

Installation Guide

SnapShot ANPR Camera



- Model 6310 ANPR Camera
- Model 6320 ANPR Pro Camera
- Model 6330 ANPR Speed Camera

About this Guide

This guide is intended for installation and commissioning engineers who are familiar with SNAP ANPR processors. It covers the installation and testing of both the standard and speed ANPR cameras. When these cameras are used in conjunction with a SNAP ANPR processor, it is essential that the engineer has both physical and log-on access to the processor.

Safety Notices Used In This Manual

Important! - Indicates a potential hazard that could seriously damage the equipment or endanger the engineer or subsequent user. Do not proceed beyond these notices until you have fully understood the implications.

Legal Notice

Camera surveillance is prohibited by law in some countries. Check the laws in your local region before using ANPR cameras and associated equipment.

Liability

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Trademark Acknowledgments

SNAP ANPR is a registered trademark of Videofit Limited.

WARNING – EYE SAFETY HAZARD

Important!

When installing or servicing this camera, physically disconnect the power supply to ensure that any IR exposure to the eyes is avoided. If adjustments are to be made whilst the camera is on, work only from the rear of the camera and, when necessary, use appropriate shielding to block the LED illuminator.

Important!

The long range versions of this camera (models 6320 and 6330) must be installed in a location which prevents a person from directly looking into the front of the camera from a distance of less than 4 metres. It is the responsibility of the installer to ensure the chosen location will meet this requirement but, as a general guide, mounting the camera on a column at least 3.5 metre high is likely to ensure this condition is met (based on the minimum viewing distance of 15 metres for these camera models).

The short range versions of this camera (model 6310) do not present any hazard in normal use. Staring directly into the front of these camera models for long periods at very close range should be avoided.

1. Description

These ANPR cameras are intended for use with all SNAP ANPR processors although they can also be used with almost any analogue DVR, if required. The cameras are capable of very high recognition accuracy and can be used in a wide variety of recognition applications. The main features of the cameras are:-

- Compact, factory sealed design
- Built-in pulsed LED infrared illumination for day/night operation
- Push button control of zoom & focus for precise set up
- Variable IR power control
- Remote camera control from all SNAP ANPR processors using RS485 telemetry (control cable required)
- Aluminium housing with O-ring seals
- Optional colour overview cameras available

The camera is also available in a speed version which includes a very accurate vehicle speed sensor. The speed data is encoded on the video signal in a unique way, which means that no additional cabling is required to transmit the speed data back to the ANPR processor.

The standard camera has a range of 3-15m whilst the Pro and Speed cameras have a range of 15-40m.



Standard Camera



Speed Camera

2. Siting the Camera

The camera is designed to cover a single traffic lane only, typically 3 to 3.5 metres wide at the capture point. Any attempt to cover two traffic lanes with a single camera will result in the ANPR processor missing vehicles and mis-reading plates.

The camera should be positioned adjacent to the target traffic lane - do not attempt to view one lane across another. Always try and position the camera close to the head-on position but not exactly perpendicular to the plate, since unwanted reflections from the infrared illuminator can occur in some situations. The ideal angle of view is between 5° and 25° from the normal path of the vehicles. If mounting the cameras at height, ensure the cameras are not tilted down more than 25° from the horizontal.

Vehicles should always be viewed from the front because rear plates offer a much lower success rate due to tow bars, cycle racks, winter dirt, etc. Also, if possible, try and avoid locations where the camera views directly into a rising or setting sun.

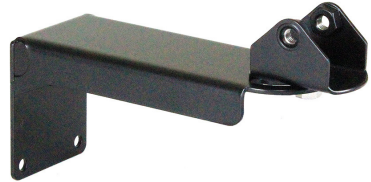
If the camera is to be used in conjunction with vehicle barriers or gates, the camera is best positioned adjacent to them; siting the camera further into the site often results in viewing obstructions from the barrier arm or gates themselves. Conversely, placing a camera in advance of the barrier is okay, providing the cameras are not intended to open the barriers automatically (using our Barrier Relay Controller). This is because cameras which control vehicle barriers must view the first vehicle in the queue for the system to operate correctly and this can only be achieved when the cameras are adjacent to the barrier itself.

Important!

The long range versions of this camera must be installed in a location which avoids any possible eye safety hazard, Please refer to page 2 of this manual for further information.

3. Fixing the Camera

The camera can be mounted to a wall using the standard bracket. This bracket provides adjustment of the camera pan and tilt by way of separate adjustment bolts.



Wall Bracket



Pole Mount Bracket

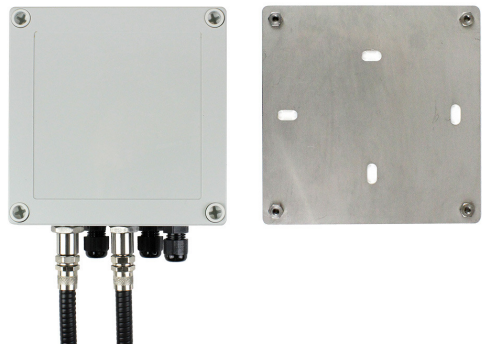
If you need to mount the camera from the top of column, a pole mount bracket is also available. This uses standard 4" PCD (101.4mm) fixing centres and will mate with a wide range of third party poles and brackets.

The camera is supplied with an IP66 junction box which should be mounted adjacent to the camera. A flexible steel conduit (two where an optional colour overview camera has been added) connects the junction box to the camera and is normally 1m in length.

The junction box should only be fixed using the holes provided. These are outside the sealed area to ensure the enclosure remains water tight.

Important!

You must not drill additional holes in the enclosure as this will invalidate the warranty.



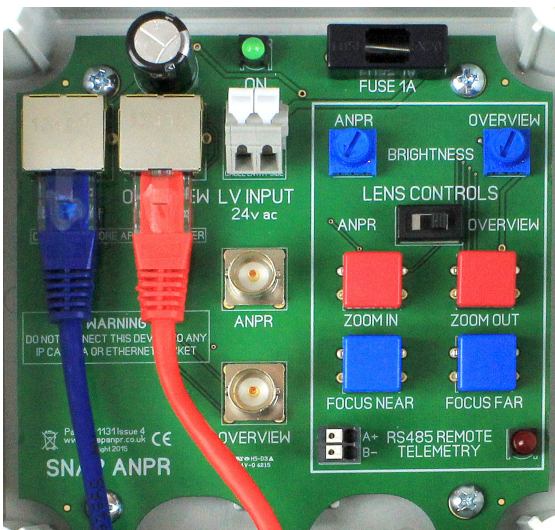
A steel backing plate is provided to simplify fixing. Do not remove the circuit board from the enclosure.

4. Connections

The camera requires a low voltage 24V AC supply (1A). Connect the incoming power cable to the push terminals marked LV INPUT 24v ac.

Important!

Do not connect mains power (240v) to this camera or there will be a serious risk of injury and the equipment will be damaged.



The camera housings are factory sealed and should not be opened.

The ANPR and optional overview cameras are each pre-wired and supplied with protective flexible steel conduit, terminated with a moulded RJ45 connector. The ANPR camera has a blue cable and the optional overview camera has a red cable. Connect to the corresponding JB socket as shown (left).

Important!

Do not connect these RJ45 plugs or sockets to any other networked equipment or wall socket, otherwise damage will occur.

The analogue video output(s) are provided by way of two BNC sockets within the junction box.

Finally, if you intend to control the camera zoom and focus from a remote SNAP processor, connect your RS485 telemetry cable to the push terminals marked A+ and B-.

5. Field Cables

ANPR processors requires a high quality video signal to achieve maximum accuracy and care should be taken to ensure that the signal is not degraded during transmission. Coaxial cable is preferred for transmitting the video signal, although high quality passive baluns used in conjunction with a twisted-pair cable are generally fine for cable distances up to 170 metres.

For longer cable distances, the transmission system should be designed with great care to ensure that the video level at the receiver is close to 1vpp and that the full frequency range of the video signal is maintained. If any form of digital conversion is used, the received analogue signal should be at least 25fps (50fps for high speed traffic), full resolution (D1) and with no visible compression artefacts.

With regard to the 24v ac power supply, please ensure that the conductor size is sufficient for the length of cable run to avoid more than a 10% volt drop.

Finally, for long telemetry cable runs we would recommend a low capacitance cable such as Beldon 8132 which will normally allow distances of over 1000m to be achieved. For shorter distances, standard Cat5 or Cat6 cabling may be used. Ensure that a twisted pair is employed.

6. Cleaning

Keeping the window clean will help reduce image degradation. The camera window is made from float glass and just requires a wipe with a wet cloth. Finish with a dry cloth or allow to dry naturally.

7. Operation

To set up and test the camera, proceed as follows:-

- Connect the power, video and optional telemetry cable
- Switch on the power and ensure the green LED lights up
- Park a vehicle at the desired captured point
- Ensure the slide switch is set to ANPR
- Connect a test monitor to the ANPR BNC socket
- Using the buttons in the camera junction box, adjust the zoom and focus for the best image. Note that the camera will automatically focus each time you adjust the zoom
- Adjust the IR power control (Brightness). For a clean plate, the characters should appear as black on a pure white background (see images below)
- If the optional colour overview is fitted, move the slide switch to OVERVIEW, connect the test monitor to the OVERVIEW BNC socket and adjust the zoom and focus as required.
- If the optional overview camera has a white light illuminator, adjust the brightness control to light the scene as required
- Ensure the bracket and junction box lid are fully tightened on completion.

Too Dark



Correct



Too Bright



ANPR Brightness Setting (Clean License Plate)

Important!

If using an optional overview camera with a white light illuminator, ensure the brightness is adjusted to avoid dazzling drivers at night.

8. License Plate Size

Below are two examples of vehicle framing with an ANPR camera. The first is zoomed in close such that the vehicle width fills the image and ensures the plate will be large enough to be read (the plate has been pixelated in this image). The second image is wrongly viewing the rear of the vehicle and needs to be zoomed in closer before the plate will be read.



Perfect Vehicle Framing



Poor Vehicle Framing

Finally, here is an example of a colour image taken by one of the optional overview cameras that are available for this ANPR camera. Remember that when using these overview cameras in conjunction with an ANPR processor, the colour image may be recorded a fraction of a second after the plate is read and will need to be zoomed and positioned accordingly to ensure it is framed correctly.



Dual Camera Overview Image

9. Speed Camera

The speed version of the camera includes a Doppler sensor to detect vehicle speed. The sensor will only detect vehicles approaching the camera and, when multiple vehicles are in view, will always choose the target with the strongest signal. This ensures that the closest vehicle in the chosen lane will always be read.

Although the detector is very accurate, this speed camera has not been submitted for Department for Transport approval and cannot therefore be used for law enforcement purposes. It can, however, be used on public roads for traffic calming and speed analysis.

There are no user adjustments to the speed detector. However, the detector will have been pre-set during manufacture based on the intended camera height and distance from the roadside. If the intended height or distance has changed significantly, please contact your supplier for advice before installing the camera.



ANPR Image with Speed Barcode

The sensor position is pre-aligned with the ANPR camera and there is no need for any positional adjustment - just set the camera up to view the required traffic lane and the speed sensor will be correctly aligned.

The speed data is encoded by the camera as a small bar code in the top left corner of the video image (see above image).

Many test monitors over-scan the image and this barcode may not be visible, but it will be evident when viewed on the ANPR processor.

10. Specifications

Model	6310 ANPR Camera (3-15m) 24v ac 6320 ANPR Pro Camera (15-40m) 24v ac 6330 ANPR Speed Camera (15-40m) 24v ac
Illuminator	Pulsed LED Infrared with fully variable IR power control
ANPR Camera	Sony 1/3" Super HAD CCD (PAL) Monochrome 650 line Shutter speed 1/10,000 th sec Minimum ambient illumination 0 lux Optical zoom 18:1 Band Pass Infrared Optical Filter Motorised zoom and focus Auto-focus-on-zoom for simple setup Local & remote control of zoom and focus
Speed Detector (Speed Camera only)	Antenna: K-band Frequency: 24.2GHz Nominal Power Out: 5mW nominal Beam Width: 12 degrees Detection Range: 15-40 metres Speed range: 5 – 120 mph Accuracy: ±1 mph
Camera Telemetry	RS485 (compatible with all SNAP Processors)
Housing	Cast aluminium with O-ring seals rated IP66
Junction Box	Polycarbonate rated IP66, with stainless steel backing/mounting plate and camera interconnecting flexible steel conduit (1 metre length)
Power Consumption	14 watts (all versions) 24 watts (with optional colour overview camera)
Size (excluding bracket)	Camera body W120mm x H120mm x L180mm Speed Camera W240mm x H120mm x L195mm Junction Box W130mm x H130mm x L80mm
Weight (excluding bracket)	ANPR Camera 1.8kg Speed ANPR Camera 2.7kg Junction Box 0.6kg
Operating Temperature	-20 to +50° C

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Videofit Limited
Cheltenham
England

www.snapanpr.co.uk