and lanes are also overlaid on the live view.

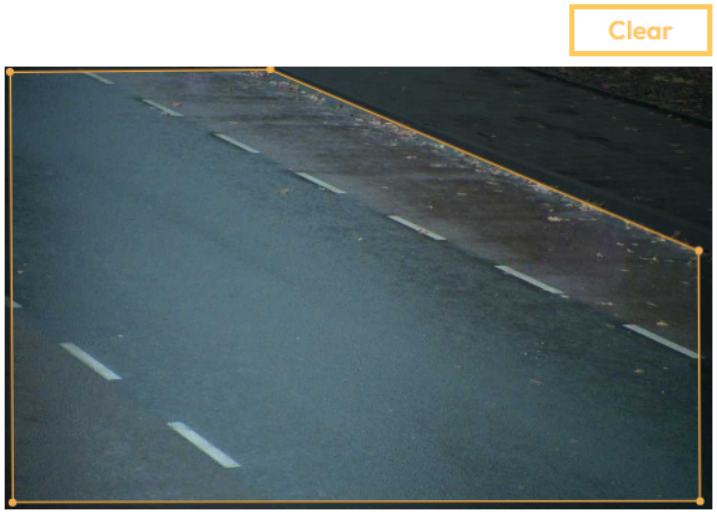
The blue buttons control the pan and tilt, with the double arrows doing this at a faster speed. The ‘home’ button will reset the pan-tilt unit to the center position.

⚠ It is highly recommended to set the Pan-tilt unit to the center position before mounting the camera in a fixed position.

3.6.4 Area of interest

Adjusting the area of interest is intended to be used on stationary camera's only.

Formerly known as the Polygon of Interest. This page allows configuring an area in which license plates should be recognized. License plates outside the drawn area will not be processed by the camera.



The area can be drawn by clicking on the live image. Point will be added where clicked. Enlarging the area is possible by clicking outside the drawn area. It is not possible to reduce the area. Clicking 'Clear' will remove the currently drawn area.

BE AWARE that 'Save' needs to be clicked, even after clearing the area of interest.

3.6.5 Lanes

Adjusting the lanes is intended to be used on stationary camera's only.

This page allows configuring lanes. License plates read in a certain lane will get the configured lane id added to the outputs. This functionality can be used to add an id to a passage that went through a specific part of the image. As an example, with this incoming and outgoing traffic can be separated, or the lane a vehicle was in on a highway can be added.

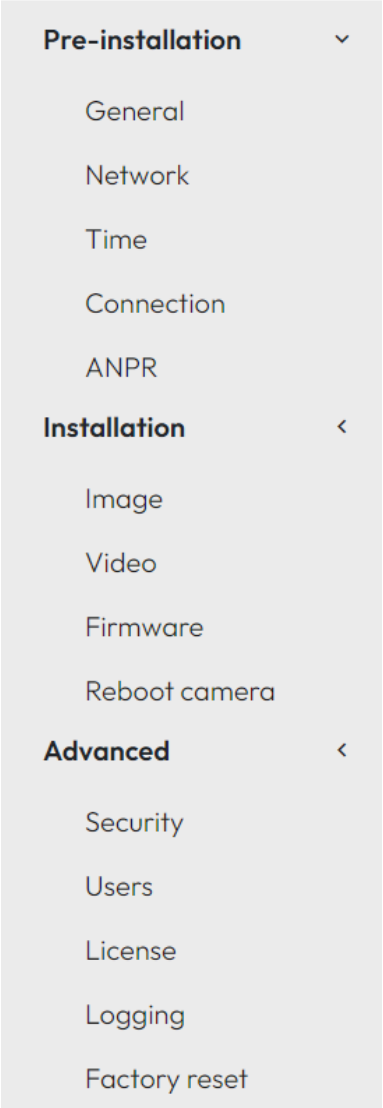
Lanes are added by clicking two points on the live view where the license plates are expected to be for that particular lane. The lane id can be filled in in the box that appears on the left. The id can only be a number. Up to three lanes can be added. Lanes should be added in order, from left to right or from right to left. When a mistake is made, 'Clear' can be used to start over.

BE AWARE that 'Save' needs to be clicked, even after clearing the lanes.

3.7 Install

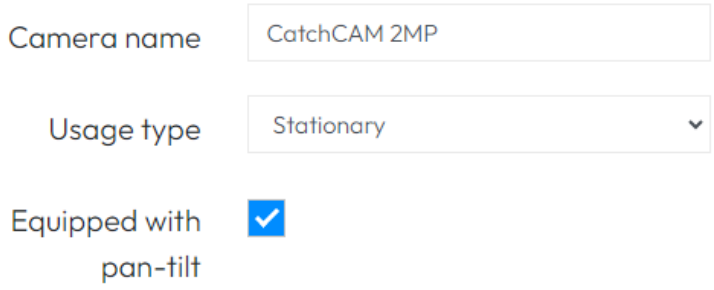
The install page contains settings that should be set before the first use of the camera. The sidebar navigation is split into three sections: Pre-installation, Installation and Advanced. Pre-installation contain all the settings that should be set before installing the camera at its final location, e.g. before mounting it above a road. The installation section contains settings which may depend on the way the camera is mounted and that should therefore be changed after the camera has been installed at its final location.

The header of the configure page shows the ‘Save’ and ‘Discard’ button. Next to these buttons a message can appear showing information when trying to save the current page.



3.7.1 General

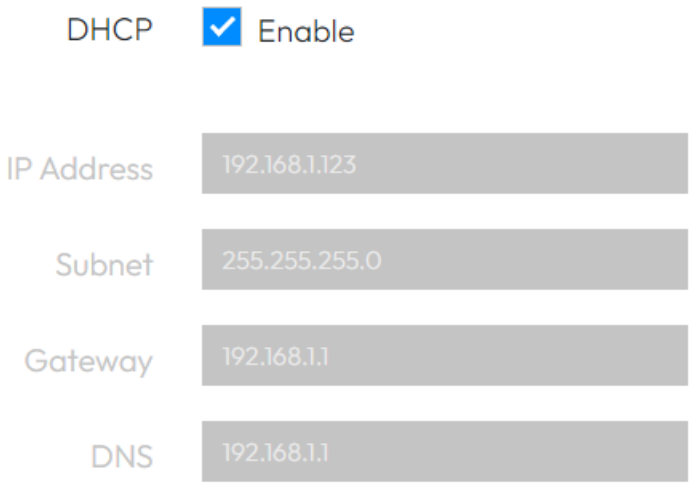
This page allows configuring general settings.



Field	Description	Default
Camera name	Name of the camera. Is used as hostname. Reboot may be required after change.	-
Usage Type	The usage type of the camera. • Stationary: camera is mounted in a fixed location. Aimed at low-bandwith cameras. When using with CatchKen, corresponds with 'ANPR server'. • Moving: camera is mounted on a moving platform, e.g. a car. When using with CatchKen, corresponds with 'CatchCAM PlateFinder'.	Stationary
Equipped with pan-tilt	Whether the camera is mounted on top of a pan-tilt unit.	Unchecked

3.7.2 Network

This page allows configuring network related settings.

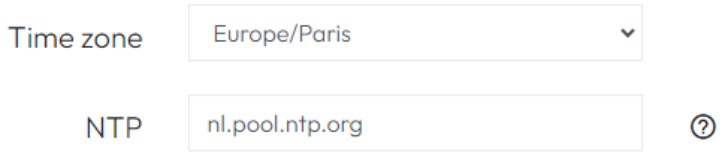


When DHCP is enabled, the configuration fields will show the configuration assigned by the DHCP server. This information may not be correct or available when DHCP has just been turned on.

Field	Description	Default
DHCP	DHCP is enabled if this checkmark is checked.	Enabled
IP Address	Static IP address	-
Subnet	Static subnet mask	-
Gateway	Static gateway	-
DNS	Static DNS IP address	-

3.7.3 Time

This page allows configuring time related settings.



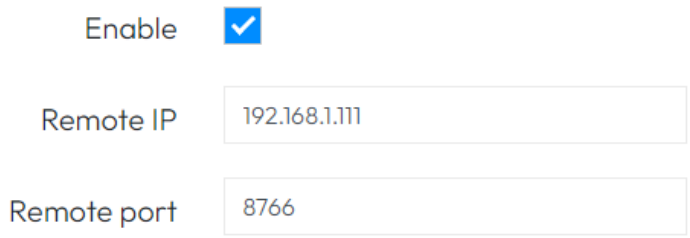
Field	Description	Default
Time zone	The time zone of the camera.	UTC
NTP	NTP server addresses, multiple servers should be comma separated: `<NTP>,<NTP>`. ⓘ Every address is interpreted as an NTP pool.	-

3.7.4 Connection

External connections to which the camera should send its data can be configured on this page. There are multiple connections, these can be enabled at the same time. Every connection type is a tab on this page.

3.7.4.1 CatchKen

This page allows enabling and configuring the connection with CatchKen. This connection type is always available. The product CatchKen is required to use this connection type and can be purchased separately from CatchSystems.

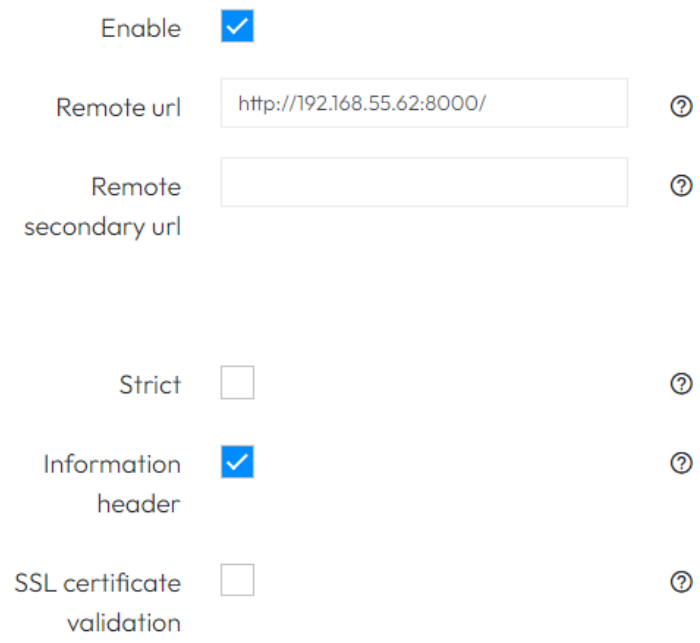


Field	Description	Default
Enable	Enable the connection with CatchKen	Disabled
Remote IP	The remote IP address of CatchKen	-
Remote port	The remote port number of the CatchKen server. This port number differs depending on the usage type of the camera. • Stationary: default 8766 (corresponding with CatchKen Server settings) • Moving: default 8801 - 8804 (unique port for each camera connected to CatchKen)	-

3.7.4.2 UTMC

This page is only available when an ANPR license is installed.

This page allows enabling and configuring connections to a remote UTMC server. Primary and secondary UTMC URLs operate independently from each other. Every message will be sent to both URLs.



Field	Description	Default
Enable	Enable UTMC	Disabled
Remote url	The remote url of an UTMC endpoint. Uses the following format: `<protocol>://<domain>:<port>/<path>` `protocol` : either http or https. `domain` : can be a domain or ip `port` : optional port number `path` : optional location on server	-
Remote secondary url	Similar to the remote url. This field can be left empty if not needed.	-

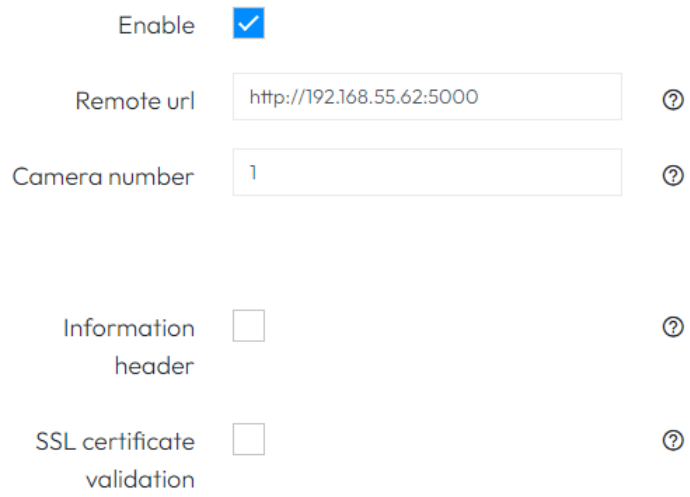
Strict	Should be checked if the UTMC messages should strictly adhere to the UTMC protocol. If unchecked, extra information will be added to the messages. Whitespaces in plates will also be allowed if unchecked.	Unchecked
Information header	Adds an information header to the overview image. This header contains the camera name, the timestamp, the license plate and confidence level.	Unchecked
SSL certificate valiation	Perform SSL certificate validation when connecting to the remote server. The connection will be aborted when the SSL certificate cannot be validated	Unchecked

ⓘ Additional documentation exists with details on the implementation of the UTMC protocol of the CatchCAM 2MP.

3.7.4.3 AFV CDI

This page is only available when an ANPR license is installed.

This page allows enabling and configuring connections to a remote AFV “CameraData Integrator” server. The camera has been tested with version 2.6.1 of the AFV CDI.

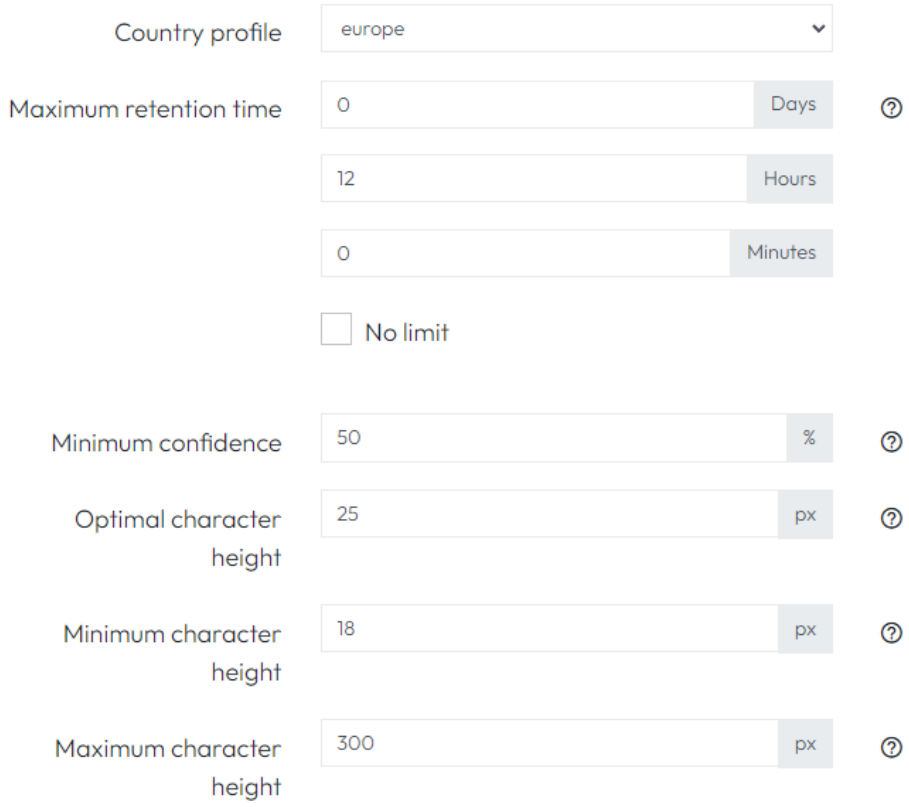


Field	Description	Default
Enable	Enable AFV CDI	Disabled
Remote url	The remote url of an UTMC endpoint. Uses the following format: `<protocol>://<domain>:<port>/<path>` `protocol` : either http or https. `domain` : can be a domain or ip `port` : optional port number `path` : optional location on server	-
Information header	Adds an information header to the overview image. This header contains the camera name, the timestamp, the license plate and confidence level.	Unchecked
SSL certificate valiation	Perform SSL certificate validation when connecting to the remote server. The connection will be aborted when the SSL certificate cannot be validated.	checked

3.7.5 ANPR

This page is only available when an ANPR license is installed.

This page allows configuring ANPR related settings that can influence the way ANPR reads plates. These settings can be different depending on the camera position and location.

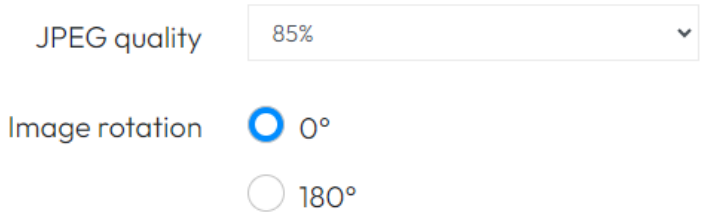


Field	Description	Default
Country profile	Region selection of the built-in ANPR engine.	Depending on firmware version.
Maximum retention time	The maximum time that license plates are stored.	No limit
Minimum confidence	License plates will only be sent over the UTMC or AFV CDI connections if the ANPR confidence is above this value. Value must be between 0% and 100%.	50%

Minimum character height	The minimum character height that the ANPR engine should use. It will only search for license plates that have characters bigger than this minimum. Value must be between 18 and 300, as well as below the configured maximum.	18
Optimal character height	The character height that the ANPR engine should prefer when selecting the best image. This setting can be used to influence the location in the image where the plate is read. E.g. a higher number will cause plates to be read closer to the camera. Value must be between 18 and 300, as well as between the configured minimum and maximum.	25
Maximum character height	The maximum character height that the ANPR engine should use. It will only search for license plates that have characters smaller than this maximum. Value must be between 18 and 300, as well as above the configured minimum.	300

3.7.6 Image

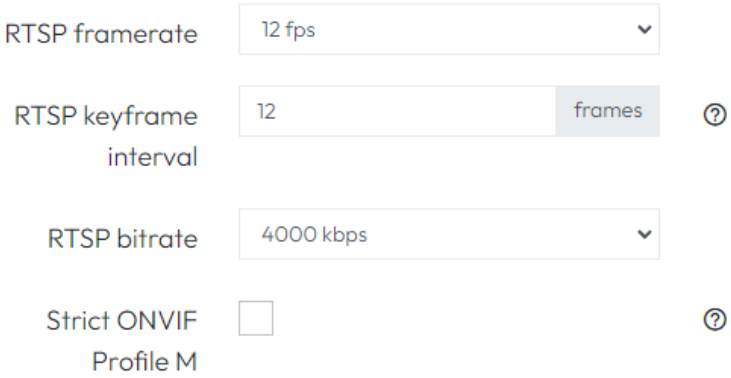
This page allows configuring image related settings.



Field	Description	Default
JPEG quality	Compression factor for JPEG images. Lower value means smaller images (with lower quality). This value is used for: • Overview image • CatchKen connections	85%
Image rotation	Rotates the image if the camera is mounted upside down.	0°

3.7.7 Video

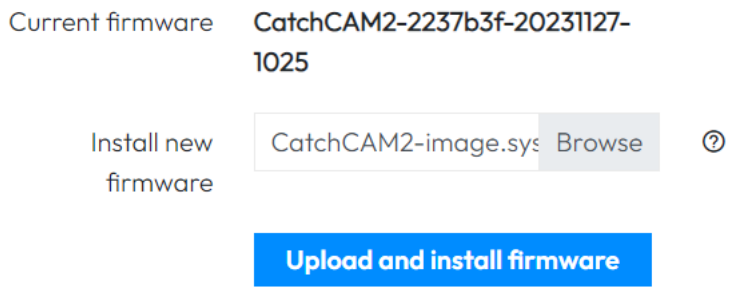
This page allows configuring video related settings. Currently this is an H.265 RTSP video stream only (no audio).



Field	Description	Default
RTSP framerate	Number of video frames per second of the RTSP stream.	12 fps
RTSP keyframe interval	The number of frames between two keyframes. A smaller keyframe interval improves quality, but requires a higher bandwidth. Value must be between 1 and 200 frames.	12 frames
RTSP bitrate	The bitrate of the RTSP stream. A higher bitrate improves quality, but requires a higher bandwidth. When auto is selected, the camera controls the bitrate based on the contents of the video.	4000 kbps
Strict ONVIF profile M	Enable for strict ONVIF profile M compliance. Disable for compatibility with certain video management systems	unchecked

3.7.8 Firmware

This page shows the current firmware and allows the upload of a different version. Please refer to CatchSystems for the latest firmware.



Field	Description
Current firmware	Shows the currently installed firmware version.
Install new firmware	File selector for the new firmware file. Format is: `CatchCAM2_<version>_<date>-<time>.sys`

Pressing 'Upload and install firmware' will start the upload of the firmware file to the camera. A progress bar shows the current status. The camera will reboot to apply the update, this may take some time. The website will automatically re-connect once the firmware has been updated.

⚠ The upload can take a long time, especially on low-bandwidth connections.

ⓘ Camera website pages opened in other windows will detect the firmware upgrade and refresh automatically after it completes successfully.

3.7.9 Reboot

⚠ All users will be logged out when the camera reboots.

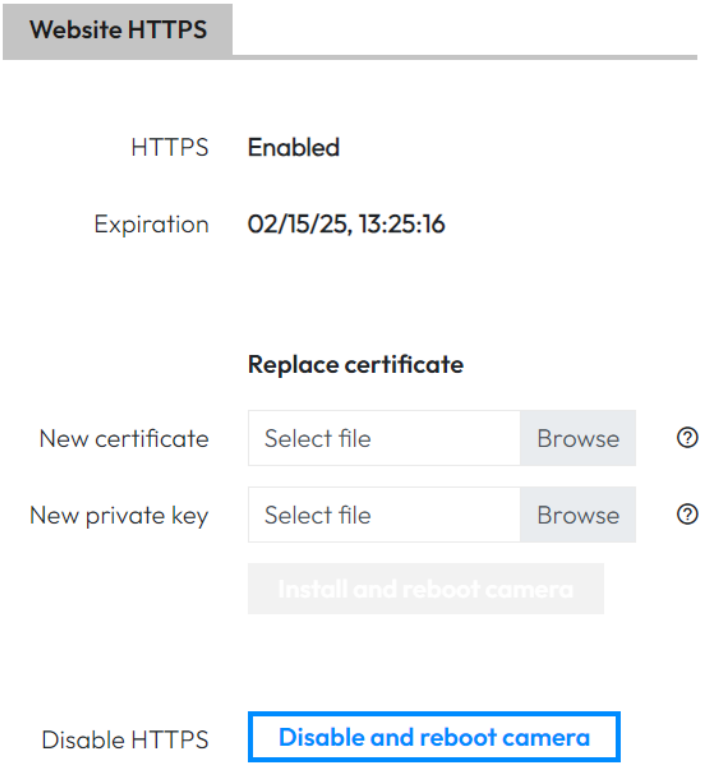
Pressing the 'Reboot' button will trigger a camera reboot. The website will automatically re-connect once the camera has finished rebooting.

3.7.10 Security

This page contains the various security features supported by the CC2MP camera.

3.7.10.1 Website HTTPS

This page shows the website https settings. It allows the upload of a certificate/key pair to enable a https connection to the web interface of the CC2MP camera.



Field	Description
HTTPS	Enabled if certificate and key present on the camera, website is accessible via `https://`. Disabled if no certificate or key is present in the camera.
Expiration	ⓘ Only visible if HTTPS is Enabled. Shows the expiration time for the current installed certificate.
New certificate	File selector for the new certificate file. Format is: `<certificate>.pem`
New private key	File selector for the new private key file. Format is: `<key>.pem`

Disable HTTPS	Only visible if HTTPS is Enabled. Button to remove the existing certificates, which will disable https, and reboot the camera.

Generating self-signed certificates

Generating self-signed certificates using these steps requires OpenSSL[1].

Execute the following command to generate self-signed certificates with OpenSSL.

```
openssl req -x509 -newkey rsa:4096 -nodes -keyout key.pem -out cert.pem -sha256 -days <expire>
```

The command will prompt for multiple questions. `Common name` can be the domain name or IP address of the camera.

1 https://www.openssl.org/

3.7.11 Users

This page shows the current user and roles for accessing the web interface of the CatchCAM 2MP camera.

> ⚠ The users created here can not be used for RTSP or ONVIF. Please see the Video Output section for more information.

3.7.11.1 Default user

By default there is only one account, an Administrator with the credentials `admin` : `catch01` . This default user can be removed. In order to remove the default `admin` account, first a new Administrator account needs to be created, then log in as that new administrator. From there it is possible to remove the default `admin` account.

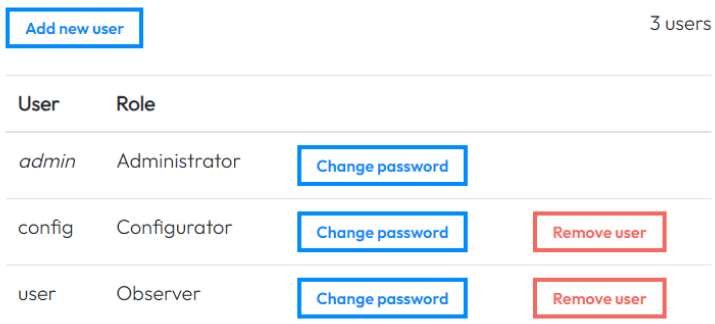
3.7.11.2 User Roles

There are three roles available for users. Each successive role has access to all the pages from the previous role.

Role	Access	Description
Observer	Status, Video, Dashboard	This role has access to the pages which show information, but has no permission to change any of the settings. On the Video page, this user will not have access to pan-tilt.
Configurator	Configure	This role has access to the configure page, which is meant for often changing settings.
Administrator	Install	This role has access to the install page. As administrator this role can change all settings and view all information.

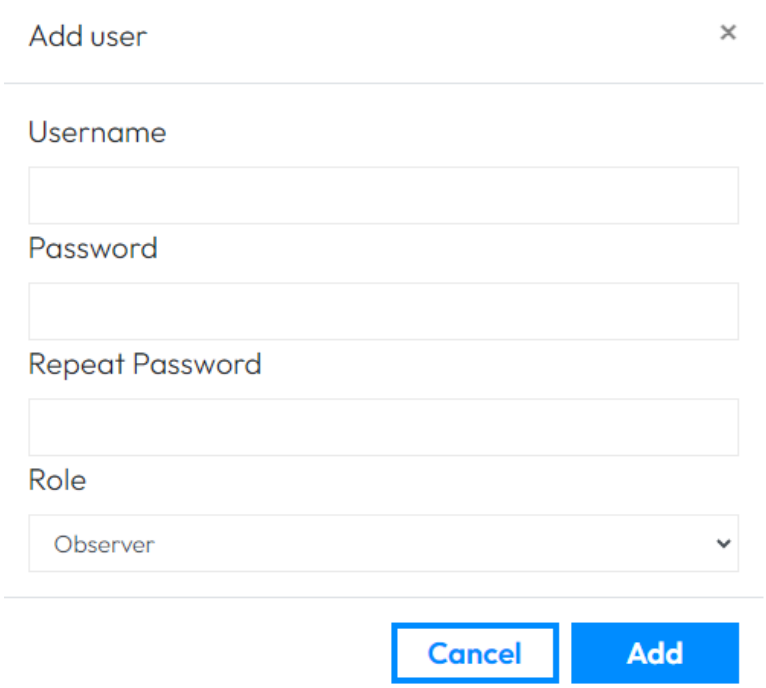
3.7.11.3 Current users

The list shown when opening the page contains all the current users. The colomn ‘User’ shows the username (current user in *italics*), the column ‘Role’ the user's role. The next two columns provide actions which can be performed for that user. It is not possible to remove the current logged in user.



3.7.11.4 Add new user

A new user can be added using the ‘Add new user’ button.

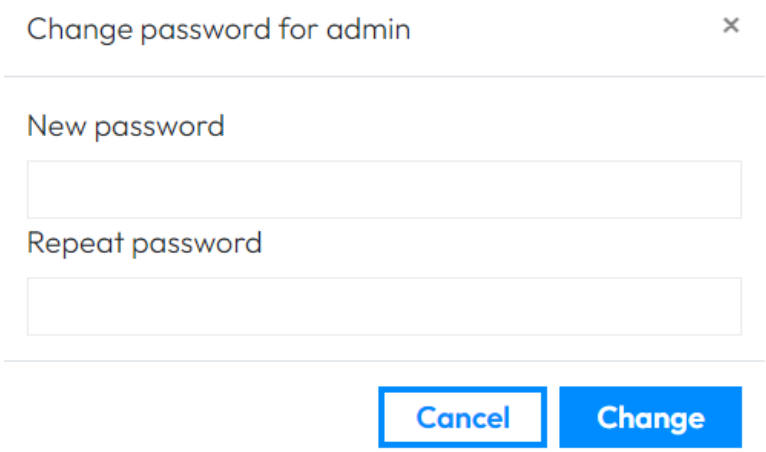


Field	Description
Username	The username for the new user. Must be a unique username.
Password	The password for the new user.
Repeat Password	Repeat the password for the new user. Must match the value in the Password field.
Role	The role for the new user, either Observer, Configurator or Administrator.

3.7.11.5 Change password

> Changing a password will cause this user to be logged out everywhere. When changing the password of the current user, all sessions except the current one will be logged out.

Changing the password of a user can be done by clicking the 'Change password' button next to a user in the users list.



Field	Description
New password	The new password for the selected user.
Repeat password	Repeat the password for the selected user. Must match the value in the New Password field.

3.7.11.6 Remove user

> It is not possible to remove the current user. First login to another administrator account to perform this action.

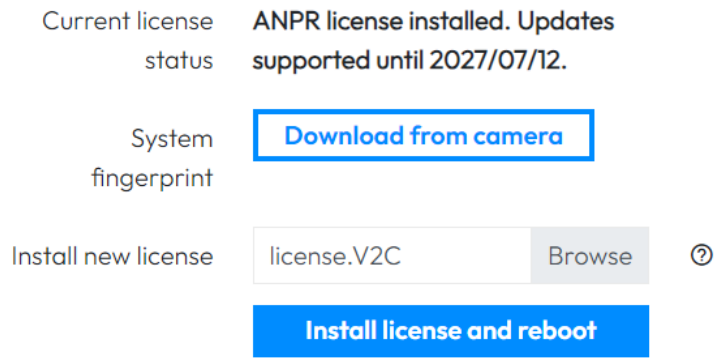
In order to remove a user, press the 'Remove user' button for that user. A confirmation popup will be shown. It is not possible to undo a user removal. Removing a user will cause that user to be logged out everywhere.

3.7.11.7 Password recovery

There is no possibility to recover a lost password. An Administrator account can always be used to change the password of other accounts. In case the password to the Administrator account is forgotten, a factory reset can be performed using the Discovery Tool.

3.7.12 License

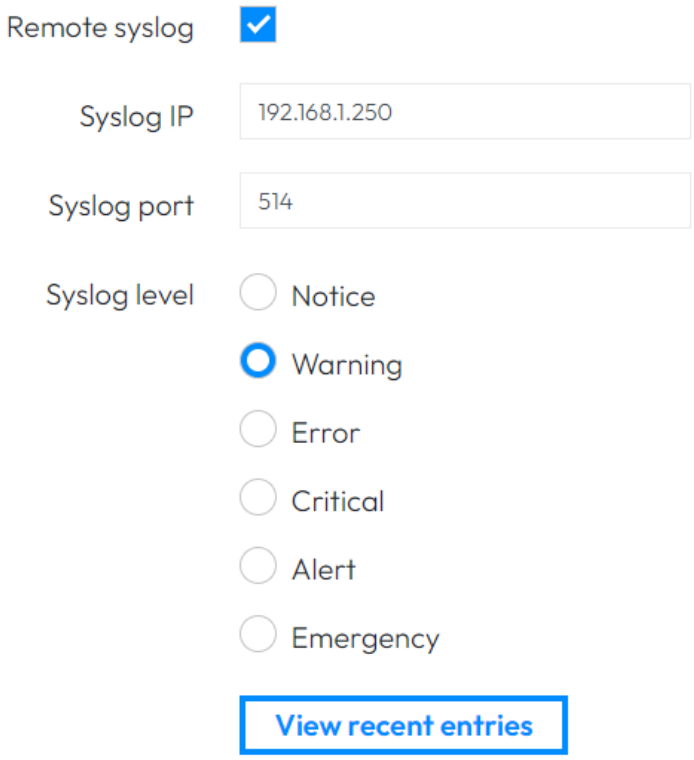
This page shows the current license that is installed and the support duration. The CatchCAM 2MP can be upgraded with an ANPR, or ANPR+MMR license. Please contact CatchSystems to obtain a license file.



Field	Description
Current license status	Shows the current license. Can be either of the following: • None • ANPR • ANRP and MMR The date until updates are supported is also shown.
System fingerprint	Download a system fingerprint file. This file is needed by CatchSystems when requesting a different license.
Install new license	File selector for the new license file. Format is: `<license>.v2c`

3.7.13 Logging

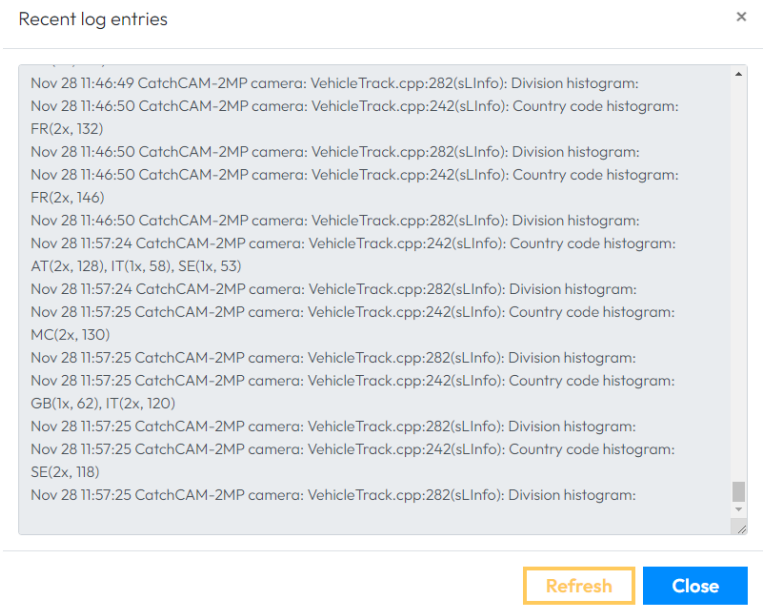
This page allows the configuration of remote system logging, as well as viewing the local system log.



Field	Description	Default
Remote syslog	Enable remote system logging to a central server. Only syslog over UDP is supported.	Disabled
Syslog IP	IP address of the remote syslog server.	-
Syslog port	UDP port of the remote syslog server.	-
Syslog level	The minimum severity of messages. This applies to message sent to the remote syslog server, as well as the local log history. Setting this to a higher severity will will result in fewer messages.	Warning

3.7.13.1 Recent entries

The 'View recent entries' button opens a popup which will load the recent local syslog history. The camera only stores a limited amount of messages locally, they will not persist across a reboot or power-cycle.



3.7.14 Factory reset

Pressing the ‘Reset’ button will reset the camera to the factory defaults.

A factory reset removes all user-configured settings and restores the defaults. This includes the network configuration. This may result in a camera which can no longer be reached. Use the CatchSystems Discovery Tool to find the camera on the network.

The installed license will be retained when performing a factory reset.

4 Camera alignment

The correct location and position are crucial to good reading performance. This chapter gives an overview of the best approach to get the most out of your CatchCAM 2MP ANPR camera. This guide is only valid for cameras mounted in a fixed position, e.g. an overhead gantry, not for cameras installed on mobile platforms.

Reading performance of the ANPR engine is highly dependent on good quality images taken from the right angle. When positioning the camera, the following should be taken into consideration.

- Front view
  - License plates will be more clean
  - No motorcycle plates
  - The license plate of the truck will be captured but not from the trailer
- Rear view
  - More dirt might be built up on the license plate
  - Motorcycle plate will be visible
  - The license plate of the trailer will be captured, not from the truck

4.1 Camera angle relative to the road

Reading performance and analysis duration are greatly improved by having license plates horizontal to the camera angle. This information can be retrieved from the “angle” field of the “Dashboard” page (for CC2MP with ANPR license), or in CatchKen. Depending on the position of the license plate in the frame, the angle might vary, ideally the angle should be as close to 0 as possible (horizontal). But within the boundaries of +- 10° it will capture license plates.

4.2 Distance to target with regards to focus distance

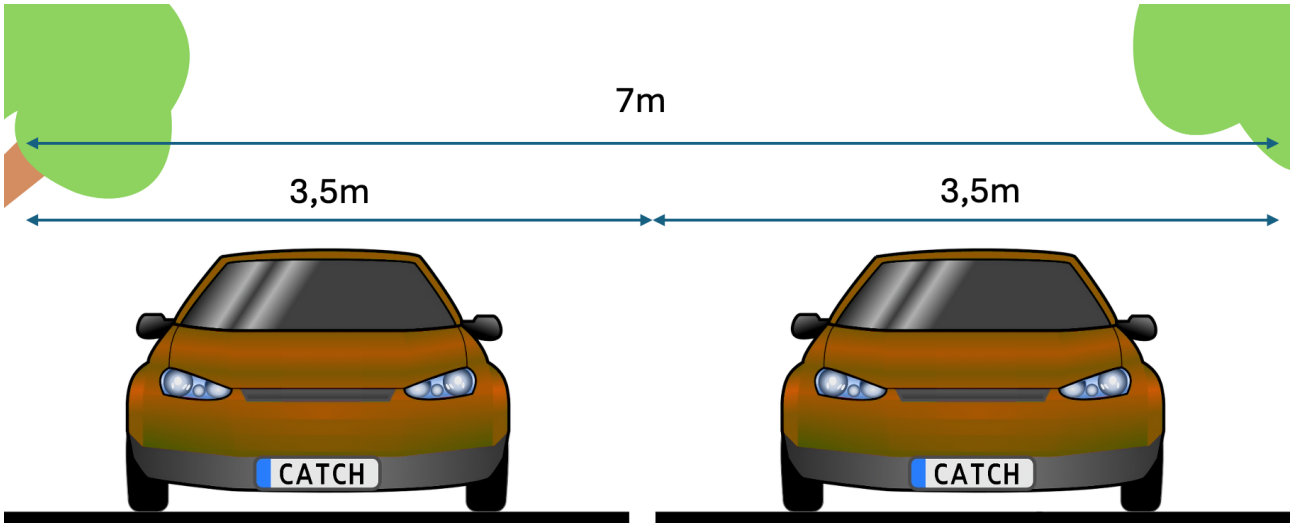
Depending on the chosen configuration of the CatchCAM 2MP, the focus distance ranges from 7m to 30m. When positioning the camera, keep in mind your camera configuration (lens) and make sure that the distance in between the camera and the target vehicles is similar to the best focus distance of your camera.

Distance depending on lens configuration:

	6mm	12mm	16mm	25mm
Best focus distance (recommended distance between camera and target vehicle)	7m	14m	20m	30m

Width:

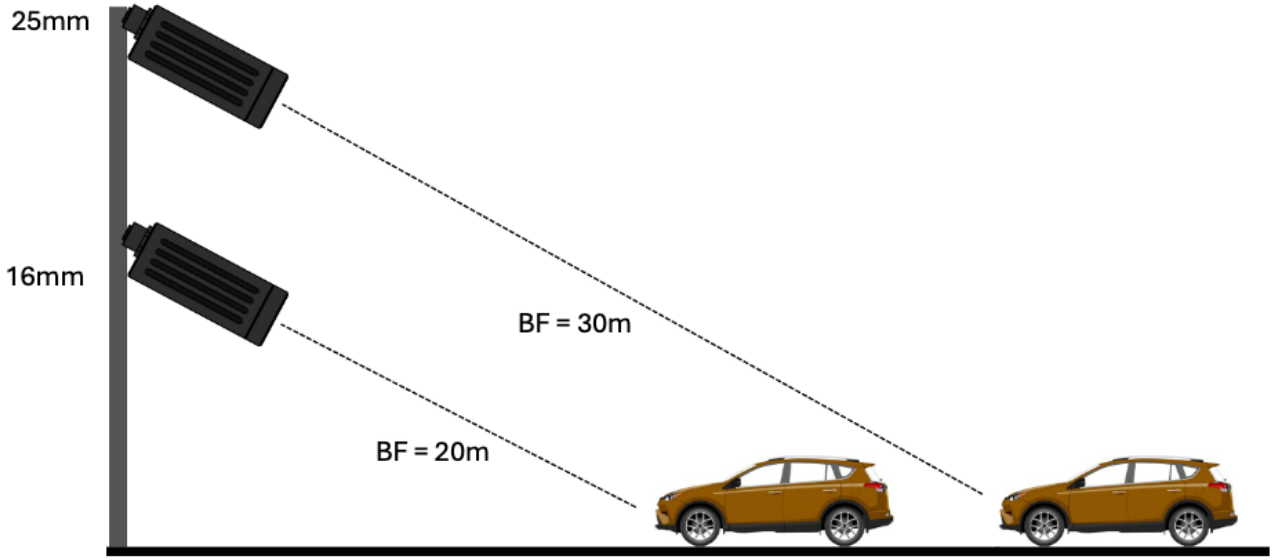
When positioning the camera in the center of a two-lane road with a distance similar to the best focus distance of your lens, the camera will read about 7m width. The angle can be adjusted to be able to capture more road width. However, possible consequences have to be considered, e.g. overlapping vehicles when positioning the camera on car height.



4.3 Camera installation height

It is possible to mount the CatchCAM 2MP on a higher surface, e.g. a wall, bridge etc. Keep in mind that the best focus distance is influenced by the height. The higher the camera is placed relative to the target vehicle, the less road distance you will have to capture the license plate in the image.

The optimal angle for the CatchCAM 2MP might vary based on the lens type and height for your situation. An example scenario is when a camera is mounted on 6m height (max. recommended height), the distance between the camera and the target vehicle is 30m based on the Best Focus distance. Using these variables, the angle of the camera should be 11.5°. The higher your angle will get, the more difficult it will be to read license plates (because they are too far away from the focus distance).



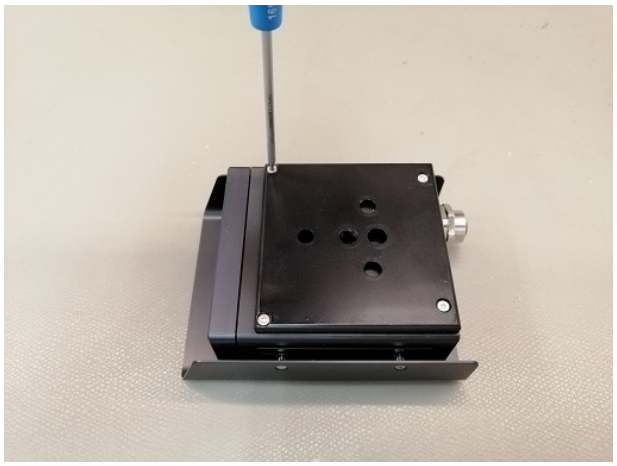
5 Retrofit pan-tilt-unit

All CatchCAM can be equipped with a pan-tilt unit. The pan-tilt-unit can be ordered as retrofit.

Order number	Description
T0170	Retrofit pan-tilt-unit (+ 4 screws)

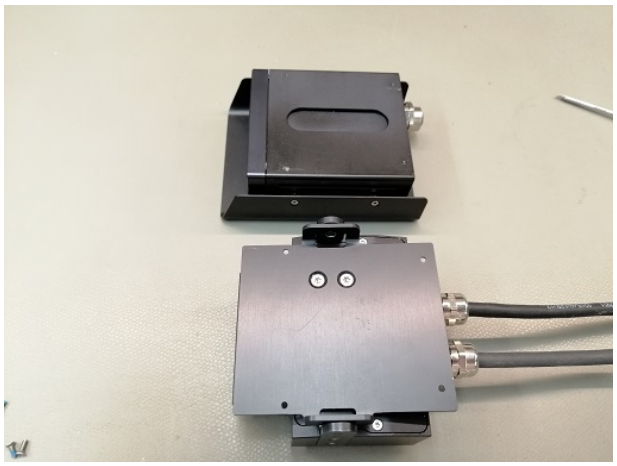
5.1 Step by step retrofit

Place the camera on a flat surface

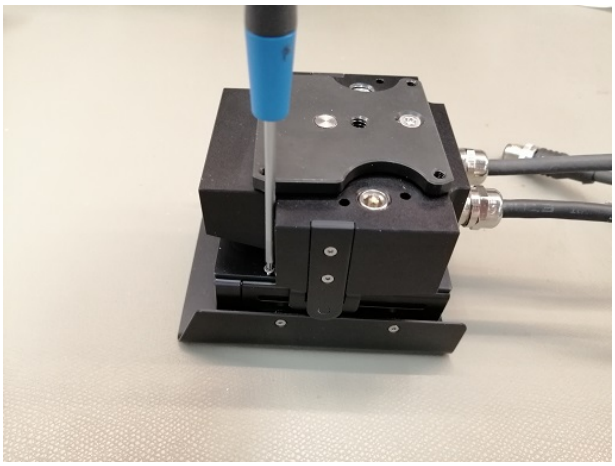


1 Use a Torx T6 screwdriver and remove 4 the screws

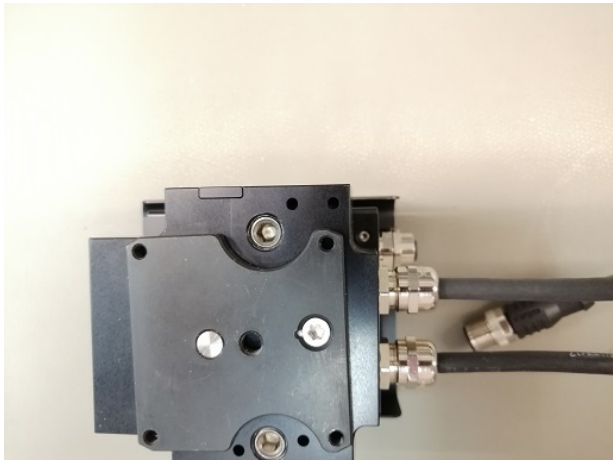
2 The black plate and the screws on top of the image below are no longer needed



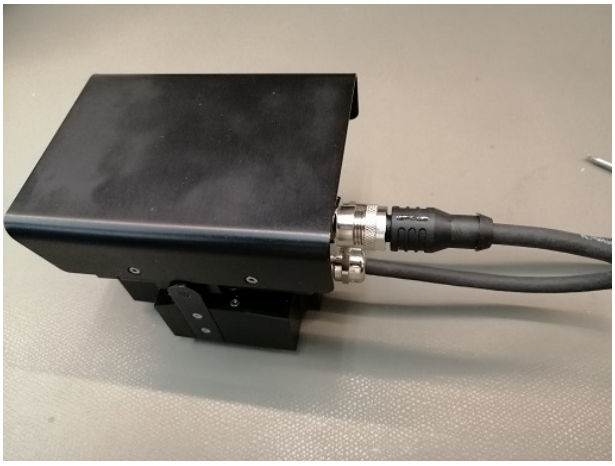
3 Place the CatchSystems Pan-tilt unit next to the camera as shown on the image



4 Use the supplied screws (with the blue tip) and tighten the 4 screws



5 Tighten the 4 screws simultaneous

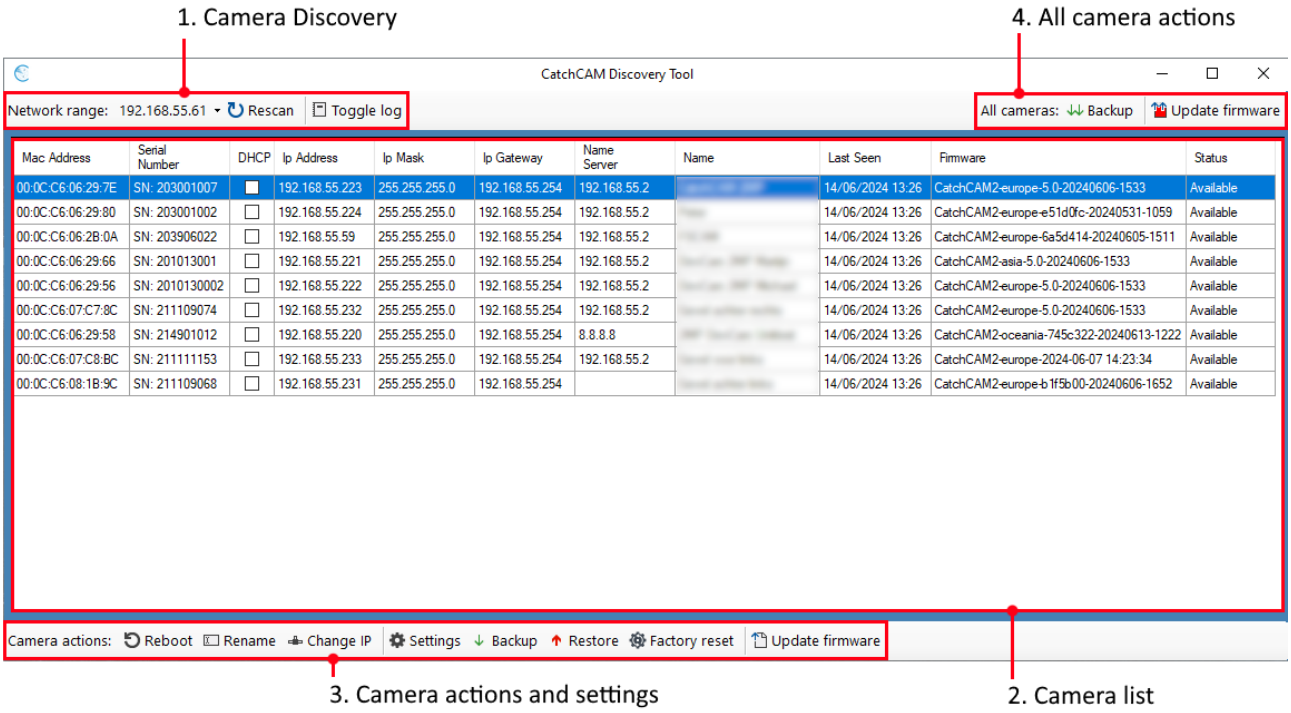


6 Connect the cable from the PTU to the camera, the retrofit is now complete

6 CatchCAM Discovery tool

The CatchCAM Discovery Tool is a tool that can be used to find CatchCAM cameras in the current network segment and modify settings of those cameras. CatchCAM Discovery will automatically detect cameras on the network by means of a special broadcast message. A new camera will have DHCP enabled and will therefore acquire an IP address from a DHCP server.

> ⚠ Please be aware that this tool does not work over network segments or VLAN. The broadcast message will only be sent on the selected network interface



6.1 Camera discovery

- Network range: select the network range to scan for cameras.
- Rescan: clear the camera list and rescan for cameras in the selected network range.
- Toggle log: show/hide the camera discovery network traffic.

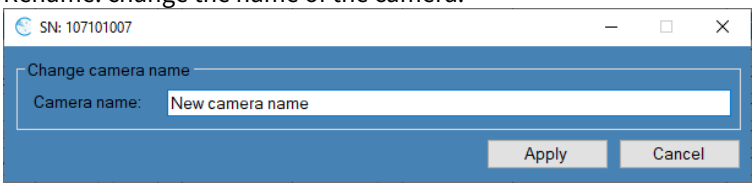
6.2 Camera list

This area shows the list of cameras detected in the selected network range.

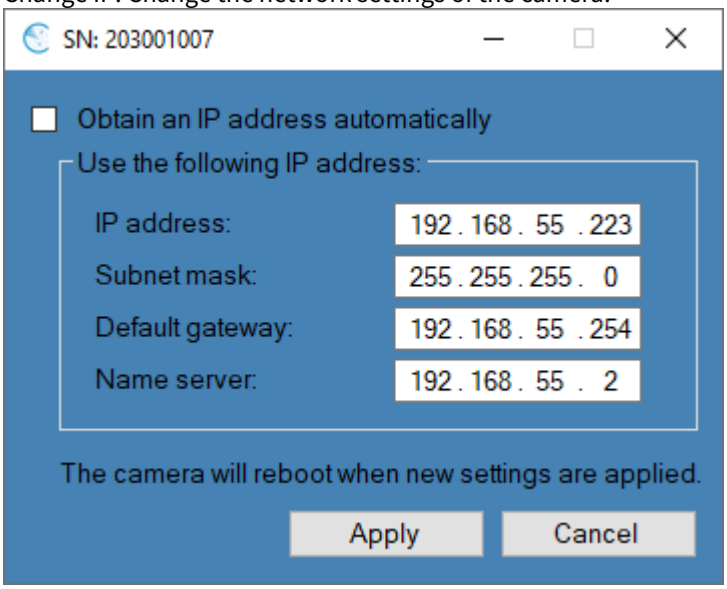
6.3 Camera actions and settings

These are actions and settings for the selected camera in the camera list.

- Reboot: send the reboot command to the camera.
  The camera will be marked as Rebooting, it will be marked as Available when back online.
- Rename: change the name of the camera.



  - Apply: send the new camera name to the camera.
  - Cancel: discard the change and close the window.
- Change IP: Change the network settings of the camera.

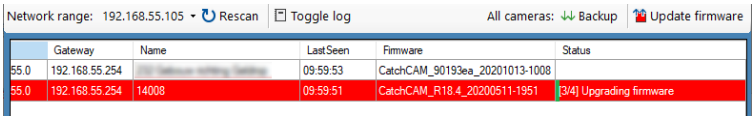


  - Obtain an IP address automatically: this checkbox enables DHCP and ignores manual settings.
  - Use the following IP address: manually assign fixed network settings to the camera.
    - Note that depending on the camera firmware version, Name server may not be available.
  - Apply: send the new IP settings to the camera.
    The camera will reboot when the new settings are applied.
  - Cancel: discard the changes and close the window.
- Settings: open the camera settings website in the browser.

ⓘ The settings website can also be opened by double clicking on the camera in the camera list

⚠ Supported browsers are recent versions of Edge, Chrome (preferred), Firefox and Safari

- Backup: create a backup of the camera settings to the PC.
- Restore: restore the camera settings from a backup.
- Factory reset: reset the camera to factory defaults.
- Update firmware: update the firmware of the selected camera.



The current firmware version of the camera is shown in the Firmware column. The Status column shows the update progress

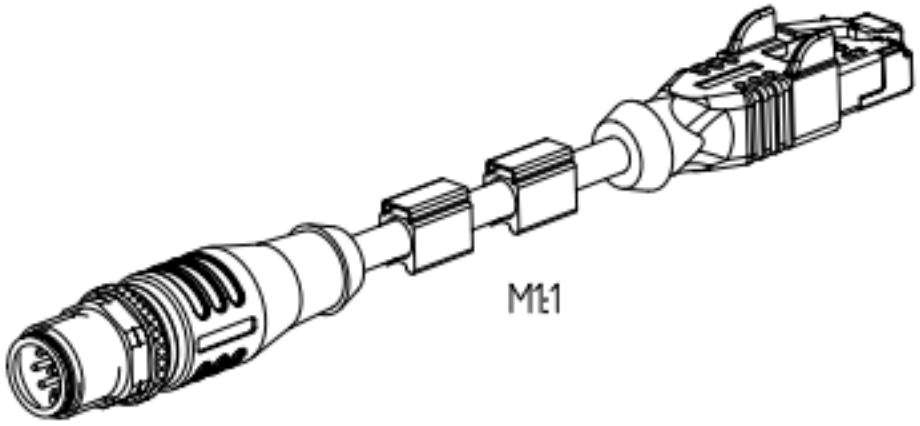
6.4 All camera actions

These are actions that operate on all cameras shown in the camera list.

- Backup: create a backup of the configuration for all cameras shown in the list.
- Update firmware: send the same firmware update to all cameras shown in the list.

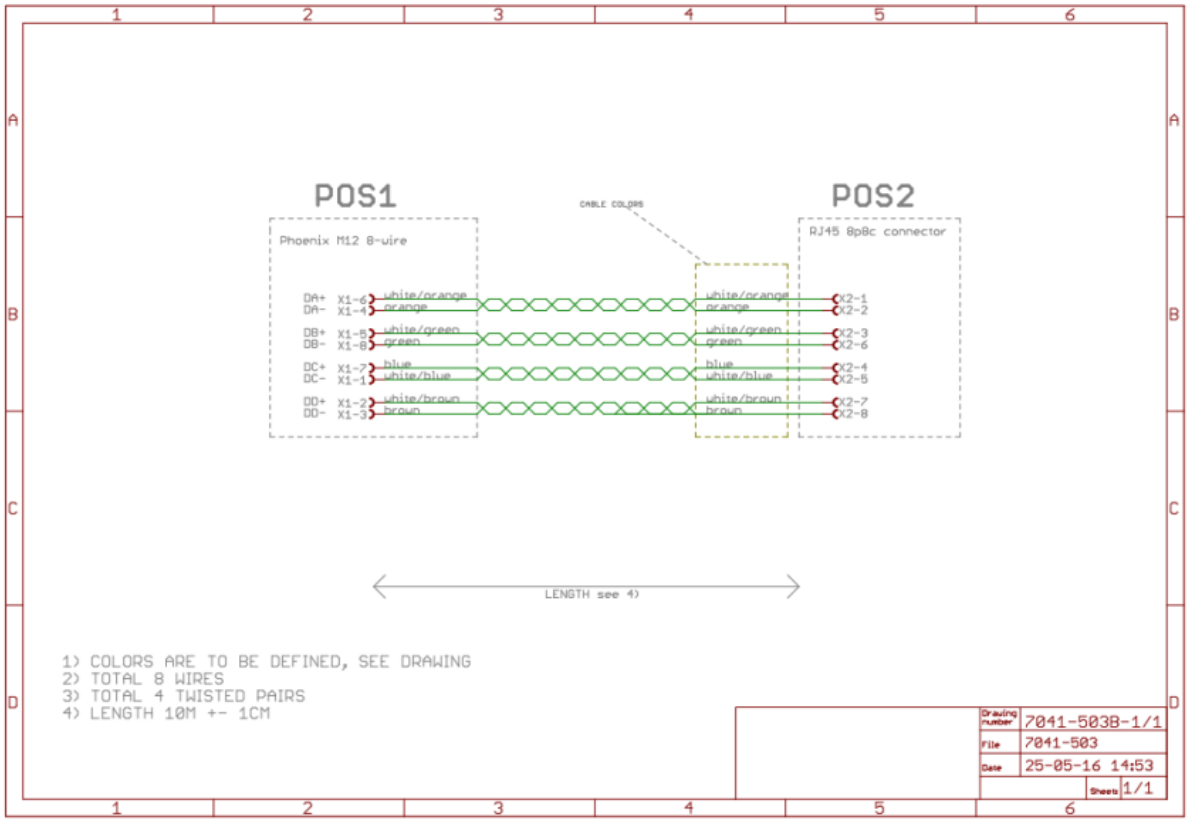
7 Connecting CatchCAM

CatchCAM is connected with an IP-67 M12 Ethernet connector.



Order number:

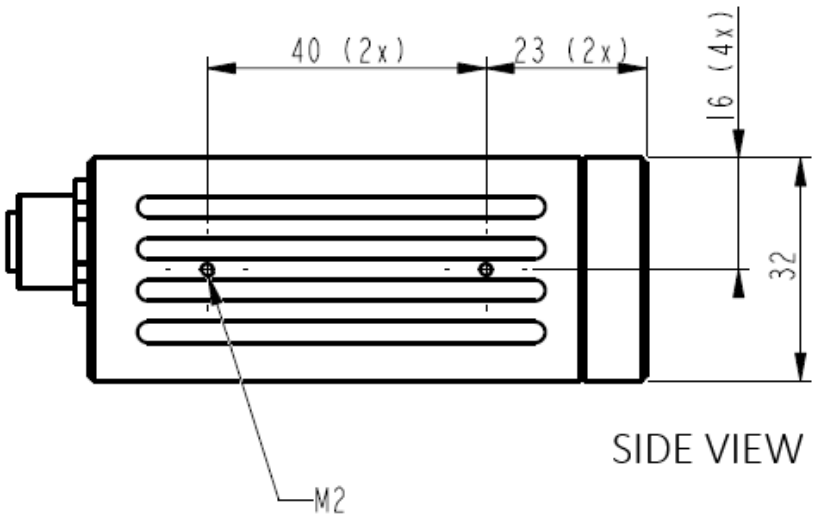
Order number	Length (meter)	Description
T0046	0,8	Cable CatchCAM M12-RJ45 IP67
T0123	5	Cable CatchCAM M12-RJ45 IP67
T0067	7	Cable CatchCAM M12-RJ45 IP67
T0176	10	Cable CatchCAM M12-RJ45 IP67
T0180	20	Cable CatchCAM M12-RJ45 IP67
T0168	0,8	Cable CatchCAM M12-RJ45 IP67 right-angled
T0169	7	Cable CatchCAM M12-RJ45 IP67 right-angled

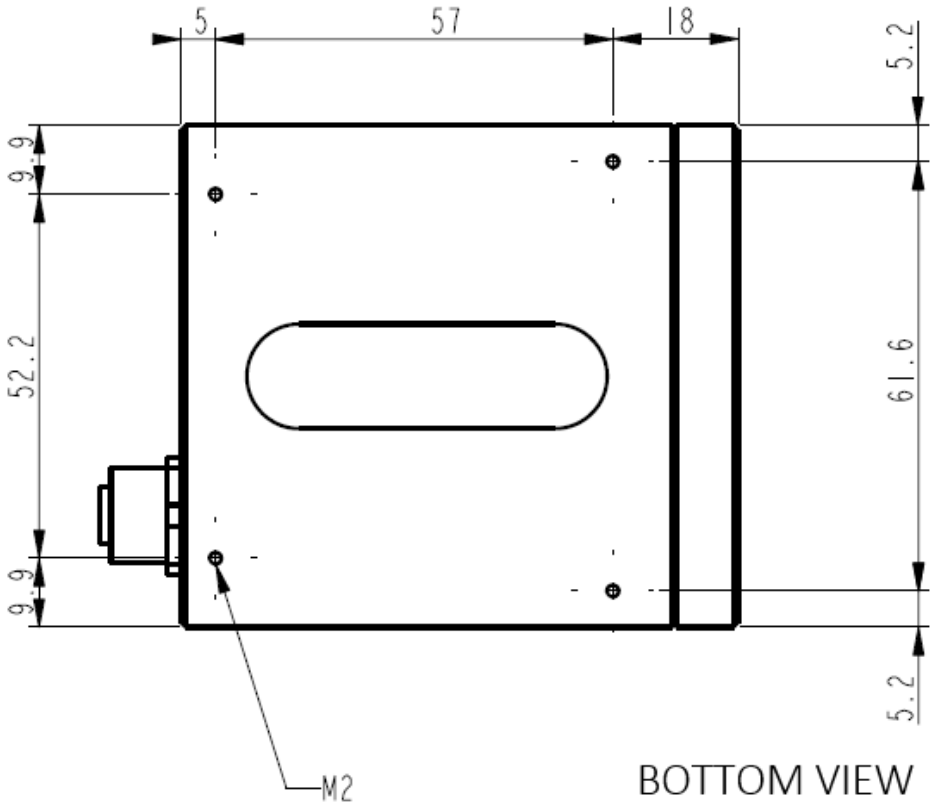


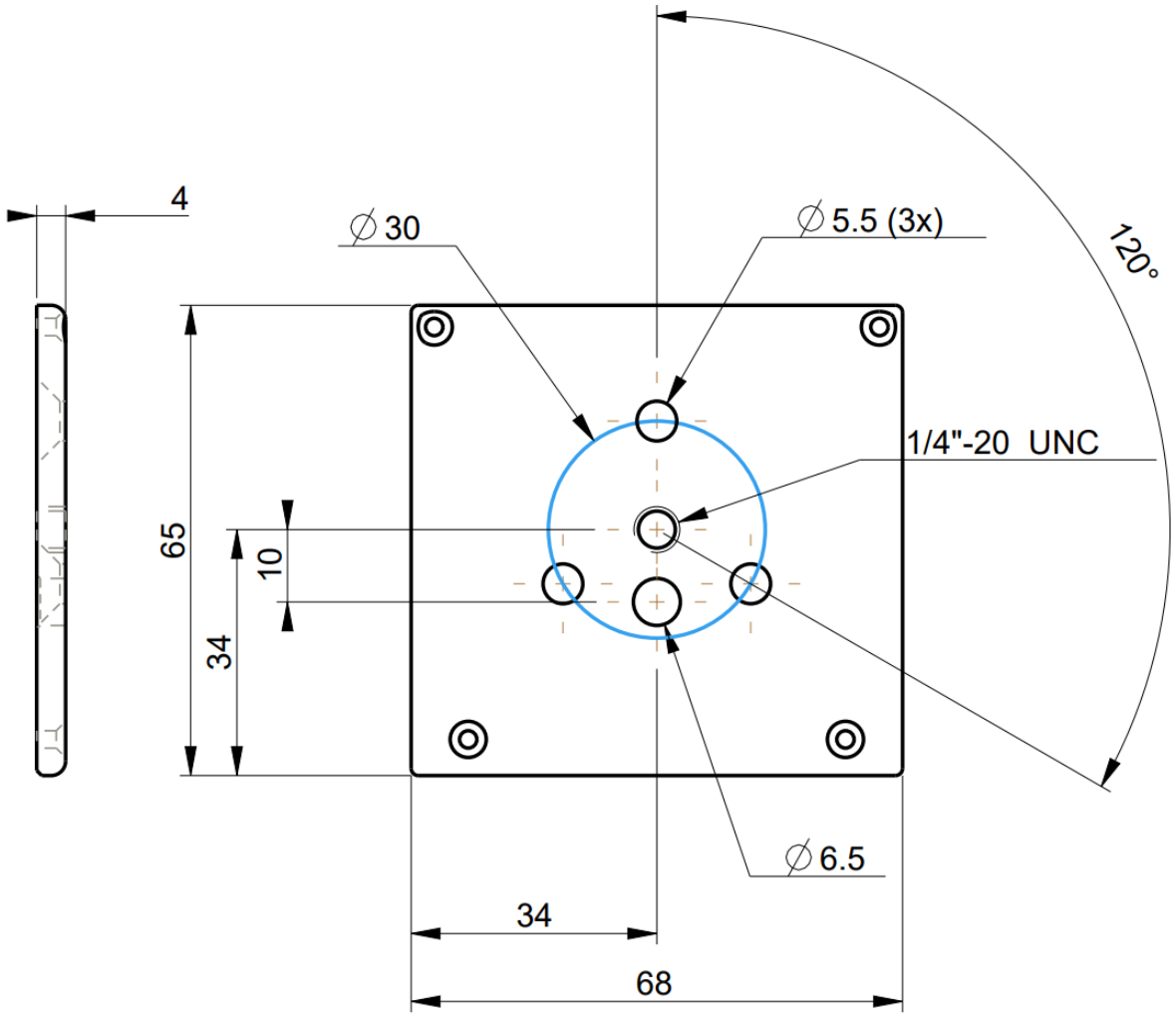
Below is the connection diagram for the CatchCAM connection cables:

8 Camera dimensions

The figures below shows the metric dimensions (all dimensions are in millimeters) of the CatchCAM.





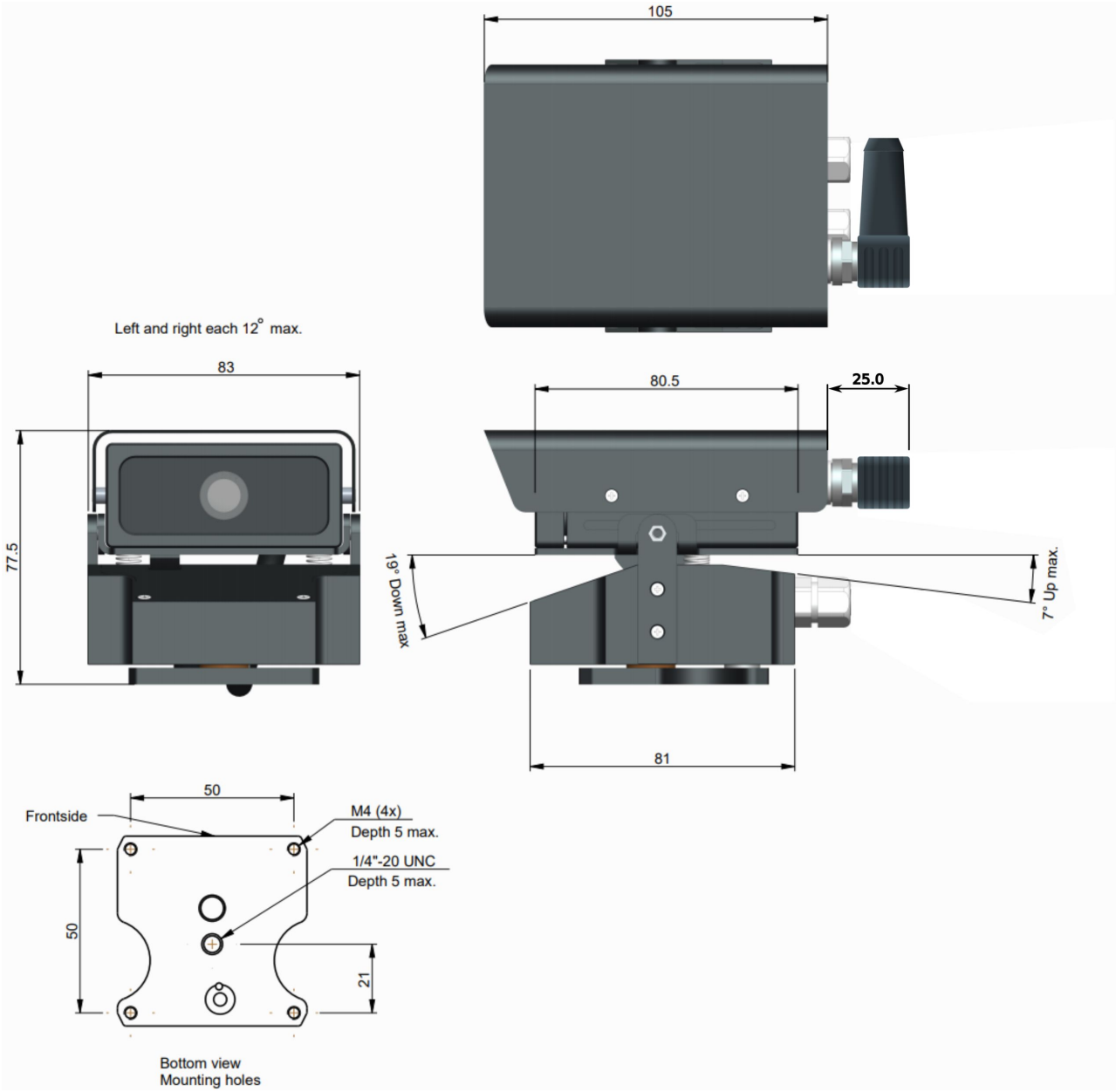


Standard mounting solutions: Tripod, Ball joint (for mounting on dashboard), and Ram T-mount assembly.

For mounting cameras, the standard CatchCAM has a mounting plate. For dimensions see below:

9 Camera with PTU dimensions

The camera mounted with the sun shade hood and the pan-tilt-unit has the following dimensions



10 Certificates

European Community Declaration of Conformity:
General CE conformity 1999/5/EC.

EMC 89/336/EEC Electromagnetic Compatibility of Information Technology Equipment.
EN61326-1:2013
EN50498:2010
EN61000-2
EN61000-3
EN61000-4
EN61000-5
EN61000-6
EN61000-7
EN61000-8

EYE SAFETY
EN 62471:2008 (Exempt Group) (Led IR Illuminators)

RoHS

This product complies with the European Union Directive 2002/95/EC on the restriction of use of certain hazardous substances ("RoHS Directive"). Based on information provided by our suppliers, we designate the product as RoHS compliant. Confirmation of compliance status by our suppliers is either because the products do not contain any of the restricted substances referred to in the European Union Commission Decision of August, 18, 2005 (2005/618/EC) in connection with Articles 4 and 5 of the RoHS Directive in concentrations in excess of the values permitted thereunder or because removal of the restricted substances is not technically possible and their existence in the products at levels in excess of these concentrations is allowed as one of the particularapplications listed in the Annex to the RoHS Directive.

WEEE

This appliance is labelled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive

Environment:
Vibrations MIL-STD 810F 514.5.
IP67 according to IEC-529
Temperature MIL-STD-810F Method 501.4, 502.4