SWZ-HD User Manual

Compact, Pan, Tilt & Zoom HD Camera with IP Streaming

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Document History

Version	Date	Change Summary
v1.0	1/8/2017	Initial Draft
v1.1	1/9/2017	Updates to support new software releases
v1.2	21/11/2018	Connections Updates
v1.3	01/06/2020	HTTP Port control added
v2.0	25/08/2020	Updates to support v4.0 firmware release
v2.01	04/07/2022	PC IP Address Configuration added
v2.02	23/01/2023	Kit Content Updates

About the User Manual

This user manual describes the operation of the SWZ-HD PTZ camera.

This user manual introduces the reader to the camera's operation, which includes a description of the various components in the camera kit and a guide to their use. As part of this, hardware interfacing, connections and camera configuration are all described in detail.

Additionally the use of software tools to control the camera and view video are explained.

The guide follows a step by step approach, describing the simple initialisation sequence to get the user up and running in the shortest possible time.

This is followed up with a description of technical specifications and dimensions.

Warranty and Support

All Visual Engineering products are supplied as standard with a 12 month 'Return to Base' warranty.

In the event of a suspected product failure, users should contact the Visual Engineering support team on the telephone number +44 (0) 1206 211842 or please email us at:

support@visualengineering.co.uk

Should the fault persist or if the support team are unable to resolve the fault, it may be necessary to return the equipment.

Equipment should only be returned using the RMA (Returns Management Authorisation) process. Users should contact the support team on the above number and request an RMA number.

Introduction

The SWZ-HD incorporates the latest developments in high definition IP camera technology.

The camera uses multiple lenses and sensors to provide a stepped zoom effect, minimising the size requirement and maximising low light sensitivity.

The SWZ-HD utilises three 1080p imaging sensors, each with a resolution of two mega pixels, these are switched into the integrated ONVIF compliant dual H.264/MJPEG encoder.

Each sensor is paired with a lens of differing focal length, providing a high definition 10x optical zoom from a tiny 50mm diameter package.

As standard the SWZ-HD is shipped with 8, 16 & 35mm lenses, providing fields of view from 40° down to 8°.

The simple construction of the three prime lenses increases the effective aperture, allowing far more light to hit the sensor than would be possible with a conventional optical zoom lens.

Recording is supported by an internal 32GB micro SD card, recorded files are retrieved via FTP transfer or through the use of VE software applications.

Camera configuration is supported via the embedded web page interface or via ONVIF VMS Applications.

PTZ control is integrated into the Ethernet connection and can be accessed via the VE Camera Viewer. Similar control is also possible through ONVIF compliant VMS Applications or through the RS232/RS485 serial comms channel.

With its internal slip ring the SWZ-HD offers continuous pan and 250° of tilt. The unit is mounted in an environmentally sealed, CNC machined housing.

Kit Contents

The kit comes in a foam lined case and includes a SWZ-HD camera, communication cables and a mains power supply with wall adaptors. The kit contents shown below are listed with their part numbers.

SWZ-HD Kit Part Numbers	
① SWZ-HD Camera	110-3528
② Passive PoE Cable Set	110-8301
③ Fischer BK1-06 CAT 6 Cable 1m	110-3507
④ AC/DC Power Supply with Adaptors	110-8661
⑤ Joby Micro Tripod, Xshot XSMTRI	110-4079
⑥ Software and Documentation	110-8679

Connecting the Camera

Connect the Fischer cable (110-3507) between the base of the camera and the PoE cable set (110-8301). The PoE cable set also connects to the AC/DC power supply and a PC or similar networked enabled device to view the camera's video.

Camera control can be accessed through the camera's web browser interface.

To view the streaming video from the camera users should have a video player installed onto their PC.

Visual Engineering recommends the use of the VE Camera Viewer to view the video.

Alternatively users can use VLC, this free media player that can be downloaded from:

http://www.videolan.org/vlc/index.en_GB.html

PC Connection

Once the camera is powered it is possible to view the camera's video and configure the encoder's parameters over an IP connection to a PC.

The web browser control of the camera's encoder allows the configuration of parameters such as resolution, bit rate, and network settings, once saved all configuration changes will be retained.
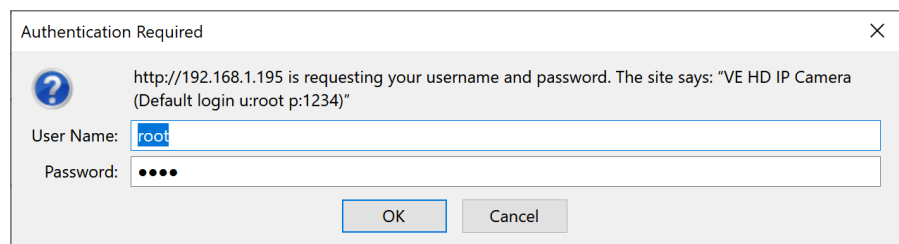
Browse to the camera's web page by typing the camera's IP address into the web browser address bar.

Camera Login

On trying to establish a connection the user will be prompted for the User Name and Password, enter the following details:

Default **User Name** is:
root

Default **Password** is:
1234

> **Authentication Required** ✕
>
> ❓ http://192.168.1.195 is requesting your username and password. The site says: "VE HD IP Camera (Default login u:root p:1234)"
>
> User Name: root
> Password: ●●●●
>
> [OK]   [Cancel]

Default IP Address

Cameras are by default set with a fixed IP address of **192.168.1.195**, this is detailed on the camera's part number label.

If the camera is not responding on this address it is possible that the IP address has been changed.

If the new IP address is unknown, the user can use the VE Camera Viewer software application to locate the IP address. This method is explained in the VE Camera Viewer section.

PC IP Address Configuration

If you are connecting the camera via Ethernet directly to a computer, you will need to configure the PC's network adapter to use a static IP address, this can be done using the steps below:

1. Open the Run app. (To do this, Press and hold Windows Key (W) on the keyboard, then press the "R" key)
2. Type the command "ncpa.cpl", then click OK.
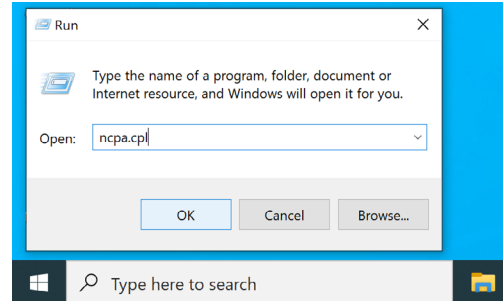
3. Right click on the network adapter where the camera is connected to, then click "Properties". (If there are multiple adapters, the correct one can be identified by disconnecting the Ethernet cable from the camera, one of the adapters should now show "Network cable unplugged" and then upon reconnection of the cable it should eventually change to "Unidentified Network", this is the one connected to the Camera)
4. In the window that pops up, select "Internet Protocol Version 4 (TCP/IPv4)" then click "Properties".
5. Another window will now pop up, select "Use the following IP Address" and enter the following: IP Address: 192.168.1.100, Subnet Mask: 255.255.255.0
6. Click "OK".
7. Click "Close".
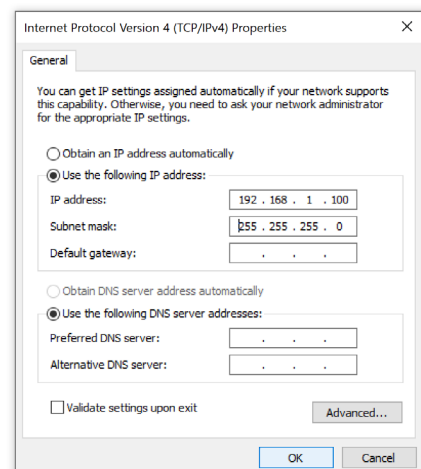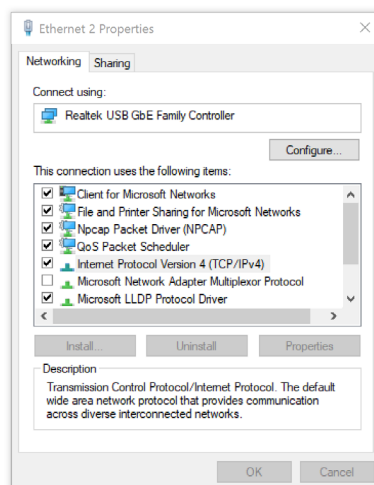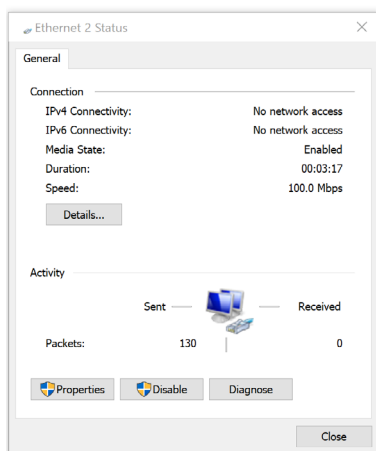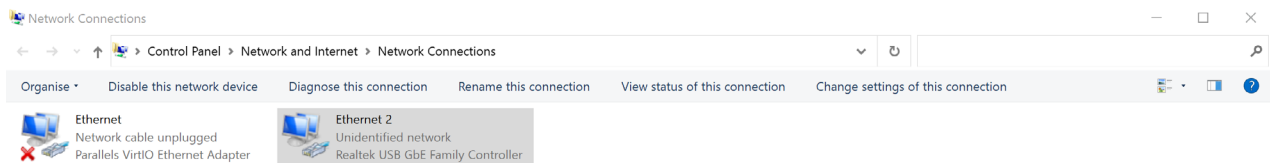
To re-configure to the original settings where the PC's IP address is obtained automatically follow the steps above except in step 5 select "Obtain an IP address automatically"

Web Browser Control

The primary mechanism for configuring the SWZ-HD camera is its web browser interface.

The example screen below shows what is to be expected once a valid connection between the PC and camera has been established by typing the camera's IP address into the web browsers address bar. In this example it is the default address of **192.168.1.195**

On the left side of the screen are the Control Menus which allow the user to configure various settings in the camera. The functions of these menus are described in the following sections.

The camera's IP address is typed in here. In this example the IP address is **192.168.1.195**

Control Menus
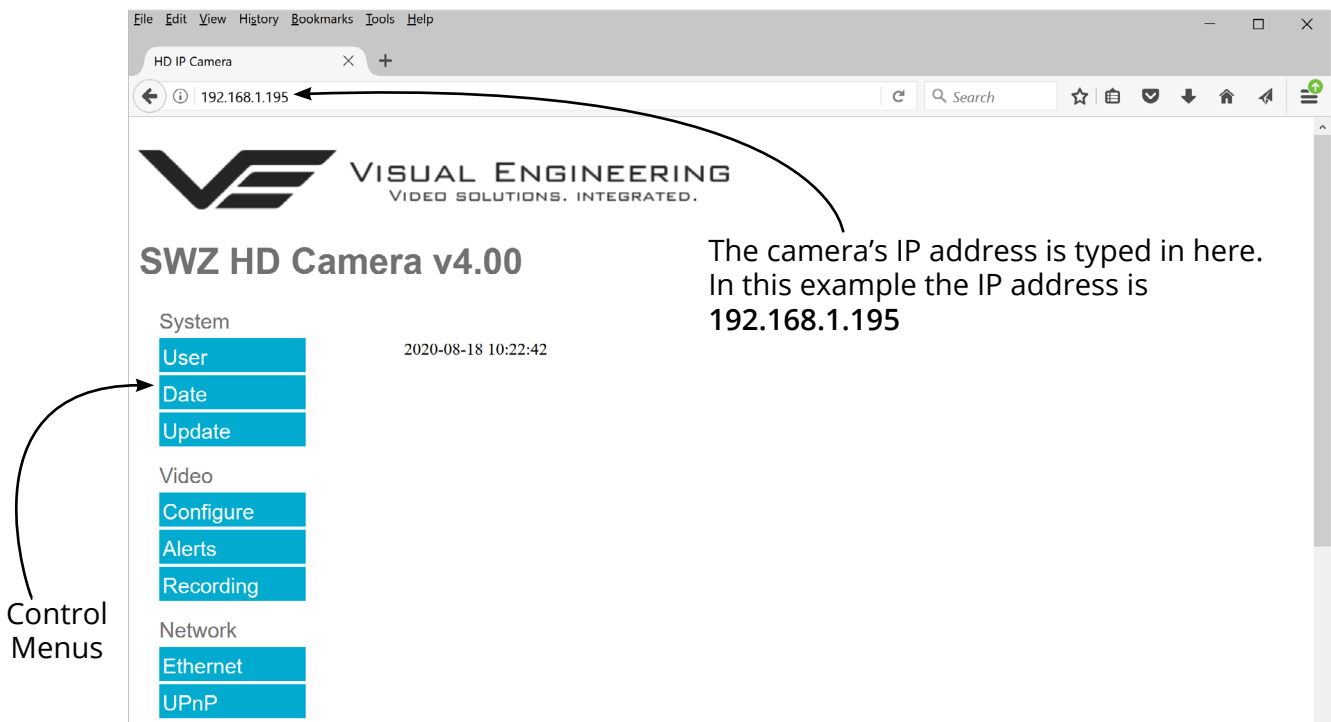
User Menu

The user menu page allows users to configure the user ID and password of the camera. It is necessary to confirm the password to change it.

There is also the option to enable/disable the following:

• FTP Server Connection
• OSD (On Screen Display)
• Audio Out

Changes are only enabled when the **submit** button is pressed.

Date Menu

The date menu page allows the user to synchronise the camera time to a SNTP server. In this instance it is necessary to have the PC connected to a network.

If a network connection is not available it is possible to synchronise the camera to the PC time by ticking the "Sync Camera to PC Time" check box and pressing the **submit** button.

The "UTC Offset" can be altered to align the camera time with the local time zone. To align the camera to the actual PC time the "UTC Offset" should be made same as the value displayed in the "PC UTC Offset" field.

Tick this box and press **submit** to sync the camera to the PC time

Update Menu

It is possible to update the firmware of the SWZ-HD camera. There are three steps to updating the camera firmware, as shown on the right.

⚠️ Only update the camera with files that have been approved by Visual Engineering. Use of other files will render the camera inoperable. ⚠️

3. Submit the file

1. Select the Update tab

2. Browse to the file

Following a **Submit** the camera will update the firmware and display the following text:
Programming in Progress...Do not remove power
Wait until the web page clears this text before trying to move away from the current web page or powering off the camera. Updates typically take approx 3 minutes to complete.

⚠️ **Important**: To fully ensure the upgrade has finished it is advised to refresh the web page and check the banner displays **"SWZ HD Camera v4.00"** or the camera starts to once again stream video before switching off the power.
It is advised that following a firmware update that the **Restore Defaults** button is pressed, this will revert the camera back to a default start state. Following a power cycle the IP address of the camera will **revert** to its **default IP address** of 192.168.1.195

Pressing the **Reset** button will completely re-start the camera.

Video Menu

The Video Page is where the camera's IP encoder parameters can be configured.

The encoder supports two encoding formats, H.264 and MJPEG. The choice of the format is initiated by the user when the video stream is started.

To initiate a H.264 stream from a camera with an IP address of 192.168.1.195 the URL is: **rtsp://192.168.1.195/h264**

To initiate an MJPEG stream from a camera with an IP address of 192.168.1.195 the URL is: **rtsp://192.168.1.195/jpeg**

It is possible to change the Encoder Type to any one of the following options:

- HD IP Camera
- PAL Input
- NTSC Input
- Guardian Node
- SWZ HD Camera
- LVDS Input 25Hz
- LVDS Input 29.97Hz
- SDI Input 25Hz
- SDI Input 29.97Hz

SWZ HD Camera v4.00

Video Configure   submit

System		
User	Source	ZA20S10
Date	Resolution	1920 x 1080
Update	Max FPS	30 FPS
Video	Encoder Type	SWZ HD Camera
Configure		
Alerts	RTSP Port	554 (1 to 65535)
Recording	H.264 Resolution	1920 x 1080
	H.264 Quality	30 (0 to 51)
Network	H.264 IDR Frame	30 (1 to 1800)
Ethernet	H.264 FPS	30fps
UPnP	Bitrate Control	◉ Constant Bitrate ○ Constant Quality
	H.264 Bitrate	6Mbit/s

M-JPEG Resolution   1920 x 1080
M-JPEG Quality   30   (0 to 63)
M-JPEG FPS   10fps
Bitrate Control   ◉ Constant Bitrate   ○ Constant Quality
M-JPEG Bitrate   8Mbit
Video Flip   ◉ Normal   ○ Flipped
Video Reverse   ◉ Normal   ○ Reversed
Video Flicker   ◉ Outdoor   ○ 50Hz Indoor   ○ 60Hz Indoor
Video Mode   ○ Colour   ○ Night   ◉ Auto
LED Control   ◉ Off   ○ Auto IR   ○ Auto White

⚠ **For normal operation it is not necessary to adjust the Encoder Type.** ⚠

For correct camera operation it is important that the Encoder Type matches the hardware configuration. For the SWZ HD Camera this is always the SWZ HD Camera type.

The **RTSP Port** is the port number the IP video stream will be transmitted on, this has the default port number 554, which can be configured to another port number as required.

The Camera has two fundamental modes of operation:

- **Constant Bitrate**. This will output a constant bit rate IP video stream, as set in the Bit rate field.
- **Constant Quality**. In this mode the bit rate is varied in a effort to maintain a constant quality. The target quality is set using a number between 0 to 51, the lower the number the higher the quality, this is set in the quality field. Amendments to this value are only allowed when the constant quality mode is enabled. In this mode the 'ceiling' bit rate is controlled by the value set in the Bitrate field, the encoder will attempt to limit the maximum bit rate to this value.

H.264 Resolution
The maximum resolution is 1920x1080, users can select lower resolutions if there is restricted bandwidth available.

H.264 FPS (frames Per Second)
The maximum frame rate is 30fps, users may choose to select lower frame rates, thereby reducing the bandwidth required.

H.264 IDR Frame changes to the I frame interval balances the stream's quality against latency, the lower the number the lower the latency. Lower latency however can incur picture degradation due to the effect of limiting the decoder buffer.

Video Flip can be useful when the camera is installed upside down.

Video Reverse can be useful when viewing the image via a mirror.

Video Flicker can be adjusted to suit the local mains frequency when the camera is used under artificial lighting conditions.

Night Video Mode will increase the sensitivity of the camera under low light conditions.

LED Control for cameras with LED illuminators included. Select either Off or Auto mode for the LED type, the LED type will become active as determined by the ambient light level.

Users should press the **submit** button to enable any changes.

Video Frame Preview

It is possible to view a single still image from the camera via a web browser using the following URL format:

http://192.168.1.195/still.jpg

The above URL is applicable when the camera is set to its default IP address.

Example Settings

The bit rate of the IP stream can be adjusted to suit the system bandwidth available. Changes to the resolution and frame rate will adjust the stream's bit rate. The following table shows example bit rates for particular resolution and frame rate values.

Bit rate Available	Resolution	Frame Rate
5-10MB/s	1920x1080	30
4-5Mb/s	1920x1080	15
3-4Mb/s	1280x720	30
2-3Mb/s	800x450	30
1-2Mb/s	800x450	15
512kb/s-1Mb/s	640x360	15
256-512kb/s	320x180	15

Alert Control

Motion and light level triggers can be configured such that an audible tone and a visual alarm alerts the viewer.

These controls can also be set using the VE Camera Viewer

Motion and dark to light level triggers can be used to trigger an OSD (On Screen Display) event. For this to occur users should ensure that the OSD Print option in the User Menu is enabled.

The level of motion required to invoke a trigger can be set with the Trigger Sensitivity between: Off, Low, Mid or High.

The duration of the alarm event will be the duration of the motion event plus the time set in the Trigger Duration field, values from 0 to 100 seconds are valid.

Users should press the **submit** button to enable any changes.

Triggered OSD Alerts

Ethernet Menu

Network parameters can be set on the SWZ-HD camera by selecting the Ethernet menu.

The camera can operate with a fixed IP address, or can be allocated an IP address from the network. This is configured using the enable/disable Use DHCP Server button.

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SWZ HD Camera v4.00

System

| User |
| Date |
| Update |

Video

| Configure |
| Alerts |
| Recording |

Network

| Ethernet |
| UPnP |

Ethernet   submit

IP Address	192.168.1.195
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS Server	210.94.0.73
Secondary DNS Server	211.33.40.5
Use DHCP Server	○ ENABLE ⦿ DISABLE

| HTTP Ports | 80 ⌄ |

HTTP Ports

The default HTTP port and ONVIF HTTP port to control and configure the camera is 80.

Selecting one of the five options as shown in the drop down box on the right will set both the HTTP port and ONVIF HTTP port number.

Moving the camera's HTTP port number should only be carried out by users confident of keeping a track on what settings have been applied to the camera.

Setting a new IP address and new HTTP port simultaneously should be avoided.

Users should press the **submit** button to enable changes.

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SWZ HD Camera v4.00

System

| User |
| Date |
| Update |

Video

| Configure |
| Alerts |
| Recording |

Network

| Ethernet |
| UPnP |

Ethernet   submit

IP Address	192.168.1.195
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS Server	210.94.0.73
Secondary DNS Server	211.33.40.5
Use DHCP Server	○ ENABLE ⦿ DISABLE

HTTP Ports	80 ⌄
	80
	8008
	8080
	8081
	8082

Once a camera has been set to a new port or IP address the web browser will be automatically re-directed to the camera's new URL.

In the example shown below the camera has been set to an IP address of 192.168.1.195 and port 8080. This extended URL format should be used to address cameras reconfigured to a HTTP port number which is not the default number of 80.
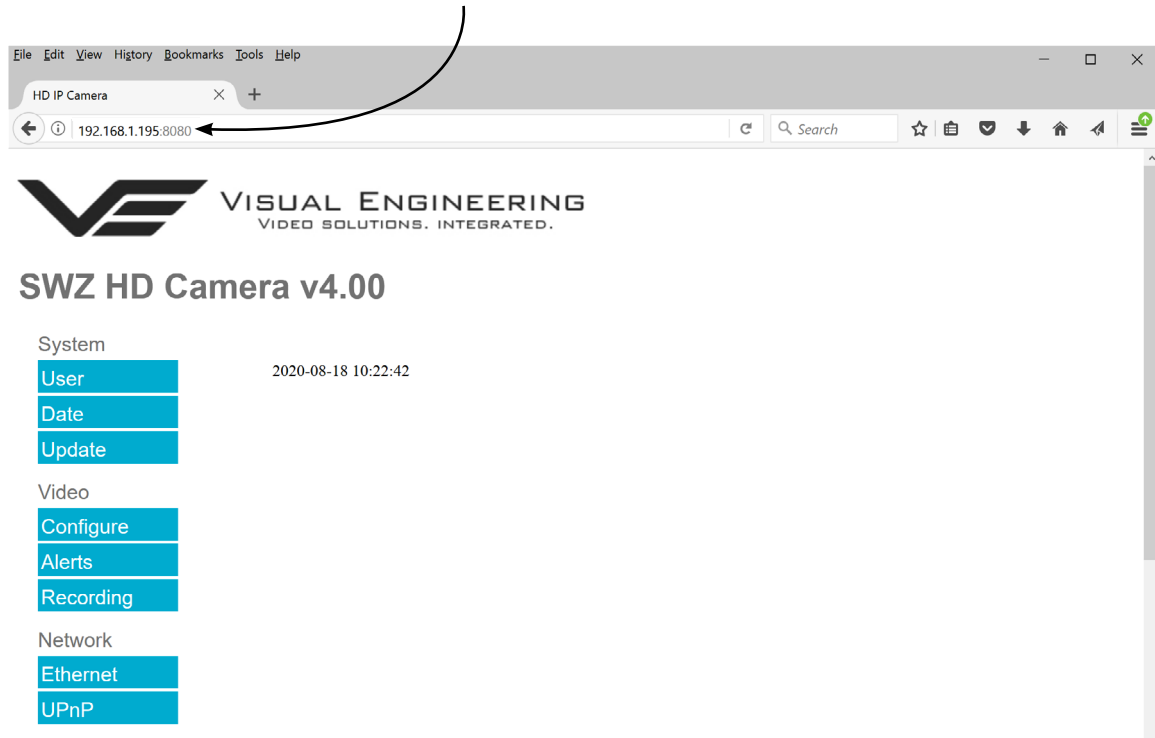
Unreachable Cameras

If a camera has been set to an unknown IP address it can be found by using the VE Camera Viewer this will find any SWZ-HD Camera's IP address regardless of the IP subnet.

If unsure which port the camera has been configured to run a VMS software tool such as the ONVIF Device Manager. More information on VMS tools can be found in the Video Management System section.

UPnP Menu

The Universal plug and play menu allows the user to set the Device ID and Camera Name.

Users should press the **submit** button to enable changes.

Recording Menu

The integral SD Card has a capacity of 32GBytes, this offers 17 hours of continuous recording at a total IP bit stream of 4Mb/s or 34 hours at 2Mb/s, etc. If recording capacity is achieved there is a user option to either stop recording or overwrite. The recording web page menu is shown below.

Note: Recording is temporarily paused during activity on the camera's web interface.

Timed Recording

There are 4 options for timed recordings, these are; Off, Continuous, Once and Daily.

Off = No recording takes place.

Continuous = Recording Continuously.

Once = Record once when the start time is reached and record for the set duration.

Daily = Record daily starting when the start time is reached and record for the set duration.

Trigger Recording

Trigger Recordings can be triggered by either motion or light level change.
Trigger recordings are disabled by default, if enabled, a recording will be made.
The duration of the recording will be the duration of the motion event plus the time set in seconds in the trigger duration.

SD Card Management

In the event of the SD card becoming full, there are two options for Overwrite Control. One option is to have the recordings stop when the SD card is full, or the other option is to have the oldest material to be overwritten when the SD card becomes full.

Following any changes made in the menu the user must press the **submit** button . Wait until the camera finishes re-configuring before powering off the camera.

Erase and Format

The SD card will be completely erased and formatted if the **Erase** button is used. The user will be asked to confirm that this is the intention before the SD card memory card is actually erased.

Recovering Recordings

Record Format

Recordings are stored on the SD Card as individual 10 second duration .avi files. This is for a frame rate of 30fps, lower frame rates will increase the length of the stored file proportionately. For example a frame rate of 15fps will create a 20 second video clip.

Video clip lengths are kept intentionally kept short, this allows integration with the VE Camera Viewer so that recent events can be played back with a low data upload overhead.

The file size is proportional to the total bit rate selected by the user.

YYMMDDHHNNSS

For example a file with the name of: 170801134611 would have the meaning:

YY = Year is 2017
MM = Month is 08, August
DD = Date is 01, the 1st of the month
HH = Hour is 13, 24 hour format
NN = Minutes is 46
SS = Seconds is 11

Additionally files containing motion will have an 'm' appended on the end. This is so any video clips with movement in the video can be easily identified. When searching motion files it is advisable to also check for activity in the video in the file preceding any motion tagged file.

For the file described above with motion in the video it will have the complete file name of:

170801134611m.avi

Recordings are stored in directories for each individual hour, the directory has the form:
YYMMDDHH
Since each file is 10 seconds long there will only ever be a maximum of 360 files in each directory.

Recordings can be accessed and downloaded via FTP (File Transfer Protocol) using either the VE Camera Viewer or an FTP application such as FileZilla.

The VE Camera Viewer is available to download from the VE website at:
www.visualengineering.co.uk/supportdownload/26

FileZilla is a free application and can be downloaded from
http://sourceforge.net/projects/FileZilla/

If using FileZilla, downloaded recordings can be played in players such as VLC either individually by selecting Play stored File or in groups by creating a play list.

Using FileZilla

With FileZilla downloaded, installed and running it will appear as shown below.

Set the Host = IP Address of Camera, default IP Address of **192.168.1.195** is shown here
Username = Camera Username, the default is **root**
Password = Camera Password, the default is **1234**

Then press 'Quickconnect'
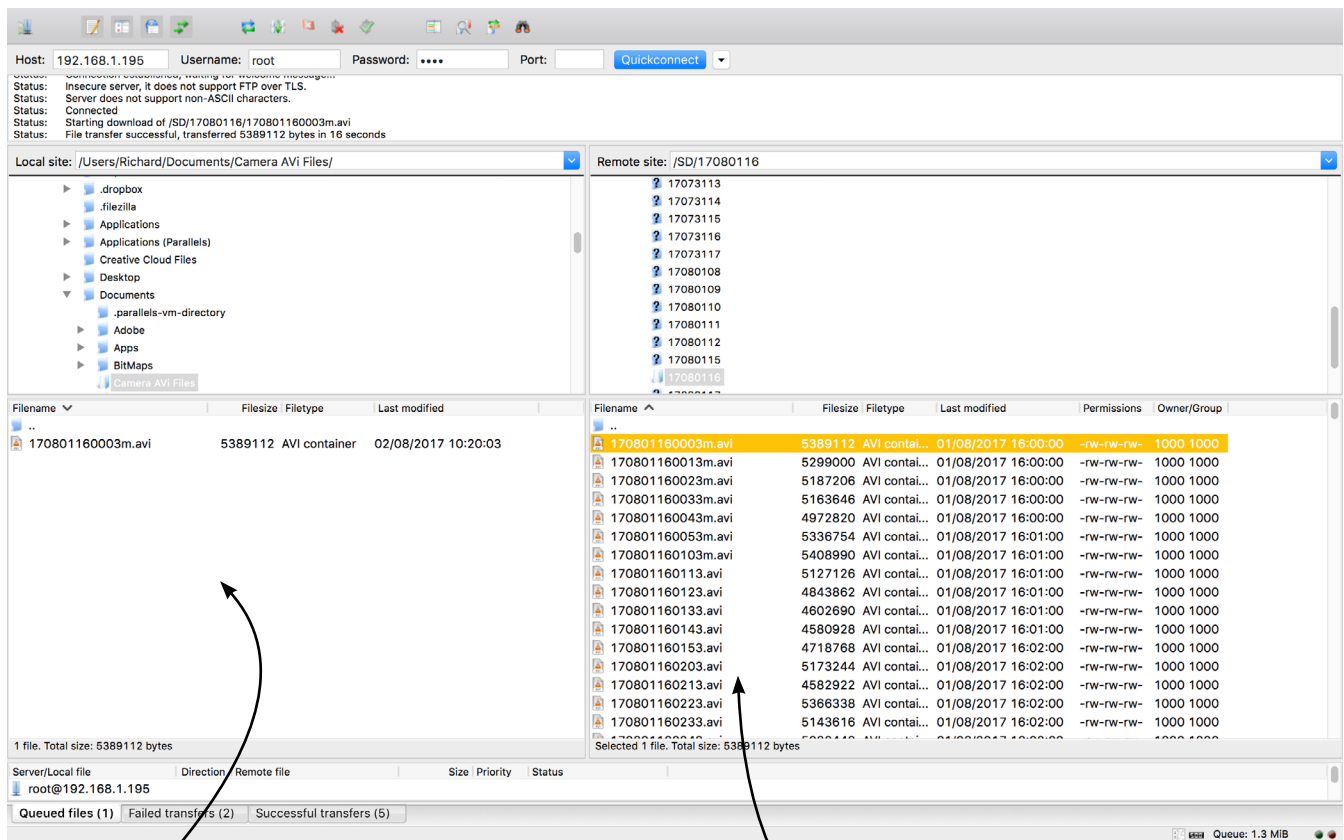
Files can be dragged across to the location selected on the local computer

File structure on the remote SD card of the camera

Recordings on the camera will be stored in the directory structure: SD/YYMMDDHH/ as shown above. Individual files can then be selected and downloaded or dragged across to the storage location selected on the local computer.

Using VLC to Play Streams

The SWZ-HD camera is compatible with many players, a simple freeware player is VLC Media Player. Users can download VLC Media Player and run the application.
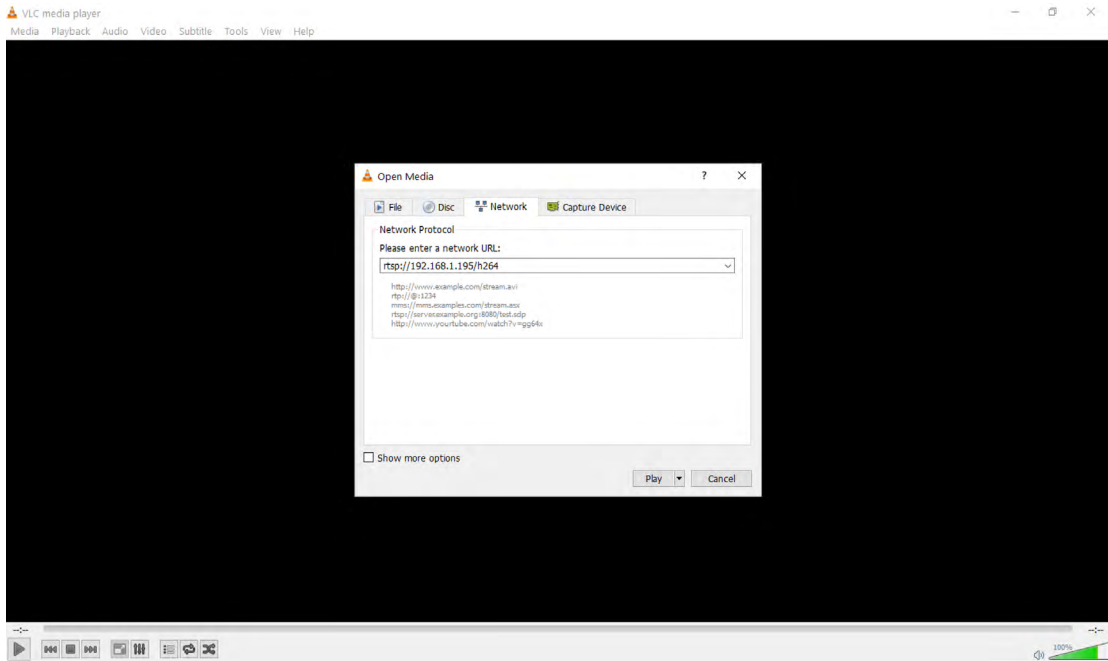
VLC is a free media player and can be downloaded from:

www.videolan.org/vlc/index.en_GB.html

- Enable the VLC Media Player application.
- From the Media menu select the 'Open Network Stream' as shown below.
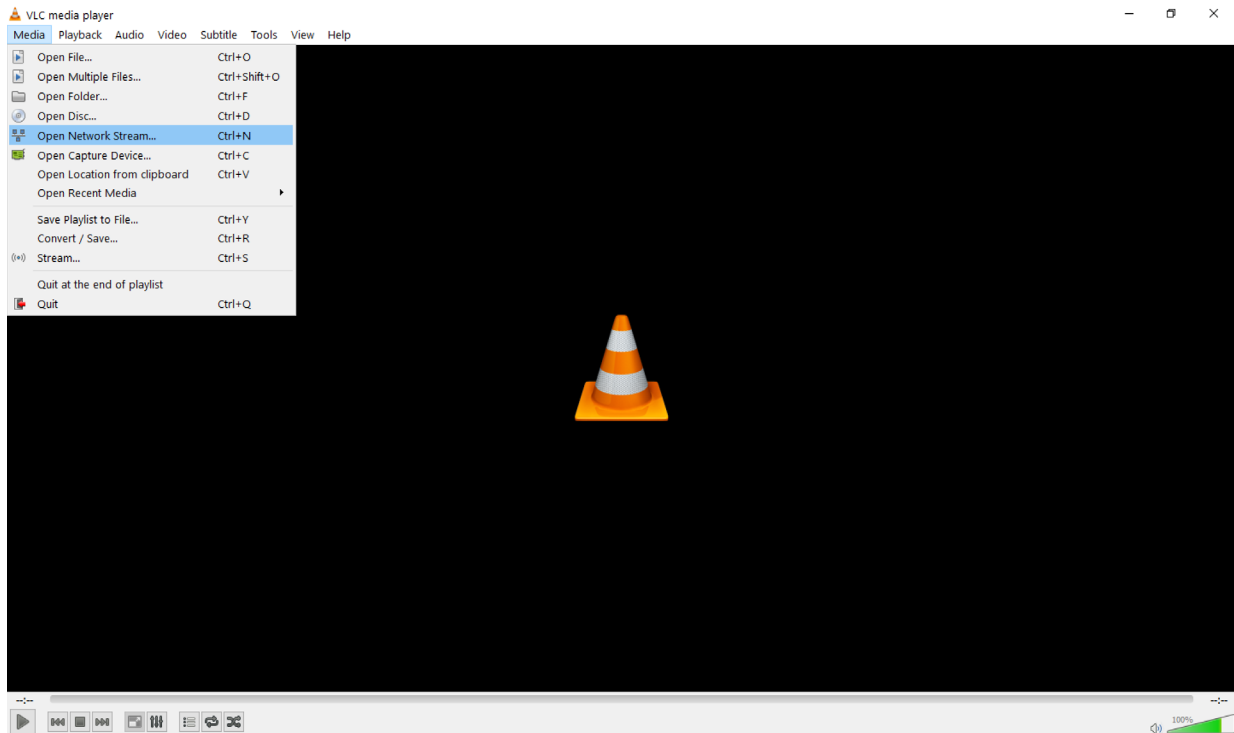
- Enter the camera URL and stream type, eg: **rtsp://192.168.1.195/h264**
  The URL depends upon the IP address of the camera and the stream type,
  eg: h264 or jpeg. This is shown below

- Press play and wait for a few seconds, the video stream will appear.
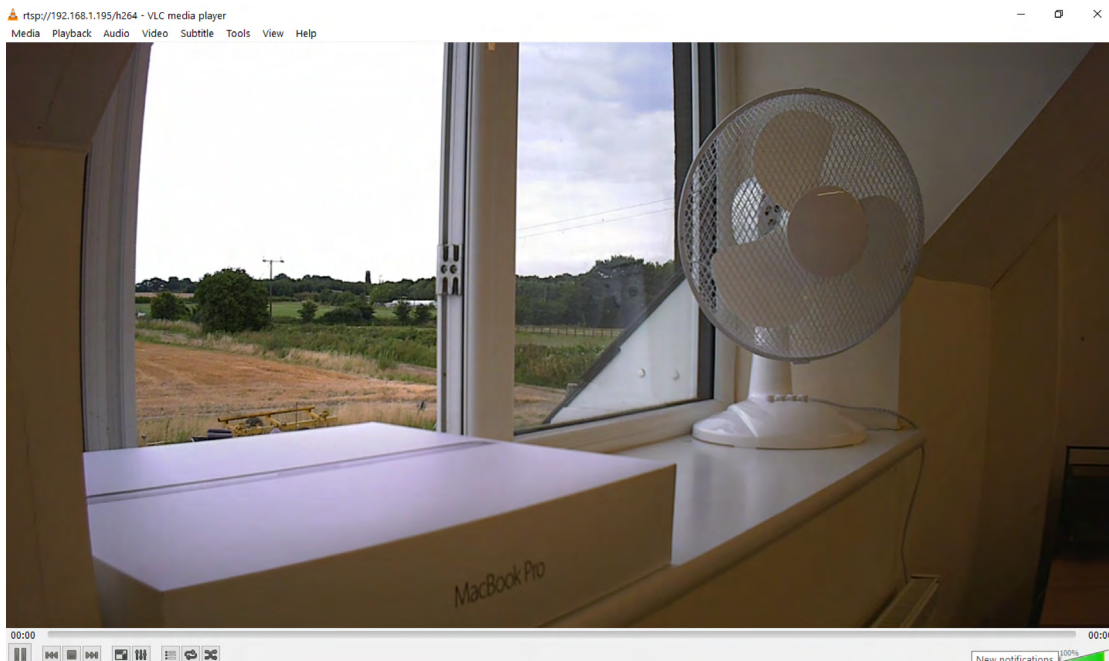
The VE Camera Viewer

The VE Camera Viewer is a software application used to display the video from all cameras in the system. It will auto detect any VE cameras that are on the network and populate a list on the left hand side of the player.

The VE Camera Viewer software can be downloaded from the VE website support page or from the memory stick provided in the kit.

www.visualengineering.co.uk/supportdownload/26

Viewing Video

The VE Camera Viewer is intuitive and simple to use. Any camera on the network will be displayed in a list on the left hand side of the player. The video can be viewed by clicking the "Eye Icon" next to the camera's name. The video panel selector can be used to select how the video panels are arranged, this is useful when several video feeds are in the system.
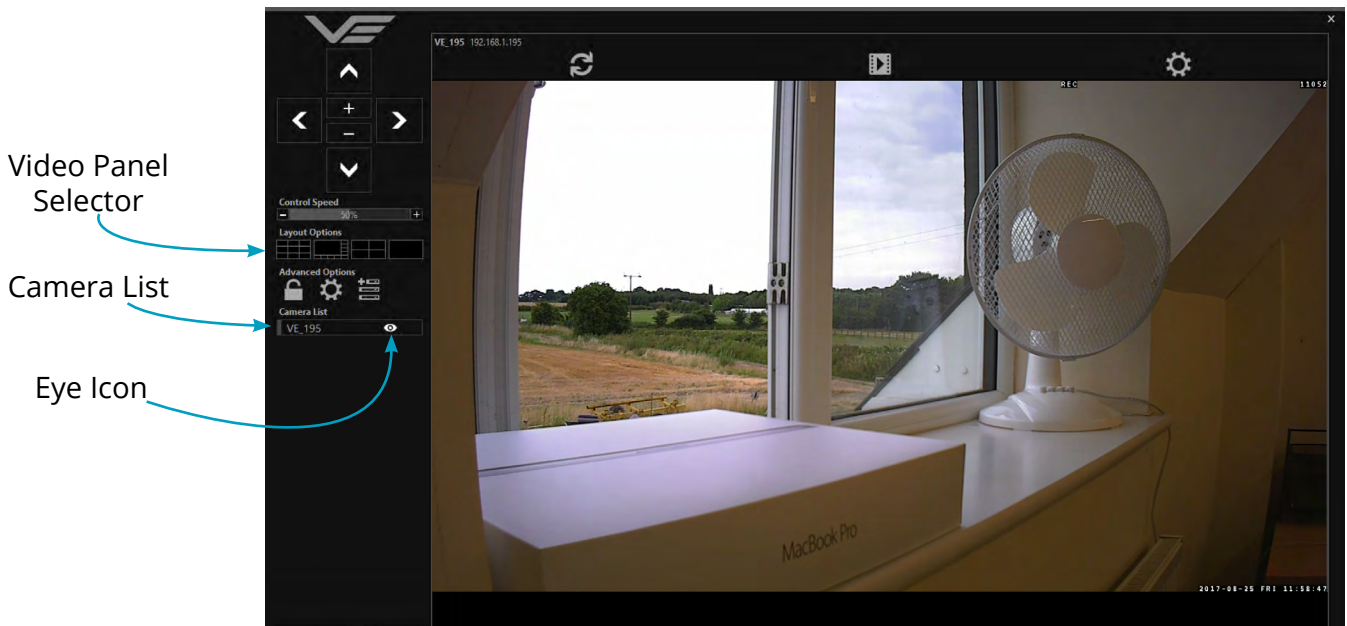
Video Panel Options

The top of the video panel displays information on the playback mode of the displayed video. In the above instance the video playback is a Live stream, it can also be noted that the camera is currently recording since the REC icon is shown. Since the SWZ-HD camera does not contain an integrated battery the power source will be displayed as a DC input.


If the mouse is hovered between the video panel and the above information the player will offer the user the three options, Refresh the video session, Play a Recording or edit the Settings.

Settings

- The video can be orientated as required using the Flip Video and Mirror Video options
- The Motion Sensitivity can also be set to: Off, Low, Mid or High
- The Trigger Duration sets the alarm time (in secs) following the end of the triggered event
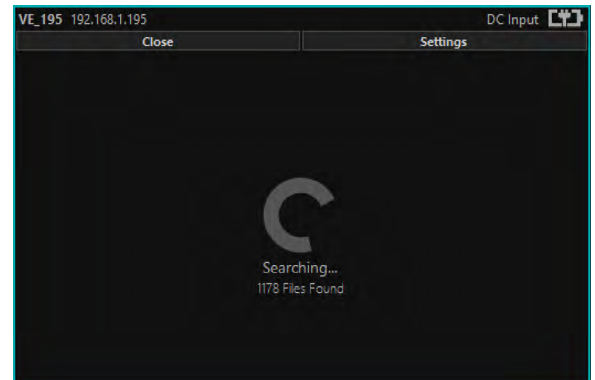- The audio can be enabled and disabled as required
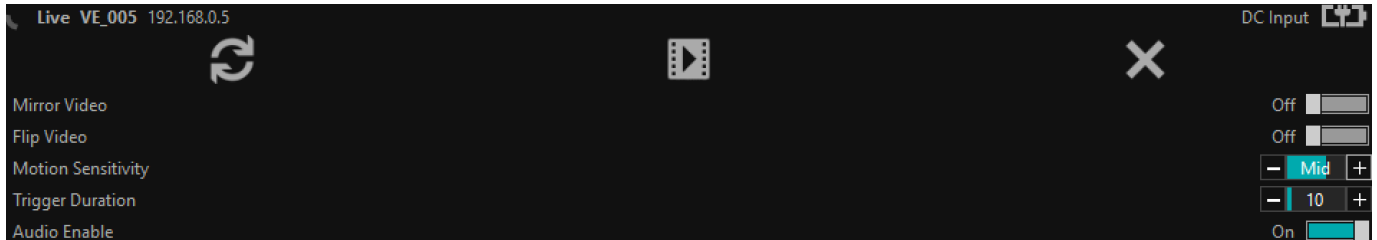
Play Recordings

If the Play Recording option is selected the player will allow the user to select a recording to playback.


The player will find all available files that are stored on the SD card in the camera. The update screen as shown on the right will be displayed until all files are discovered.


Users can then select a segment of recorded video to be played back from memory. Options are from 30 seconds to 10 minutes.

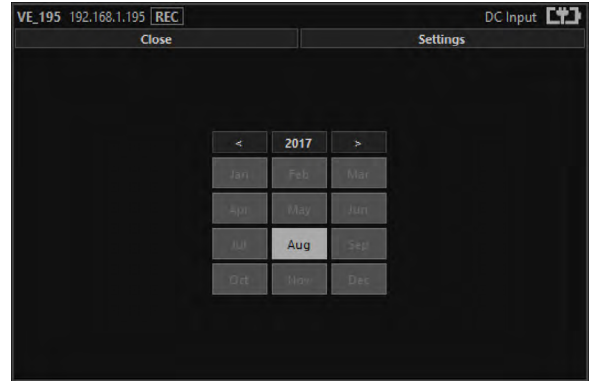The full range of download periods is only available in advanced mode.

To access the advanced mode the user needs to hold keyboard keys "A", "D", and "V" then click on the padlock icon next to the Advanced User text.
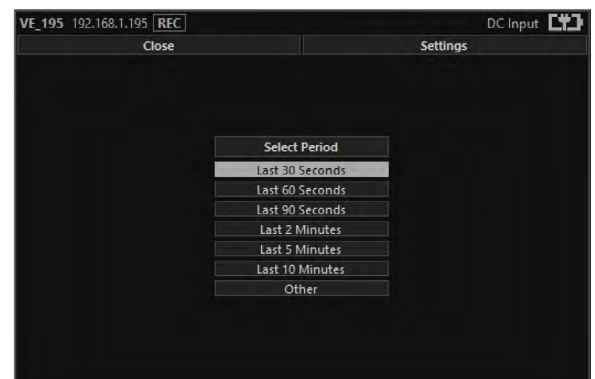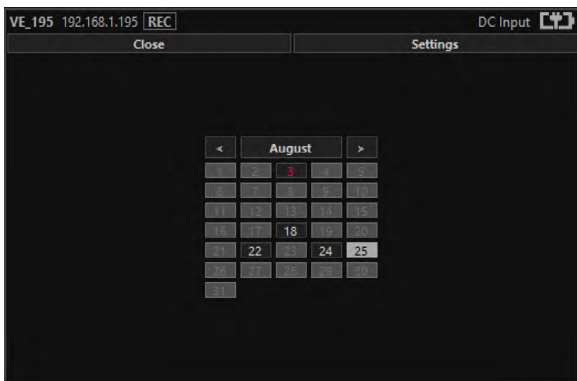
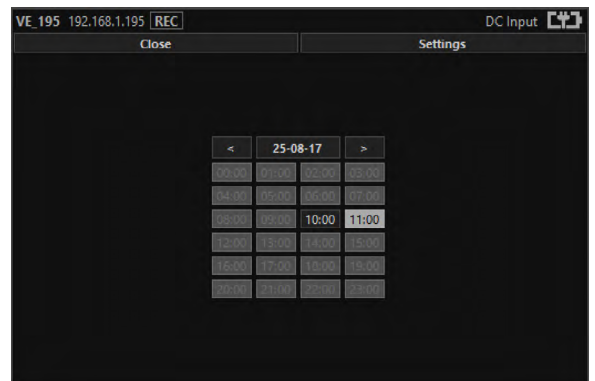Select "Other" to choose a specific period of timed recording.
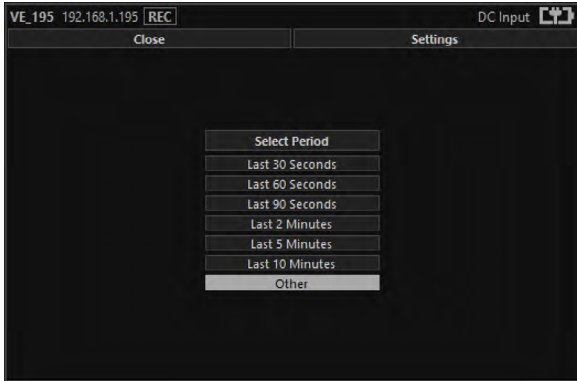
Select the required month, months that don't hold recordings are greyed out.

Select the required date, days that don't hold recordings are greyed out.
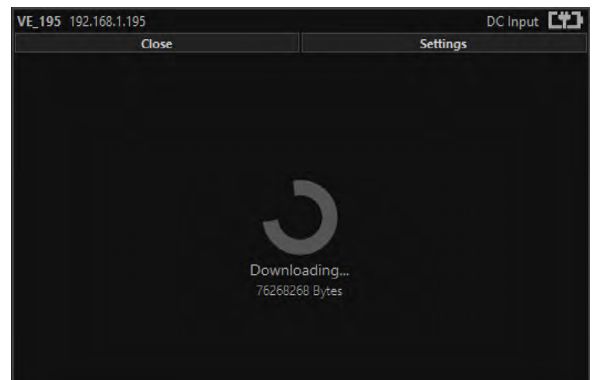

Select the required hour of day, hours that don't hold recordings are greyed out.

Select the required start and end time from the time dial. Press the play icon.

The files will then be downloaded, after which time the video recording can be viewed in the video panel.

Video Panel Coloured Border

The video panel is edged in a colour, the meaning of which is described in the following table.

Video Panel Edge Colour	Meaning
Red	A trigger alarm has occurred
Blue	The panel has been selected for Pan Tilt Zoom Control
Grey	No trigger alarms & not selected for PTZ Control

Trigger Alarms

The trigger alarms are enabled either via the player or the web interface. Once a trigger event occurs it will be displayed and sounded in the player. The video panel will have a red edge border and an icon will be shown in the bottom left corner. The trigger icon is either a motion trigger or a low to high light level change as described in the table below.

| Trigger Icon	Trigger Source
	A low light level to high light level transition has been detected.
	Motion has been detected in the video.

Pan, Tilt & Zoom Control

Select a camera from the Camera List, this will cause the selected camera description being edged in blue, as shown on the right. The video panel for the camera will also be edged in blue.

- Pan Control: left & right arrows
- Tilt Control: up & down arrows
- Zoom in: + symbol
- Zoom out: - symbol

Advanced User

To access the advanced mode, which allows full access to the stored recordings, the user needs to hold keyboard keys "A", "D", and "V" then click on the padlock icon next to the Advanced User text.
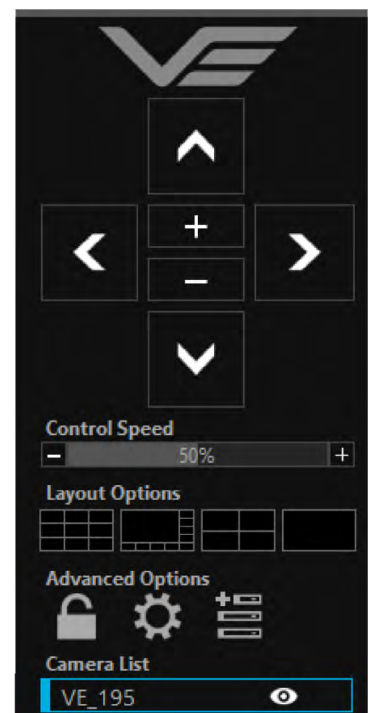
Selecting the centre settings icon allows access to several player settings including:

- Network Cache Size
- Encoder Type
- Internet Protocol
- Multicast

Increasing the Network Cache Size will cause the player to cache more data before streaming video. Decreasing this value will result in the latency of the video stream being reduced, values below 350mS are not recommended.

The camera is capable of transmitting H.264 and MJPEG video streams, select the preferred stream to be viewed.

The video stream packets can be sent over TCP or UDP, select the preferred transport method. More information on these methods is described in the TCP Vs UDP section.

Select Multicast to On sends a request to the camera to send a multicast video stream. Currently the camera does not support multicast streaming.
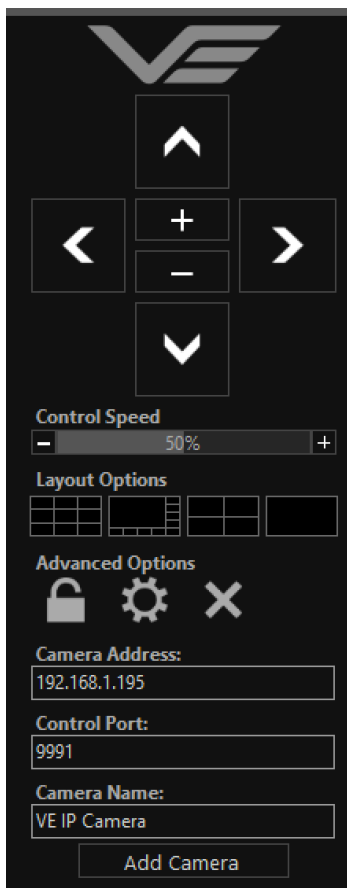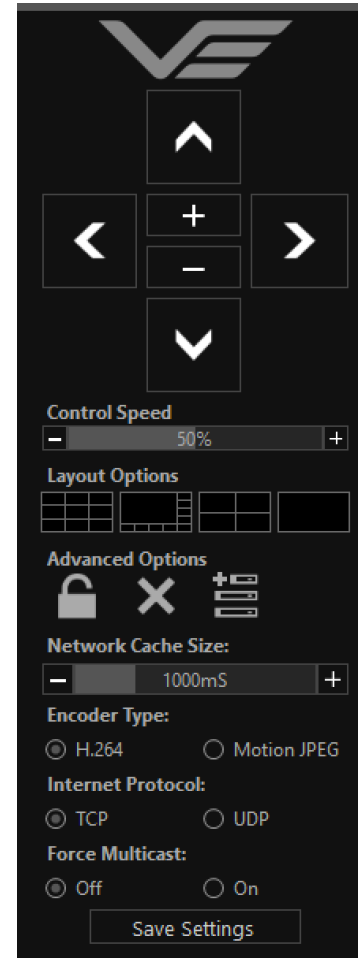
Selecting the right hand side icon allows the user to manually add a camera by IP address.

Adjustment to the TCP/IP control port and camera name settings can also be made.

Multiple Viewing

Multiple Viewers

It is possible to connect multiple instances of a video player to a single camera.

There is however a maximum limit at which the encoder bit rate can be set to whilst streaming video to multiple viewers using the unicast method of transmission. Bit rates set to a value greater than the allowed maximum value for a given number of clients will result in video breakup.

With the camera set to constant bit rate mode, the table below describes the maximum bit rate the camera can be set to for a given number of connected viewing clients using the unicast method of network transmission.

Client Count	Maximum Camera Bit rate
1	10Mb/sec
2	8Mb/sec
3	6Mb/sec
4	4Mb/sec

TCP Vs UDP

The camera is capable of transmitting a video stream over either UDP or TCP transmission protocols. The benefits of each protocol is particular to the specific deployment of the camera. In general terms UDP is a more efficient method which carries less overhead than TCP but lacks some reliability as not all video frames are required to be received in full.

For example, if the camera is used in a scenario where the video is being monitored in real time and the stream is being sent across an RF link that is susceptible to break up, UDP would be the best choice. The reason for this is that re-sending any missed video packets using the TCP method will result in out of date video frames being reconstructed, which will ultimately result in an increase to the video latency.

TCP/UDP in VLC
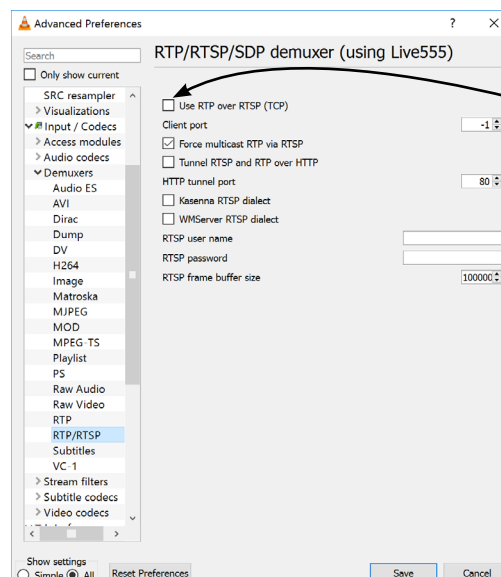
If this check-box is ticked VLC will request that the camera sends video packets over TCP, otherwise it will request that the camera sends video packets over UDP.

ONVIF

Video Management Systems

The SWZ-HD Camera supports the ONVIF protocol such that it can be controlled and viewed on ONVIF compliant VMS platforms such as the ONVIF Device Manager, Milestone and Airship.

ONVIF Device Manager is available as a free download available here:

https://sourceforge.net/projects/onvifdm/

The software will locate SWZ-HD Cameras on the network. If the Network settings tab is clicked it will display the port that the SWZ-HD Camera is currently configured to. In the example shown below camera's port is set to 8080, therefore the camera's URL is 192.168.1.195:8080
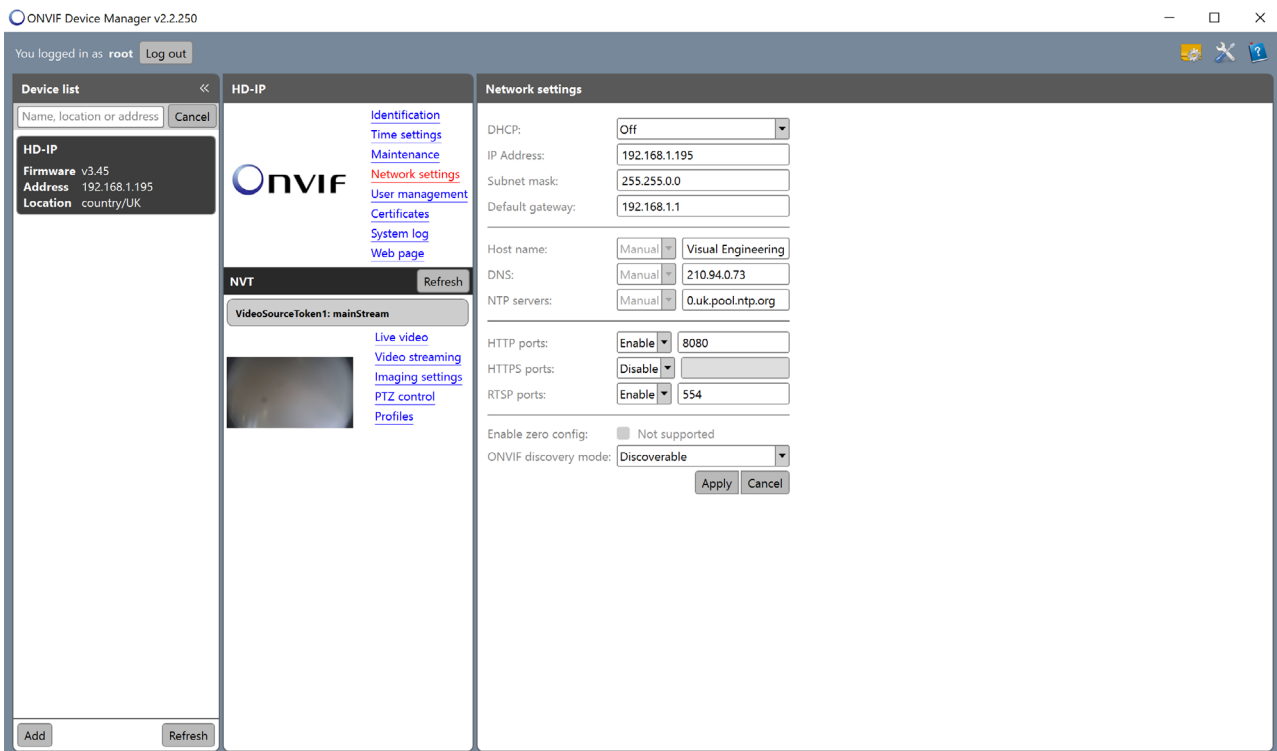
If the controlling PC and SWZ-HD Camera are on separate IP subnets and the camera's IP address is unknown run the VE Camera Viewer application, which will find the IP address of the camera.

Control Across The Internet

Port Forwarding

It is possible to control the SWZ-HD Camera and view its video remotely through an internet connection. One way of achieving this is through port forwarding on a router that is connected to the internet and also connected to the SWZ-HD Camera.

As many internet enabled routers are capable of providing this gateway, the settings and control interface will differ dependant on manufacturer and model.

The example below shows a router's NAT/PAT (Network Address Translation/Port Address Translation) configured to forward port 8080 (the HTTP port) and port 554 (the RTSP port) of the camera which has an IP address of 192.168.1.194

Both of these ports can be configured in the camera through the following camera web pages:

• The HTTP port can be configured in the Ethernet Menu
• The RTSP port can be configured in the Video Menu

NAT/PAT settings

these rules are needed to authorise a remote communication from Internet to reach a specific device of your LAN. you can also define the ports(s) that this communication will use.

NB: following rules are only applied with IPv4.

⚠ warning : make sure you have not filtered these ports in the firewall.

customize rules

application / service	internal port	external port	protocol	device	activate	
Camera H ⟳	8080	8080	TCP ⇕	192.168.1.194 ⟳		save
HD IP Camera	554	554	both	192.168.1.194	☑	delete
Camera HTTP	8080	8080	TCP	192.168.1.194	☑	delete

Remote Configuration

Access to the remote camera's web pages are addressed by using the gateway IP address of the router along with the HTTP camera port that has been forwarded.
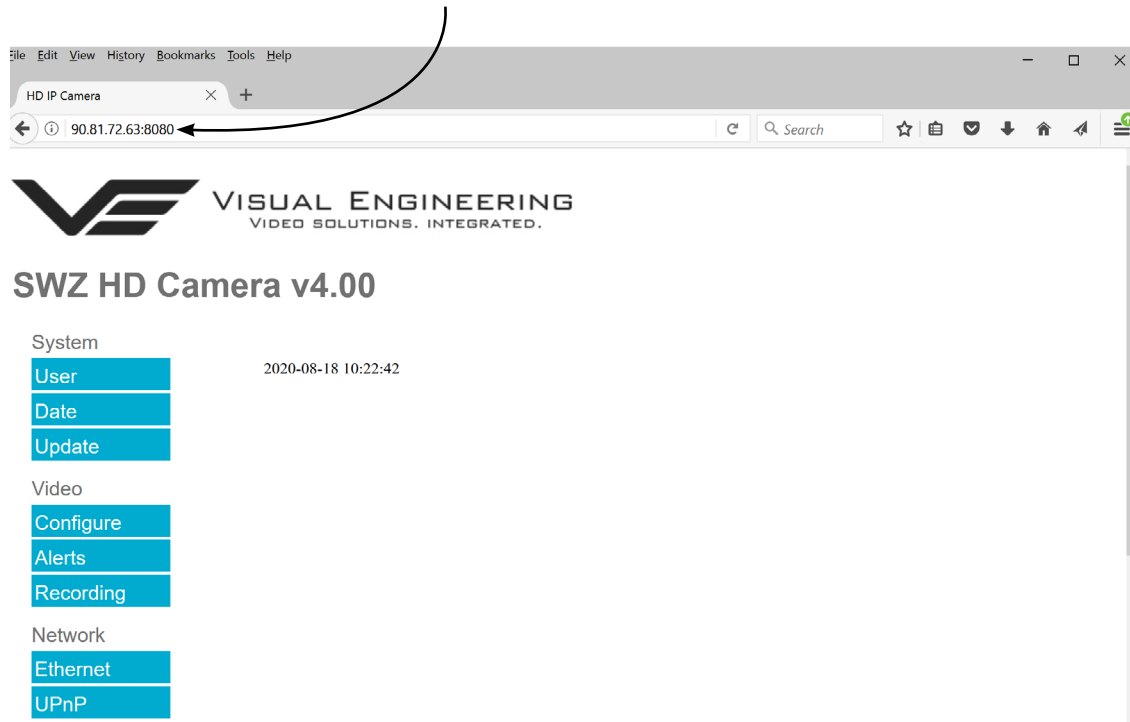
Remote Video Streaming

To stream the camera's video across the internet a URL similar to the ones described below should be used.

- **rtsp://90.81.72.63:554/h264**
- **rtsp://90.81.72.63:554/jpeg**

In the above URL examples the internet router's gateway IP address (90.81.72.63) and the camera's RTSP port (554) should be substituted where relevant.

Ensure that the video bit rate of the camera is matched to the available connection capacity.
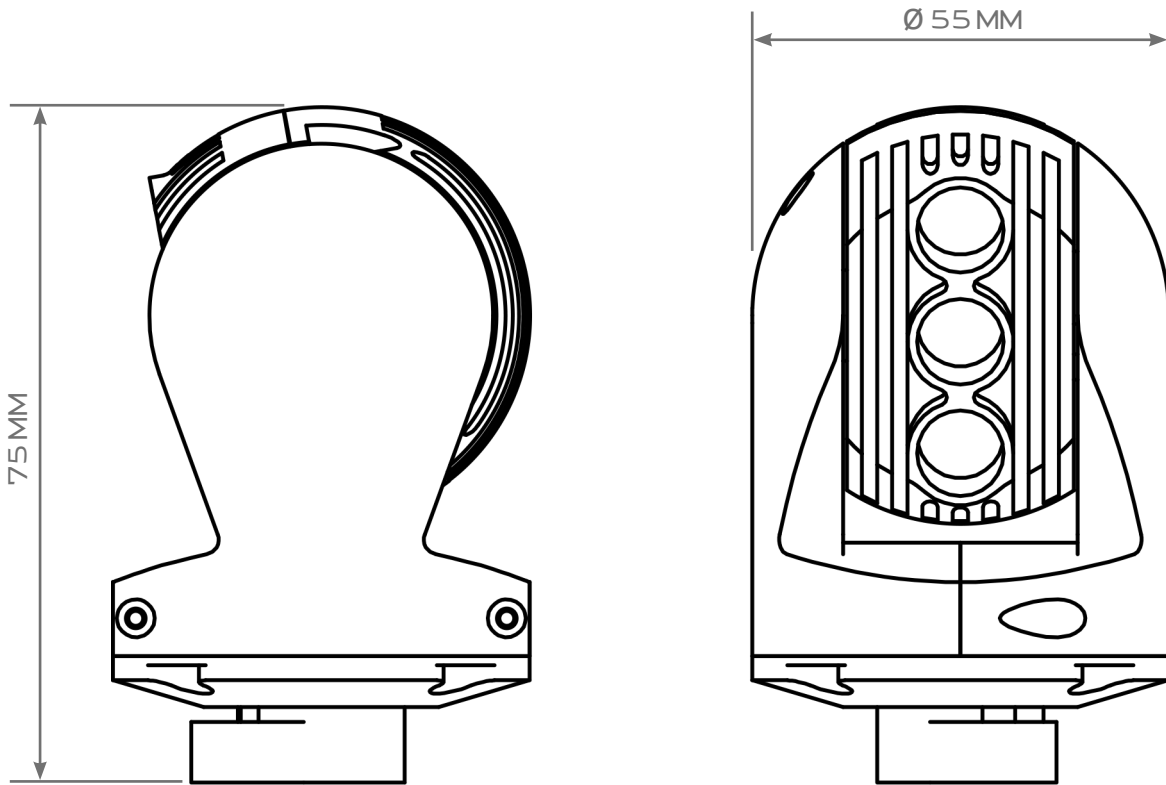
Specifications

Specifications			
Camera Sensors	3 x 2 Mega Pixel, CMOS	**Pan Range**	360°
Camera Sensitivity	< 0.1 Lux	**Tilt Range**	250°
Camera Resolution	Max: 1920 x 1080p30	**Streaming Protocol**	RTSP over TCP or UDP
Max Bit Rate	10Mb/s	**Configuration**	Web Page Interface
Video Encoding	H.264 & MJPEG	**Power Consumption**	< 2W
Streaming Protocol	RTSP over TCP or UDP	**Input Voltage**	9v to 15v
Fields of View	40° 17° & 8° Horizontal	**VMS Compliance**	ONVIF, PTZ Supported
Lens Mount	S-Mount M12 x 0.5mm	**Environmental**	IP65
Recorder Storage	32GB Micro SD Card	**Dimensions**	ø 50mm x 75mm

Dimensions

Ø 55 MM

75 MM

British
Assessment
Bureau

ISO 9001
QUALITY MANAGEMENT

Product specifications subject
to change without notice

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