Video Server Software & Vemotion Encoder

Support Guide

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CHANGE HISTORY

Version	Date	Change Summary	Author
V1.0	25.04.2016	Initial Draft	TPL
V1.1	17.05.16	Enc 3.5.2 VS 2.3.6	TPL
V1.2	15.08.16	GPS/Watchdog/File export	TPL
V1.3	20.09.16	Enc 3.6.8 VS 2.3.16	TPL
V1.31	13.10.16	HD-SDI	TPL
V1.32	14.11.16	Sim Card APN & GPIO	TPL
V1.33	28.03.17	Record update	TPL
V1.34	21.04.17	Pin outs for PTZ	TPL
V1.35	12.06.17	VB-36 Sim set up/remove camera control page/add audio ENCv3.7.7 VSv2.4.5	TPL
V1.36	30.06.17	Virtual port simulator	TPL
V1.37	30.08.17	Changes to video server IP/RTSP camera set up VSv2.4.10 Enc v3.7.8	TPL
V1.38	17.11.17	Disable Wi-Fi on VB-30mu	TPL
V1.39	15.01.18	FFMPEG	TPL
V1.4	02/03/18	Data Saver & GPS recording Enc 3.7.12 VS 2.5.3	TPL
V1.45	09/04/18	Tidy up	TPL
V1.5	23/5/18	NEW update Enc v3.8.0 & VS v3.0.0	TPL
V1.6	21/3/19	Triggers updated to include VB30mu	TPL
V1.7	13/5/19	Enc v3.8.6 VS 3.0.10	TPL

FOREWARD

Vemotion specialise in the acquisition of analogue and IP video streams, compressing via H264 and transmission of high quality video over low bandwidth and unreliable networks, as well a cost effective delivery over high bandwidth providers. These networks include, but are not limited to Cellular, Satellite and broadband bearers. Vemotion gives the ability to switch dynamically between low and high bandwidth video streams, adjusting the video quality to suit. HD 1080p streams are catered for and ONVIF compatibility allows integration into Video Management Software (VMS) platforms. Viewing the transmitted stream can be done via a multitude of platforms, from mobile phones to command and control rooms.

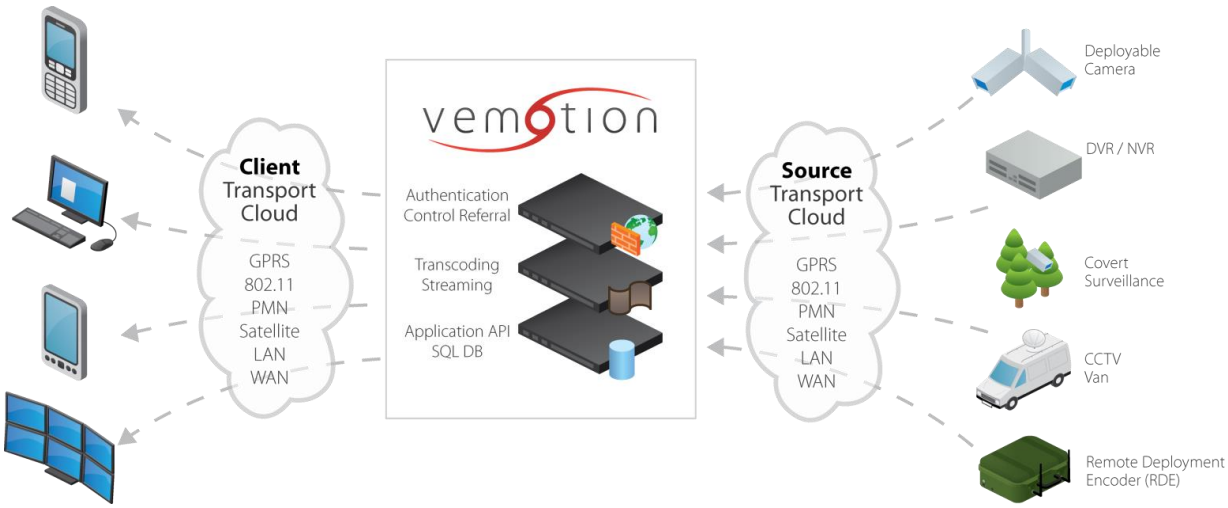
This handbook provides a reference for users of the Vemotion applications. It aims to help you install and set up the Vemotion software.

The system is flexible and may be tailored to meet specific business requirements.

For further details or if you need any extra support please contact Vemotion.

HOW DOES VEMOTION WORK?

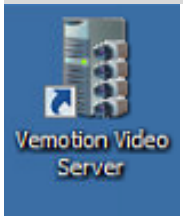
Vemotion specialise in innovative video compression enabling multiple live video channels to be transmitted to a server and then multi cast to a platform of your choice. You can allocate available bandwidth between channels, increasing picture resolution to view a scene of particular interest.



VEMOTION SOFTWARE

There are many software applications that work in conjunction with one another allowing video streams to be taken from any source and transmitted to the viewing client.

Vemotion Video Server (VVS)

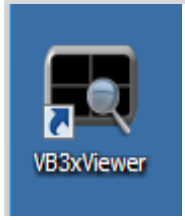


The VVS allows you to program how many cameras you wish the Encoder to have access to by adding a channel per camera. The VVS also allows you to record the camera of your choice at the specific resolution, bit rate & frame rate desired, as well as activating GPS locatoin. It also permits you to add either analogue or IP Cameras, add PTZ control and handle encryption keys. It then sends the streams to the Vemotion Encoder software to begin processing.

Vemotion Encoder (VE)

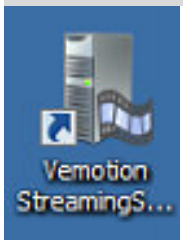
The Vemotion Encoder transcodes live video captured from the camera into highly-compressed data finding a perfect balance between quality and compression.

Local User Interface (LUI) – VB3X Viewer



The VB3X viewer will allow you to connect directly to the Vemotion Video Server to enable a live stream from the camera to be viewed on the Hardware Encoder itself acting as a PC or to enable the video feed to be viewed on an HD screen.

Vemotion Streaming Server (VSS)



The Vemotion Stream Server is used to consolidate and distribute the Vemotion video streams.

Vemotion V264 Player and Vemotion Viewer

This is the software that displays the live video on the viewing device of your choice, be it CCTV control rooms, PC, laptop or Android & iOS phones or tablet. The software not only displays the live video, it also enables various control options.

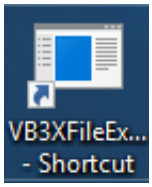
Vemotion Android Encoder (VB-10)

This Vemotion Android Encoder will allow your phone to become the Encoder and stream video to the Streaming Server.

Vemotion Proxy

This software allows connection to a network video stream from the Vemotion Streaming Server from ONVIF/RTSP and web clients. These clients can be viewing management software, to recording devices and the video stream is in an open format compared to the stream that is viewed within the Vemotion Viewers and Players.

VB-3X File Export



Download Recording from the encoder using the VB-3X File exporter available from your Vemotion Account manager. You can be hardwired to the Vemotion hardware unit or connect wirelessly. In both cases you have to set up the network sharing setting and change the adapter settings so all units are on the same subnet. Please see separate support guide.

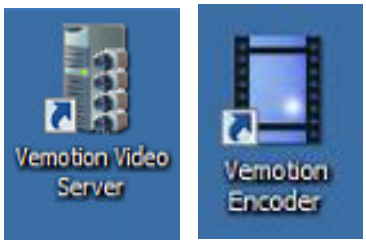
Video Server Software & Vemotion Encoder

Support Guide

SETTING UP THE VEMOTION HARDWARE ENCODERS

This section will describe how to set up the hardware products, VB-30, VB-35 and the VB-36. It will detail via the software, how to add cameras, set up the encoding parameters and recording capabilities and allow you to set streaming profiles. Software is already loaded onto the hardware units and the standards consist of the Vemotion Video Server and Vemotion Encoder.

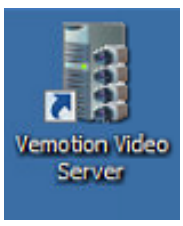
At this stage you will need to plug a monitor, keyboard and mouse into your unit. Monitor will plug into the DVI-I port and the keyboard and mouse can be connected via USB ports. You will see the following applications on the desktop;



VEMOTION VIDEO SERVER SET UP

The Vemotion Video Server (VVS) takes the camera streams and sends to the shared memory on PC/device. Any number of apps can get access to this shared memory.

Click on the Vemotion Video Server icon;

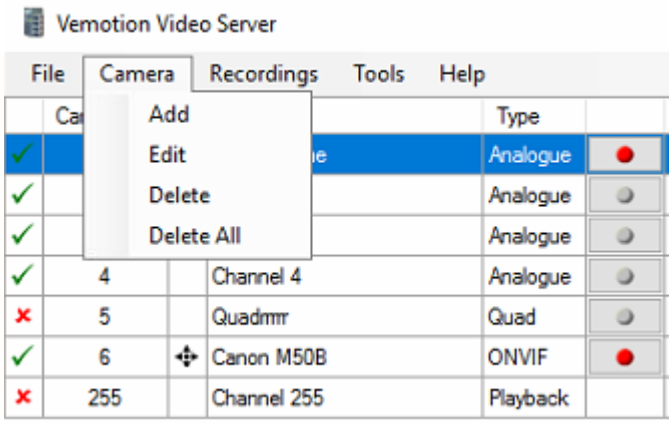


This will open up the Vemotion video Server app.

Adding cameras

All units will come pre-set with 4 or 8 analogue video channels set on channels 1-8. Cameras can be named, in the Name section, should this be of interest so the Name of the camera comes up in the main page and will be the name of the camera when viewing.

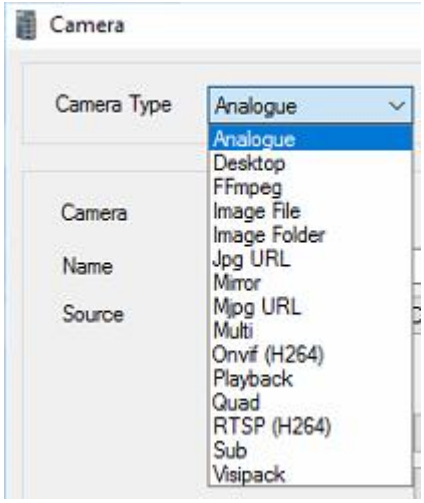
In the camera tab you have the option to add, edit, delete or delete all. For adding cameras click add.



This will bring you through to the Camera page.

Camera type

Select from the drop down list which camera you would like to add

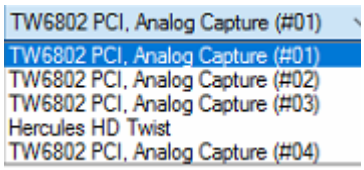


ANALOGUE CAMERA ADDITION

Camera - is the next available line in video server to add camera

Name – what you wish to call the camera for the viewing clients to see it by

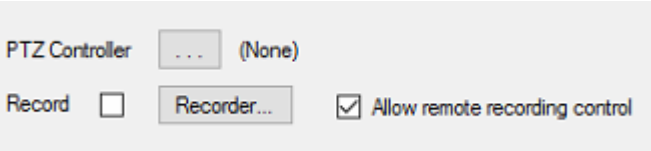
Source – is what hardware options you have available to you, most of our VBOX's will have a capture card internally so this allows you to associate a particular capture card to the BNC inputs. i.e BNC labelled V1 should be paired with Analogue Capture (#01). In the picture below there is a USB camera attached, this has been instantly recognised and appears as Hercules HD twist



Capture Format and configure should be left as the default.

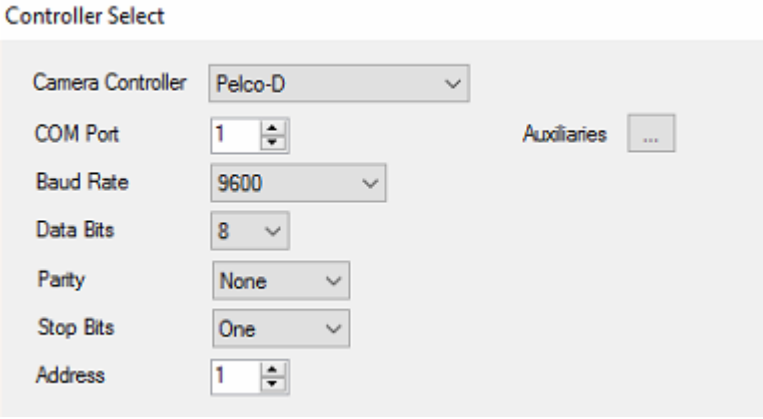
PTZ Controller for analogue cameras

If the camera has the option to PTZ click on the PTZ controller button



This will allow you to choose the protocols of the camera you are setting up from the Camera controller drop down box

Select the protocol of your choice



COM Port

COM Ports on your VB hardware should be labelled. For example VB-30 has 4 com ports, COM1 Top right = RS485, COM2 Top left = RS232, COM3 Bottom left = RS422. Identify the right com port for your set up. Pin outs and PTZ later are to be found later in this document.

Baud rate – Data Bits – Parity – Stop Bits - Address

Fill in to relate to the camera being used.

Click Ok to come back to the camera control page and what you have set will be displayed next to the PTZ controller

Aux button

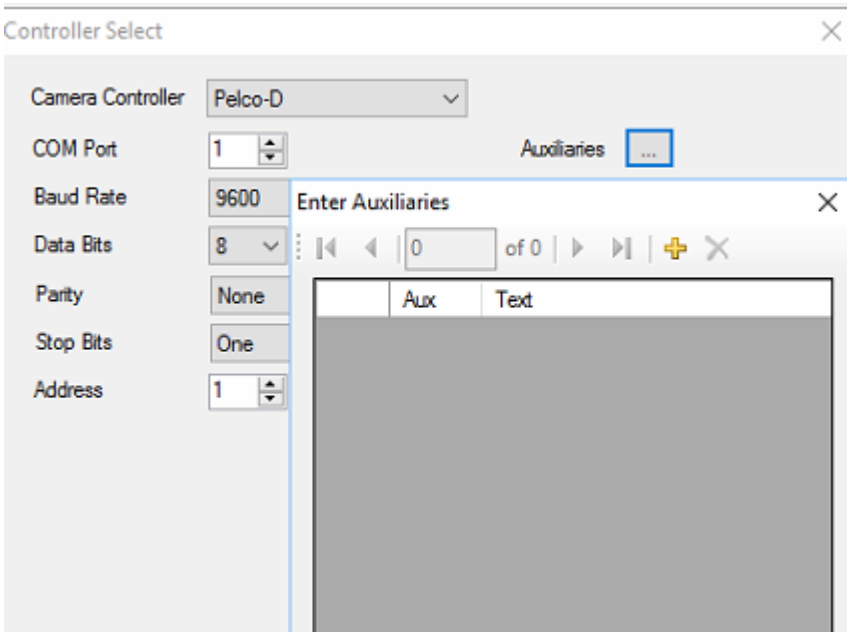
Some PTZ protocols have an auxiliary command in their command set. These commands map onto camera specific functions. For example, some cameras that use Pelco P support auxiliary functions which allow the different features, for example:

5 = Wiper

6 = Infra Red

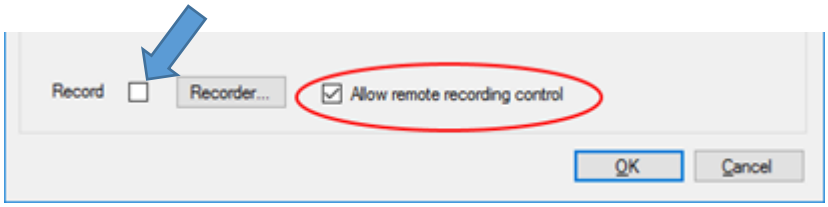
7 = Backlight

The actual commands are just on/off commands by number. The functions are camera specific and not something that you can query to discover, so the option to configure them is given in the software. The configuration page you show allows you to specify Text so that it shows in the viewer, so the user knows what setting it on/off should do.

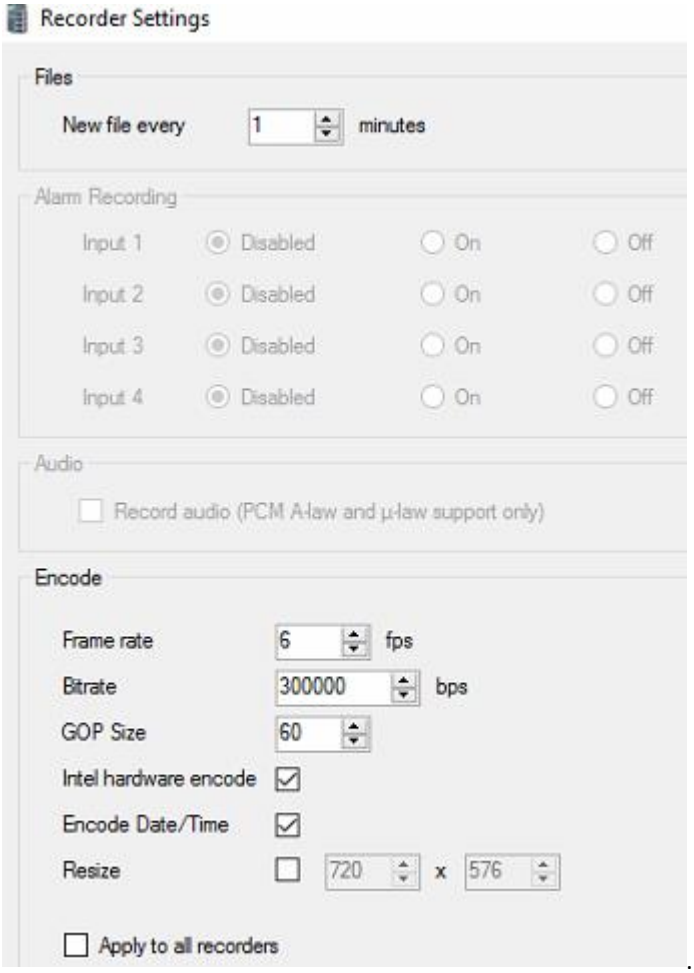


Recording Analogue cameras

Cameras can be configured to allow or disallow recording on/off by other applications. Make sure the 'allow remote control recording' is ticked to enable clients to be able to turn the recording on and off remotely. Then tick the box to record.



Press the recorder button to see the recorder settings page;



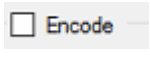
Files

This denotes the length of each recording file. 1 minute files means that downloads of a particular recording can be done very quickly at the client viewing end.

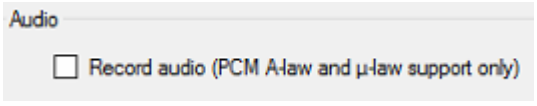
Alarm recording

Depending on what triggers and alarms you have set onto the encoder you can choose to activate recording when trigger is on or off.

Encode the recordings

For analogue cameras you have the option to set the frame rate and bitrate for recording. For IP cameras this is greyed out as it will record at whatever the IP camera is set to, however if you wish to change the setting tick the encode box 

For IP cameras that support PCM A-law or m-law there is the option to record audio by ticking the following tick box



Frame Rate

Select the Frames per second you wish to record at

Bitrate

Select the bps you wish to record at

GOP size

GOP is group of pictures. This is set to 60 to minimise storage space consumption (reduce bitrate) under the same frame rate, whilst maintaining video quality.

Intel hardware encode

For encoding and decoding Vemotion as default will use hardware acceleration of the unit in order to take the load of the CPU. This option will therefore be ticked as standard. However this has been found not to support all IP cameras, therefore by unticking this box the unit will only use software to do the encode/decode. This will increase the load on the CPU and may mean you might not be able to use as many cameras on the one unit as before.

Encode date/time

Date and time can be over laid on all recording. The time is set via the internet which is done via the streaming server.

Resize

You can chose to resize the picture. The part in grey is what the input of the camera is coming in as:

Apply to all recorders

If this is what you wish to apply to all analogue cameras tick apply to all.

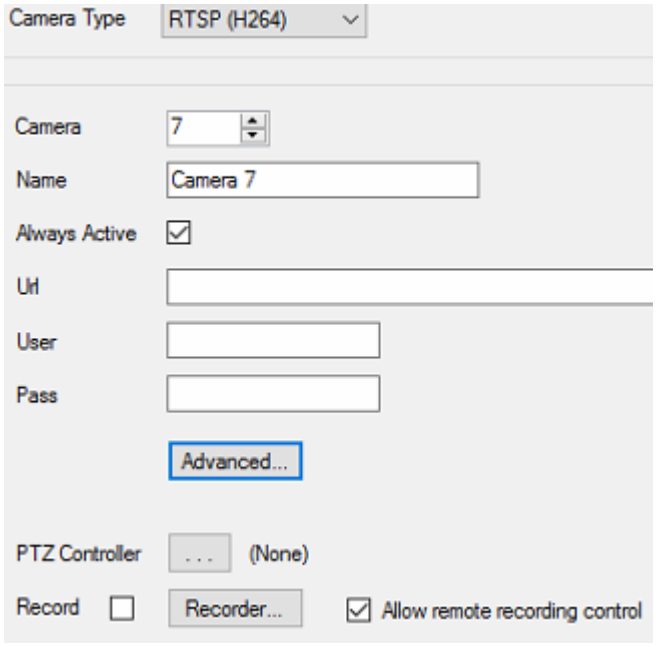
Press Ok

IP CAMERA ADDITION

IP cameras will come either ONVIF compliant so you can use the ONVIF drop down box or you may have to use the RTSP option and put the URL of the device in

RTSP camera

Choosing RTSP (H264) will bring up the following Camera page



Camera

Denotes how the camera stream is logged in the Vemotion memory and will need to be duplicated in the encoder software to make sure the encoder sees the correct camera.

Name

Name of camera

Always active (previously 'stop on idle')

If "Always active" is checked the channel will be running all the time, regardless of whether the video is required for recording or viewing.

If it's unchecked, then the channel will stop if it's not being recorded or viewed, saving resources.

(e.g if 4 IP cameras are set up, if you were just viewing one camera and not recording any, you would only need the camera you were watching so would probably not want to take in feeds from all at once)

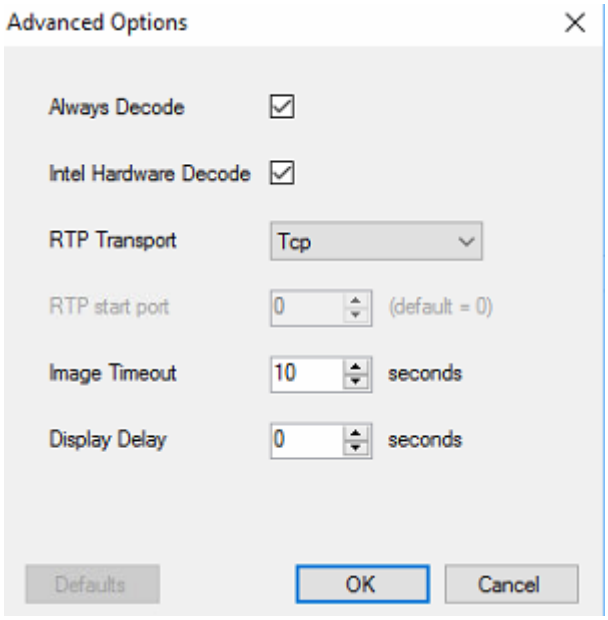
URL

Add in the URL of the camera which usually looks like rtsp://IPaddress/xxxx and this is bespoke to each camera type

User & Pass

The username and password are defined by the camera, if the camera needs user and password it will not save when you try to OK the page

Advanced Options



Always decode

Previously Video Server only decoded H264 video from RTSP and ONVIF channels if it needed to. This was to prevent unnecessary CPU usage. The video stream did not need to be decoded, if for instance it was being recorded directly and nobody was watching the stream.

This leads to the user briefly seeing the blue screen in the live feed on the viewer, when switching to this camera, as it has to find an appropriate place in the stream to start decoding from.

The "Always decode" option was added and is now selected by default when adding new channels.

This prevents the user seeing the blue screen when the camera is "Always Active", and switched to in the live stream.

The reason behind leaving it as an option rather than just always decoding, is again down to CPU. You might theoretically have 4 IP cameras being recorded, it would then probably only best to decode the ones you need rather than all of them.

Always active is slightly different from the “Always decode” flag for RTSP/ONVIF channels, a channel can be active, or always active, without needing to be decoded. (In the case where the IP feed is being directly recorded to disk, without being re-encoded) Hence the 2 separate settings.

Intel Hardware decode

This box is ticked by default. However if there is an issue with the hardware decoder and the ONVIF camera, which usually portrays as an intermittent white screen, untick this box.

RTP Transport

Transport is defined by the camera and can be highlight from the drop down box either, TCP, UDP or Http depending on your camera source.

Image Time out

Image timeout means that if the channel connects to the IP camera and fails to get a video image for X seconds it will tear down the current connection and establish a new one.

Display delay

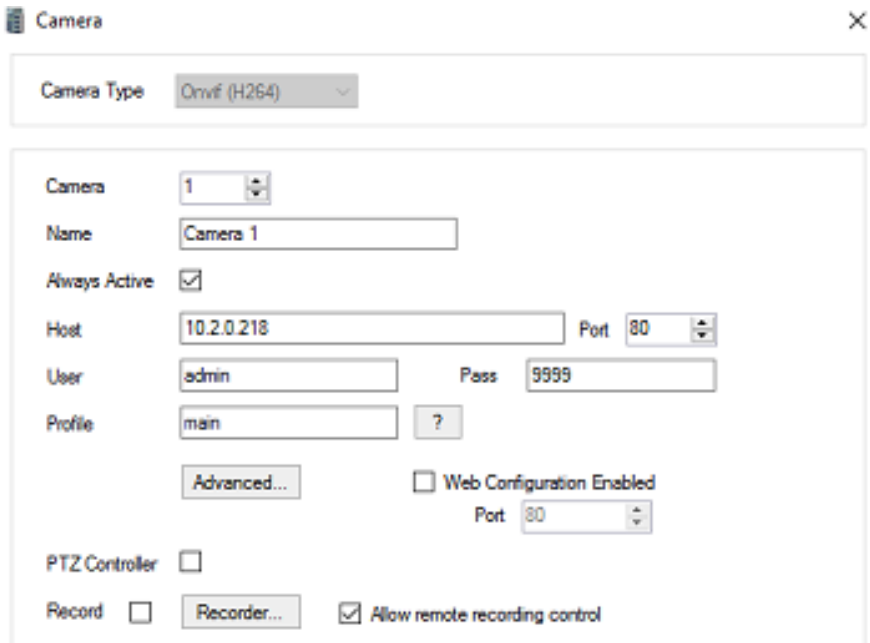
Image delay buffers the received video for X seconds before displaying it, this will smooth out the video stream as it can play/freeze/play/freeze when sending over a particular, lossy, latent network such as satellite.

PTZ Controller

See Analogue PTZ section

ONVIF camera

It is also possible to add an IP camera if it is onvif compliant



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Host & Port

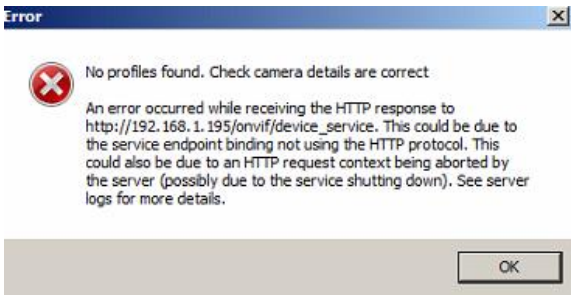
Add in IP address of the camera and the port it uses

User & Pass

The username and password are defined by the camera, if the camera needs user and password it will not save when you try to OK the page

Profile

Press the '?' to find the profile of the camera. If no profiles can be found then the camera may not support ONVIF or profiles of ONVIF, the error message below will appear. Please then revert to adding as an RTSP (H264) input.



Advanced Options

Always decode

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Image delay

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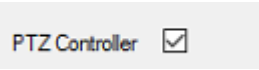
WEB Configuration Enabled

This tick box is used to enable access to the Onvif devices web pages from the V264Player using the socket tunnel feature.

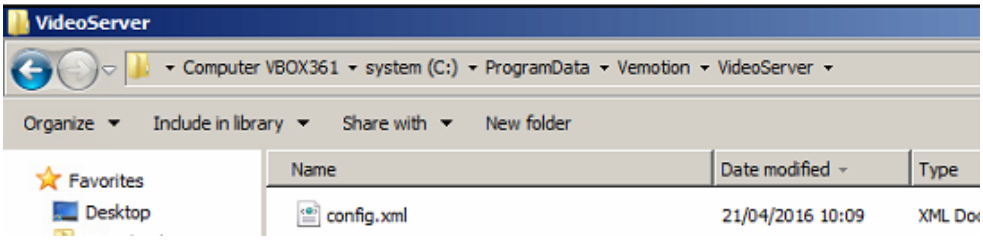
PTZ Contoller for ONVIF

With ONVIF cameras if they are also PTZ, the profile that you chose on set up will automatically follow through for the PTZ so it is just a simple tick box to enable PTZ



Saving IP camera config to USB to transfer to another VB Encoder

Once you have gone to the trouble to add the IP cameras and all their URL’s it is handy to be able to transfer that data to another encoder via a USB stick. Go to C drive/program data/Vemotion/Video Server and copy the config.xml file to the USB.



On the new encoder delete the current config.xml files and copy the new config file in the same location as above. It is important to note that any analogue cameras that were in the transferred config file must be deleted and reinstated as the analogue/direct show channels do not transfer and save.

IP Camera – Enabling two streams from one camera

Most IP cameras have the ability to encode two separate streams in H264. This gives you options to set low and high bandwidth outputs as well as being able to send two encoded streams, perhaps an overview as well as a tight close up stream.

rtsp://192.168.1.90/videoinput_1/h264_1/media.stm

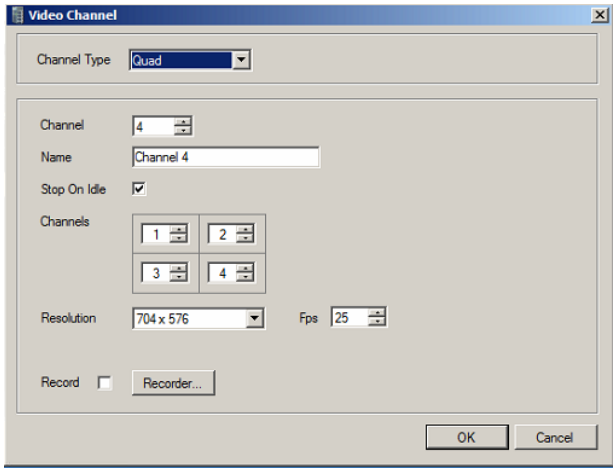
rtsp://192.168.1.90/videoinput_1/h264_2/media.stm

Or if truly an ONVIF camera it will find the profiles you have preset in the cameras.

Set up two channels as per the instructions in the 'Adding IP cameras in Vemotion Video Server'.

Adding a QUAD view for multiple cameras

In the drop down box you have the option for adding a Quad view.

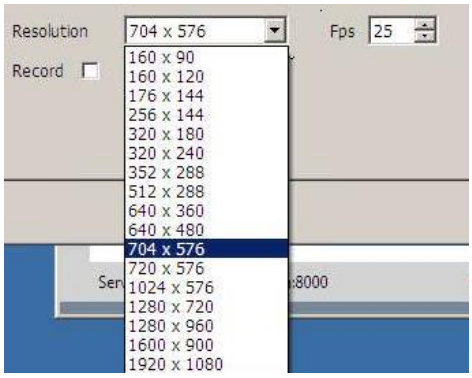


Channel

By selecting the channel numbers of the cameras you have already added, you can manage how you view the 4 different cameras. It may be you have added more than 4 and wish a quad view of a selective cameras. Note you cannot add the channel number of the quad to the channels quadrant.

Resolution

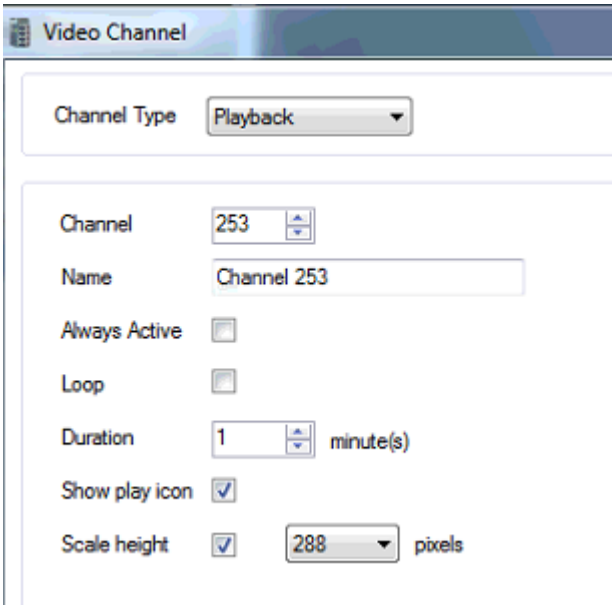
The resolution denotes the max level of stream you will want to send to the encoder and stream plus the option of changing the frame rate.



Adding Playback for multiple Encoders

Playback needs to be in place in order to view recorded playback per encoder on the unit. Click the Playback drop down to program.

If there is no Playback in the drop down. Make sure you have FFMPEG downloaded from your support and maintenance website and saved in Video Server Program folder which is found in C:\Program Files (x86)\\Vemotion\VideoServer.



Channel and Name

Set to any channel preferably a high number and channel name can denote which camera you are playing back

Always active

If this box is left unticked which is set as default, then if no one is viewing video or not recording then it stops getting data from camera which means that it preserves processing power.

Loop

Loop means that it will keep playing the file over and over again in the V264 player until the stop button is pressed.

Duration

This is the length of files that you can playback. So if you want to playback one minutes worth of recorded files set to one minute. If this synchronises with the fact you are recording files by the minute, this is fine. If you now put the duration to 60 minutes. When you start playing your one minute file in playback from the viewer, it will play the first file you select and then continue to the next file and so on and so forth until you either stop the playback manually or it reaches 60 mins and it will stop itself.

Show Play Icon

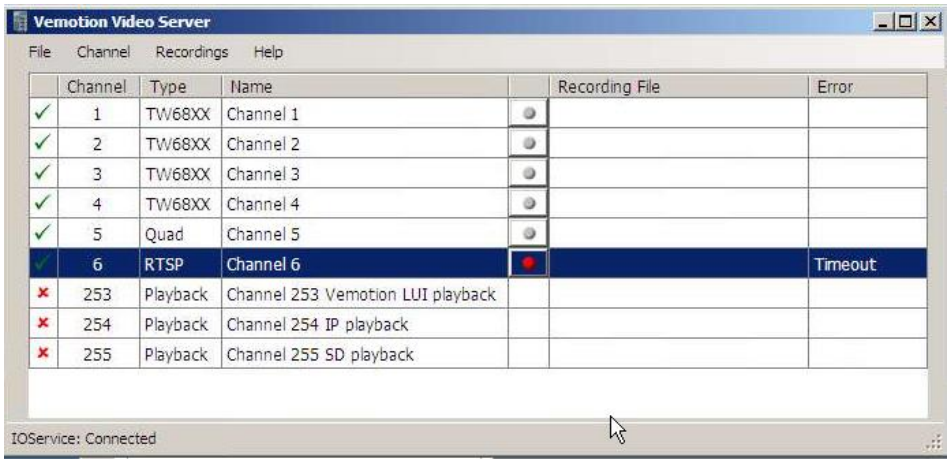
Tick this if you want to see the play icon, it helps for you to know you are playing back the recording of you see the playback arrow

Scale Height

To be kept at 288

Press Ok

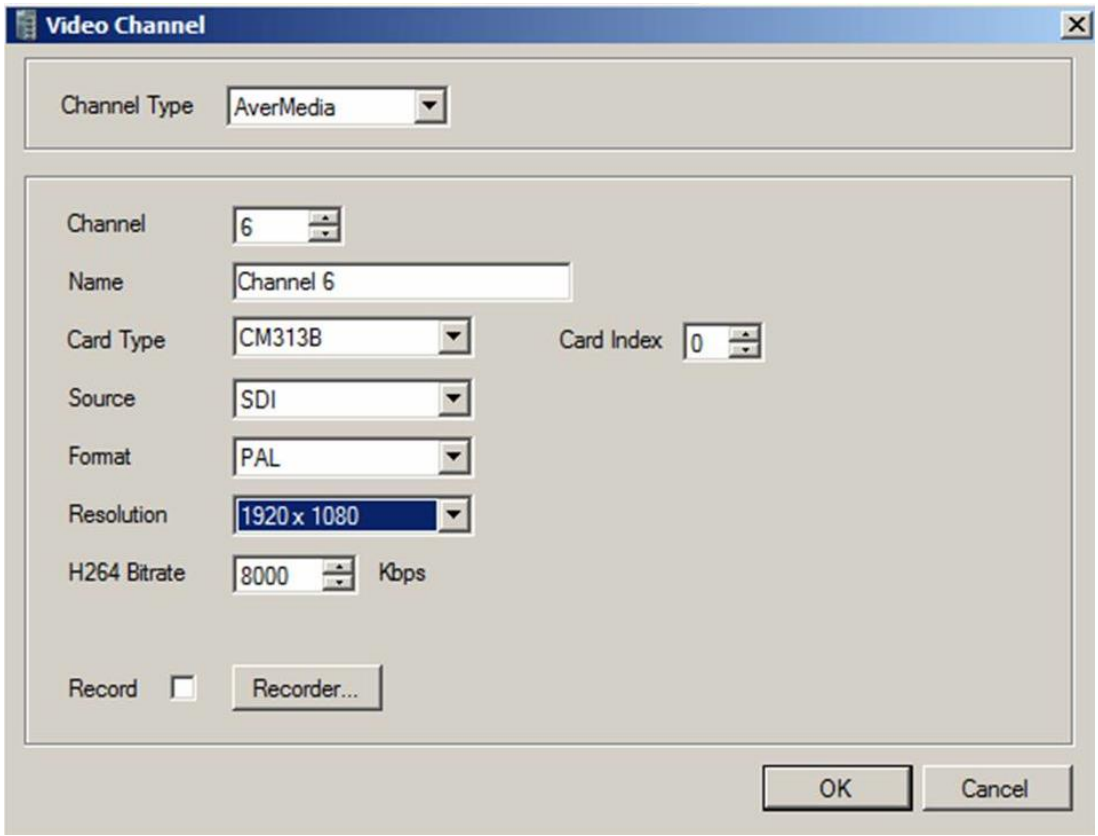
This will return you to the Vemotion Video Server main page.



Green ticks mean that there is processing video so analogue will always be ticked and IP will only be green if recording or viewing as will quad or playback. (Play back will be higher channels 255 and is working in the background so ignore if red cross's)

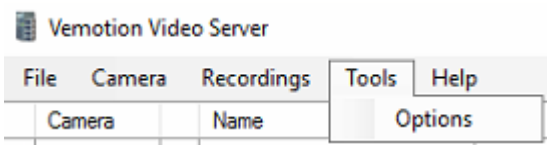
Adding an HD-SDI camera

The ability to add HD-SDI is an option and requires a bespoke built VBOX or an external HDSDI to USB interface. This VBOX will have a different interface and drivers to enable the HD-SDI. The drop down box for HD-SDI will read AverMedia. This will be pre-set when the unit arrives and you should only need to change the Resolution, bitrate required and record option. Before updating software it is important to note the card type and source so that it can be input for software upgrades.

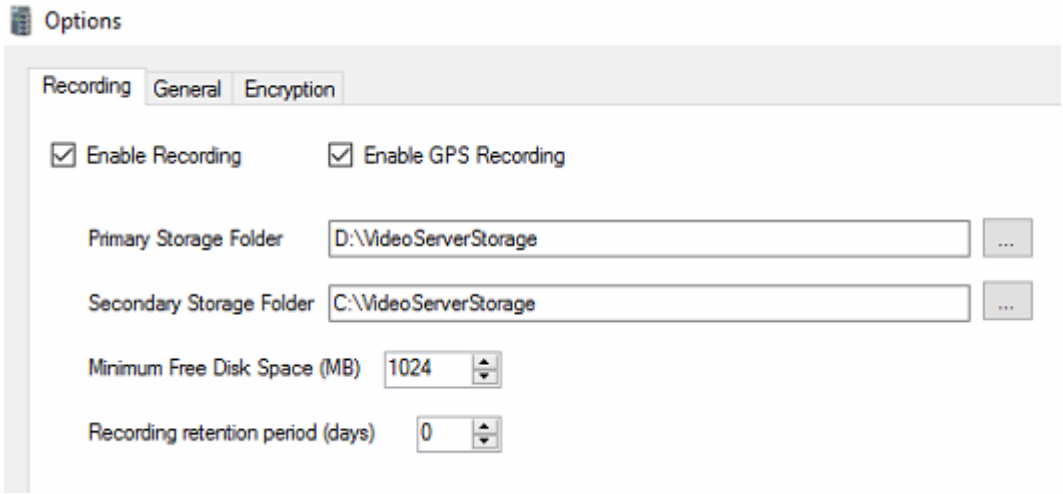


TOOLS - RECORDING, RECORDED ENCRYPTION KEYS, GPS & TRIGGER OPTIONS

Tools tab in the Vemotion Video Server, press Tools and Options;



Recording tab



Recording Storage Folder

To enable video recording to the unit you must tick the enable recording. If you wish to record the GPS meta data to the file as well please tick the Enable GPS recording (you must have a GPS device configured to your Vemotion hardware in order to record GPS data to the files).

There are then two choices a primary and a secondary folder to store the video and GPS data to. To record to an external recording device, use the folder selector button on the primary storage, to select were to store the footage. Secondary storage is only used if it cannot see an external device, this should be the D drive in all cases so input D:\VideoServerStorage in the secondary folder.

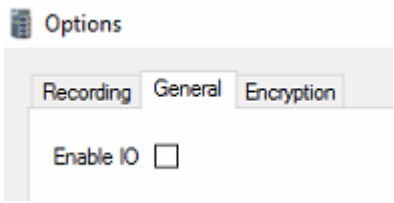
Minimum free disk space

Free disk space gives a buffer so disc is not maxed out. Recording will continue and not stop when the storage device is full it will rewrite over existing files.

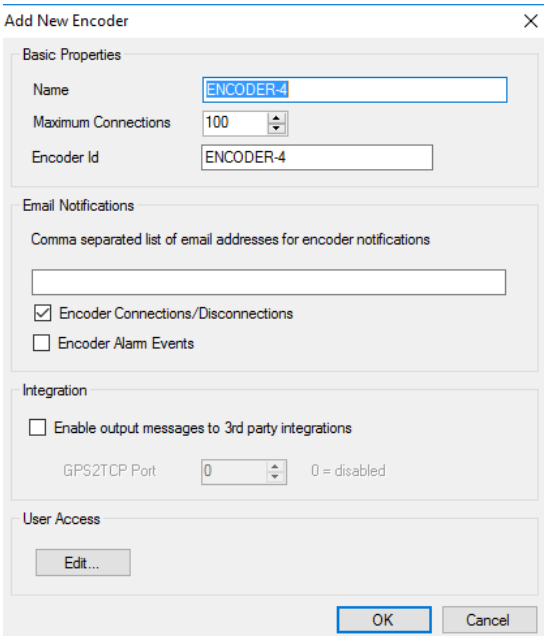
Recording Retention Period

Retention is the time before files will automatically be deleted even if free disc space.

General Tab - Enable IO

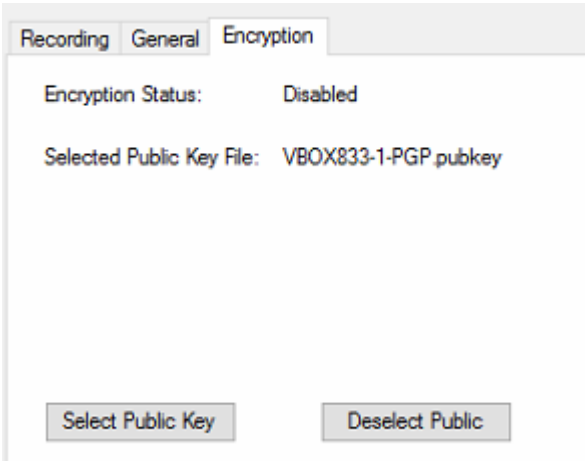


In the General tab there is the ability to record on triggers. Tick this box and the unit will record on, an on/off trigger. Emails can also be sent on trigger events, the list of e mails should be entered in the Vemotion Streaming Server software on the server. This is done when adding a new encoder to the Streaming server software (not video server) and the e mails are registered in the Notifications box, see below;



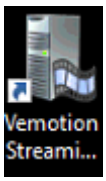
Encryption Tab for recordings

This encryption tab is to do with encrypting the recordings, NOT the video stream transmission. It is a chargeable product through licensing in the Streaming Server. It is enabled and disabled from the Streaming Server so you can remotely activate encryption of the recorded files. It does not matter how many encoders you have on the VBOX all recorded data will be encrypted or not with a push of a button from the Streaming Server.

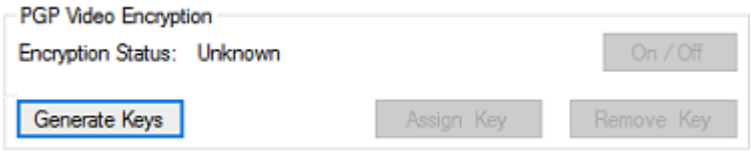


You have got the option of loading your own keys onto the unit by using the Select Public keys but you must turn the recording on via the Streaming server to enable the encryption of recorded files on the VBOX. So Encryption is only able to be turned on remotely not on the box itself. However if you deselect the public key this will turn encryption off, all files going forward will be unencrypted.

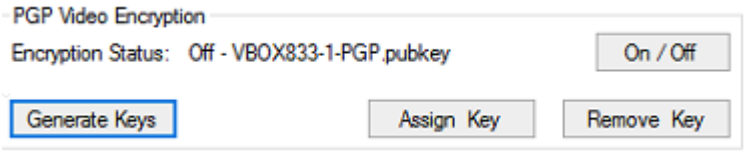
Go to your Streaming Server and edit an encoder.



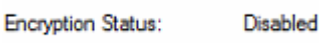
If the encoder is not online and connected to the server you will see the encryption status: Unkown, as below



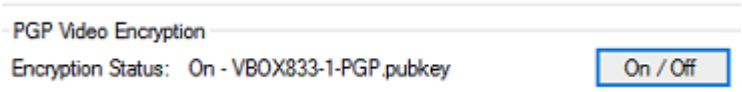
When the encoder is online this changes to



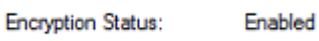
This currently shows encryption is off and is seen in the Video server as



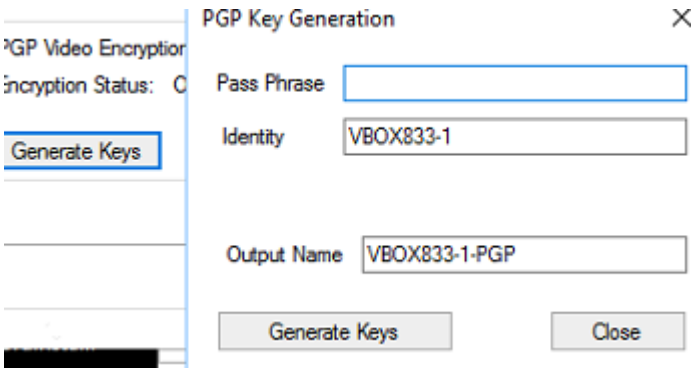
By toggling the On/Off button you will turn encryption on and off



Video server now shows as

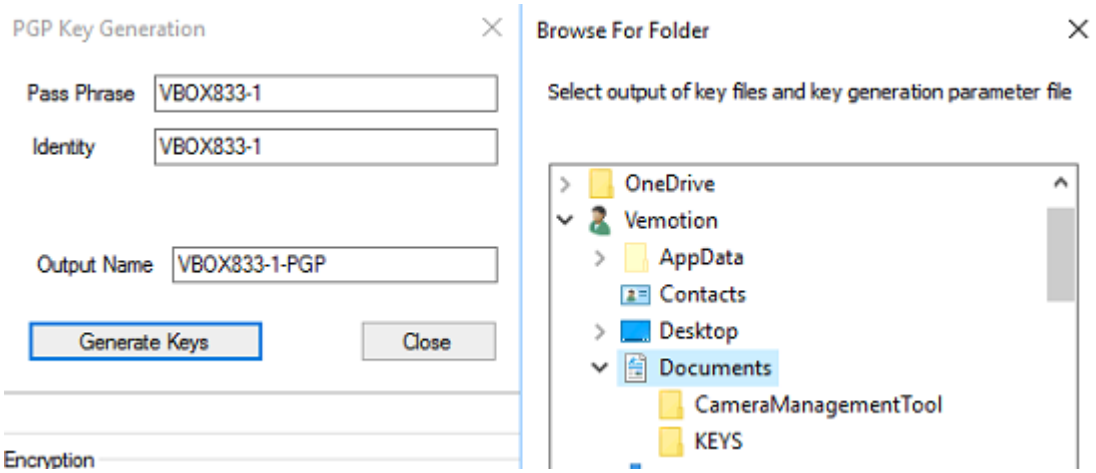


By clicking Generate Keys, the following PGP Key generation page appears:



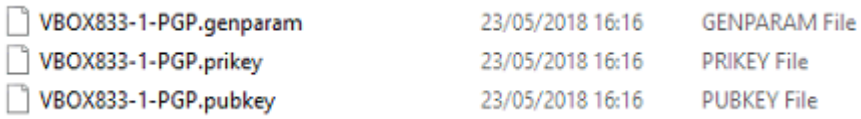
Add the Pass phrase, this is the password needed to associate with the generated keys for viewing recorded data and will have to be input into the video server. Output name is the name of the key and can be changed if needed.

By adding a pass phrase and clicking generate keys, this will then ask for you to select a folder to save keys to:



If keys are already in the file it will ask if you wish to overwrite files, once key generation complete press ok.

Now go to the folder you have saved keys to and there will be three files

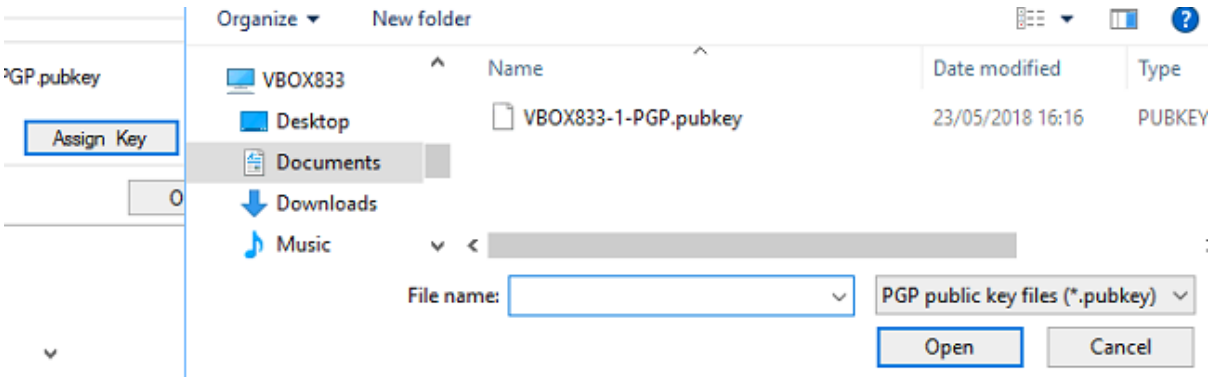


Genparam will contain the identity of the encoder and the passphrase to use with the private key to decrypt

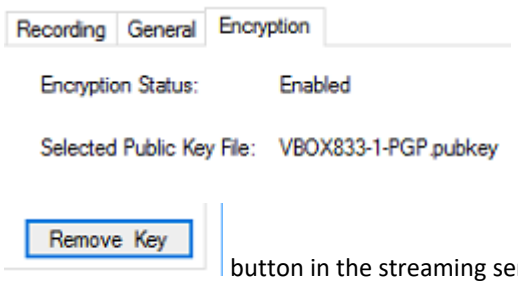
Prikey is the private key for decryption

Pubkey is the public key for the Video Server front end

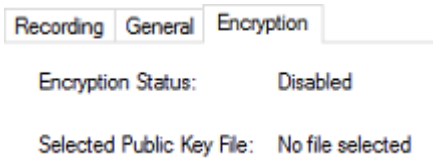
Return to the streaming server and editing the encoder of choice and press Assign Key



Highlight the key of choice and then press open. This then pushes the key to remote VBOX, where it will appear in the Encryption tab as the Selected Public Key



button in the streaming server will take the key from the remote VBOX and also disable the encryption. You will now see Encryption disabled in the VBOX video server.



The VBOX has to have the public key pushed to it in order to encrypt the recordings

NETWORKING AND CONNECTING IP CAMERAS

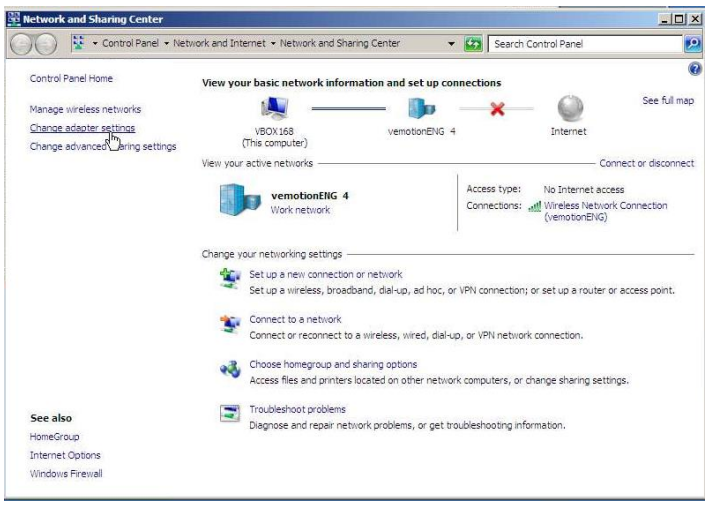
All IP Cameras will need to be powered separately from the Vemotion hardware. If you wish to power from a VB36 or VB30 device ask your account manager for more details.

Connecting IP cameras

Power the camera and add to one of the RJ45 ports. There is usually a port marked with a static IP address. Make sure your camera is either on the same subnet as this IP address or reset the subnet on the Vemotion unit itself.

To reset the subnet on a specific port, plug in the camera, go to Open Network and Sharing Centre. Bottom right of screen where the date and time is.

Click on Change adapter settings

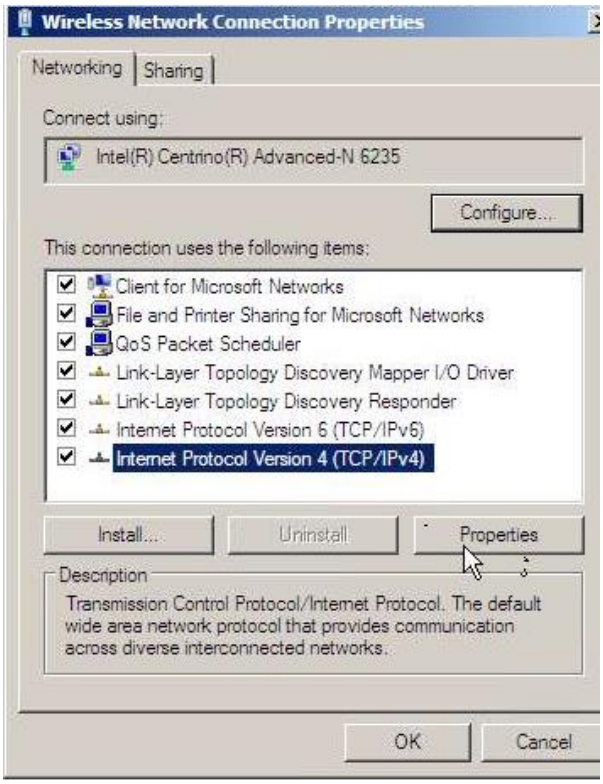


This takes you to the Network Connections page where you should be able to see what is connected.

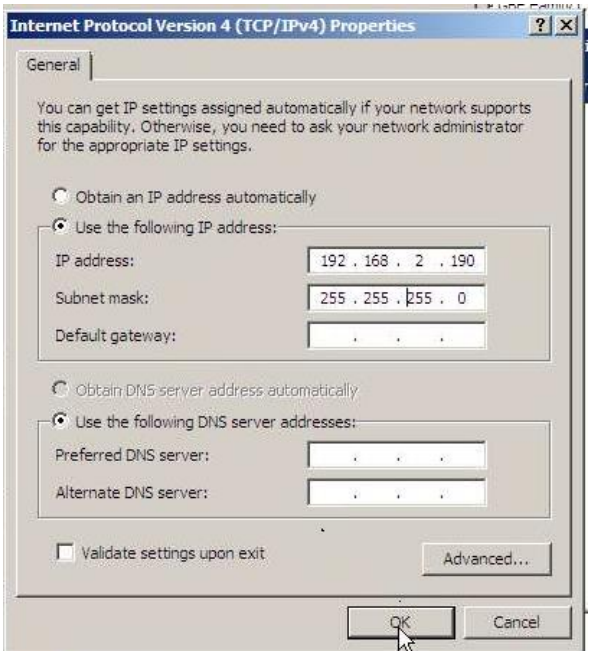
To check which port your camera is connected in, you can disconnect the camera and reconnect and check to see which disconnects and shows a red cross and connects.

Right click on the icon and then left click on properties

Left click on Internet Protocol Version 4

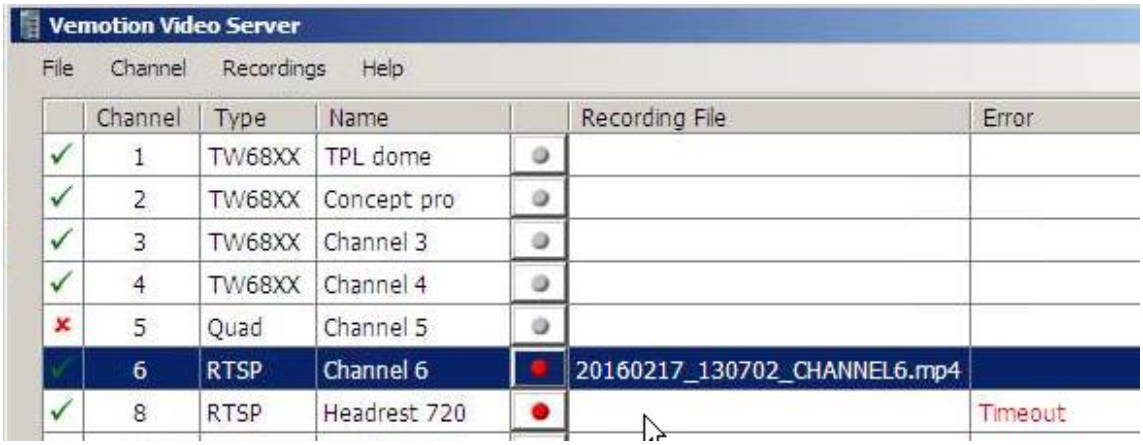


Left click properties



Click on Use the following IP address and add in the IP address to match the same subnet as the camera with the fourth Octet being different. Press Ok

Your camera and Vemotion box should now be linked and if you have already set up the Video server you can press the record button as a quick check to see if the camera is set up correctly. This should bring up a recording file in the recording column of the home page of Video Server. See below picture, camera 6 is connected and programmed and showing a recording file. Camera 8 has timed out as cannot connect to IP camera.

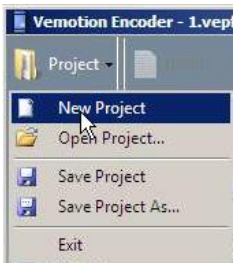


If no recording channel appears, check the camera is connected and powered, you can ping the camera and you can browse to it too.

VEMOTION ENCODER SET UP

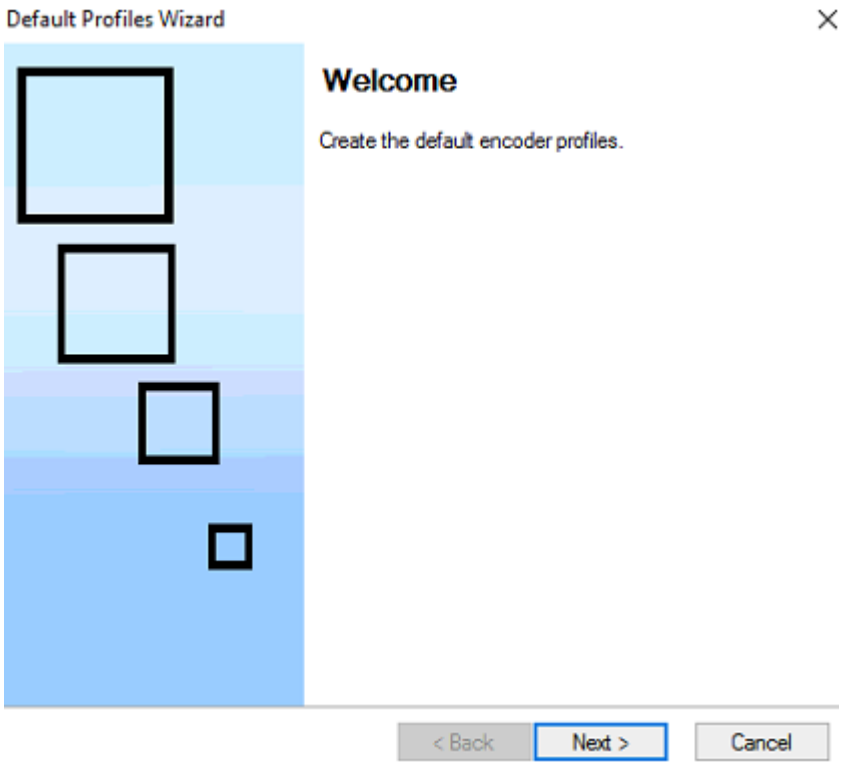
Before you set the encoder up you must have set up the Video server in entirety.

Project – open new project



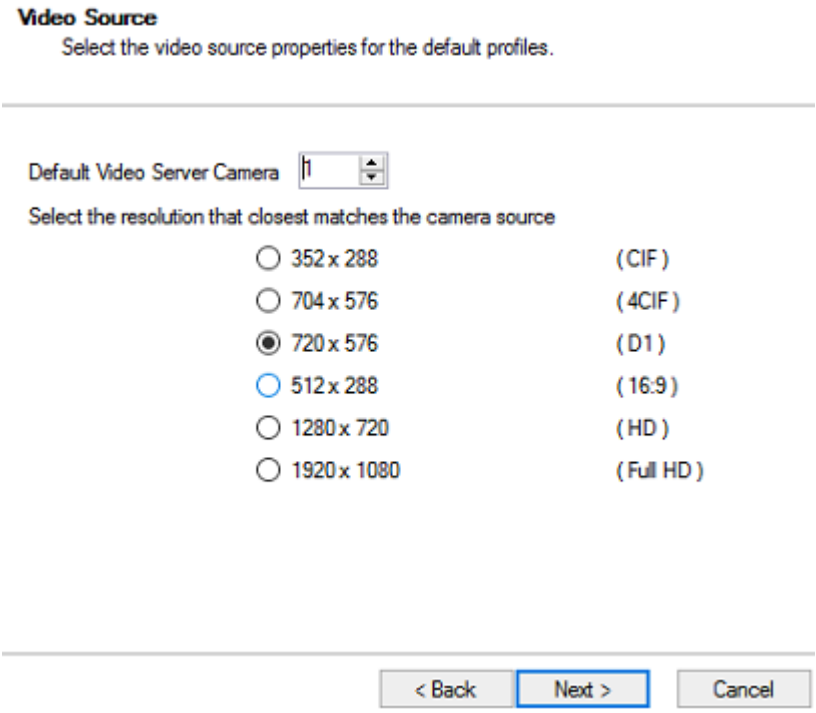
Setting up Default Profiles

After selecting new project this will take you through to the Default Profiles Wizard page.

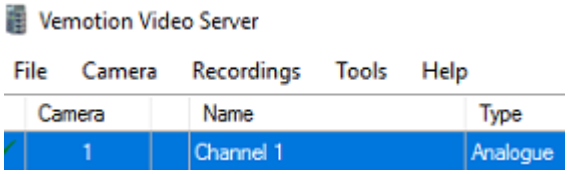


Click Next

Video Source Page



The Default Video server camera should be set as the first camera that the encoder shows on start up. This number represents the line item in the video server so 1 is Camera 1 in the video server:

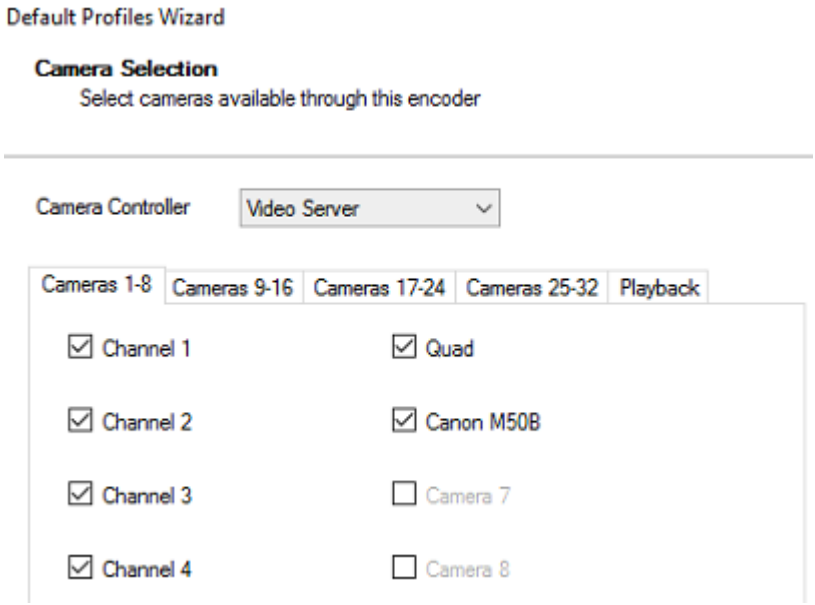


Once this is chosen then select the resolution closest to the cameras you are using.

Press next

Camera Selection page

The next page is the Camera Selection. This page will be pre populated with all the cameras you have set up in video server. However if you only wish to stream one or two of these untick the cameras you do not want to stream.

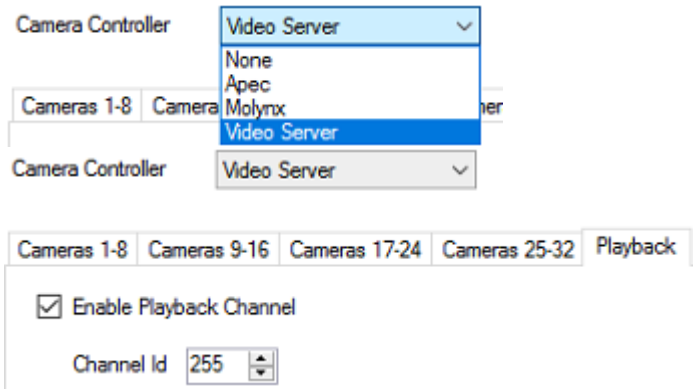


Camera Controller

You will also note that there is a drop down box in the Camera Controller. This is for 3rd party software applications Vemotion has integrated with, these do not use our video server for cameras input. i.e APEC has a hand controller that sends the camera of choice to the encoder. This may limit recording options.

Playback Tab

Also on the camera control page there is a Playback tab. For the encoder to be able to playback video in the V264 Player, Playback must be ticked.

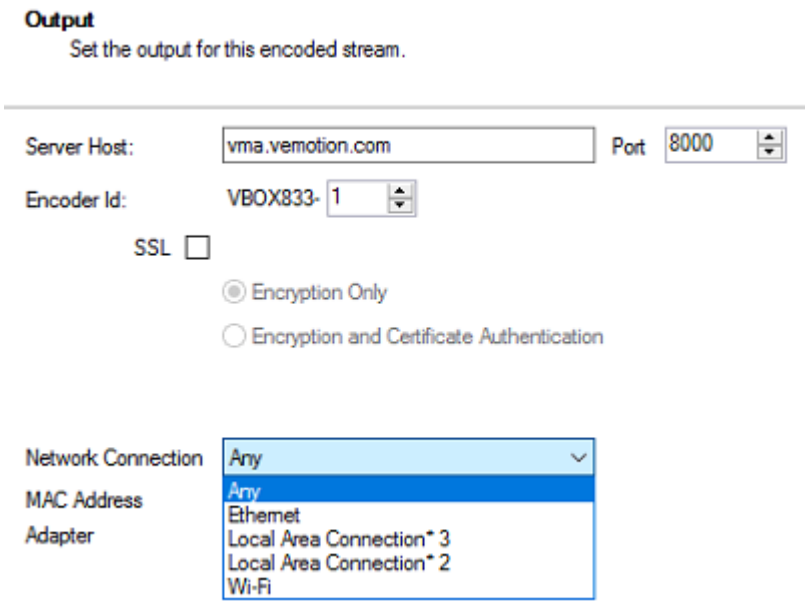


Overlay options page

If you want date and time on the screen, tick encode text overlay. Time and date will be synced with the windows operating system on the VBOX itself. If this is to be seen on all transmissions then tick apply to all. Then click next.

Output Page

This is where, on initial set up you put the IP or DNS address of the server you will be streaming to. If you are being hosted on the Vemotion server these details will be sent to you or will already be set up. You can set up multiple encoders to go to different Streaming servers on the same VBOX unit, for example.

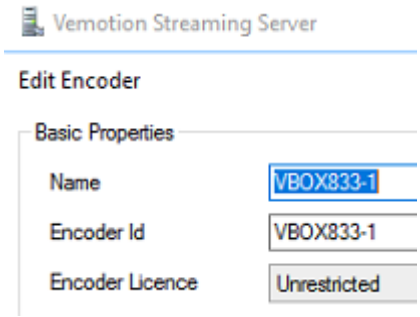


Server Host

Enter the DNS or the Fixed IP address of the Server you are transmitting to.

Encoder ID

This must match the Vemotion Streaming Server, Encoder ID. This is preset and you can only change the encoder number e.g. VBOX833-1. See the box below as a reminder from the Vemotion Streaming Server Software, please see a separate user guide for this. Picture below is what it looks like in the Streaming server and where you add the encoder ID.



Port

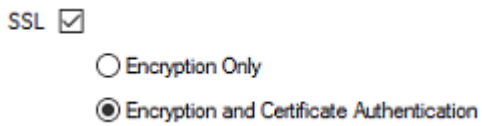
This is the specific encoder port and is set to the default of 8000

SSL

Leaving the SSL tickbox un-ticked will allow the connection to be sent with no encryption

Ticking SSL Encryption only will send using SSL and TLS but will require no SSL Certificate to authenticate the connection

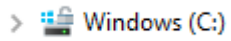
SSL Encryption with Certificate requires the server to be set up with either a CA or a self-certificate (see first part of this guide)



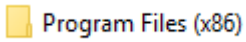
Below are steps for setting up the different levels of SSL and the options you have within the Streaming server software.

Streaming server – Setting SSL up

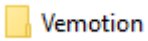
First, locate your C drive (C:)



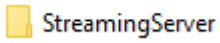
Navigate to Program Files (x86)



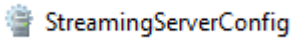
Navigate to Vemotion



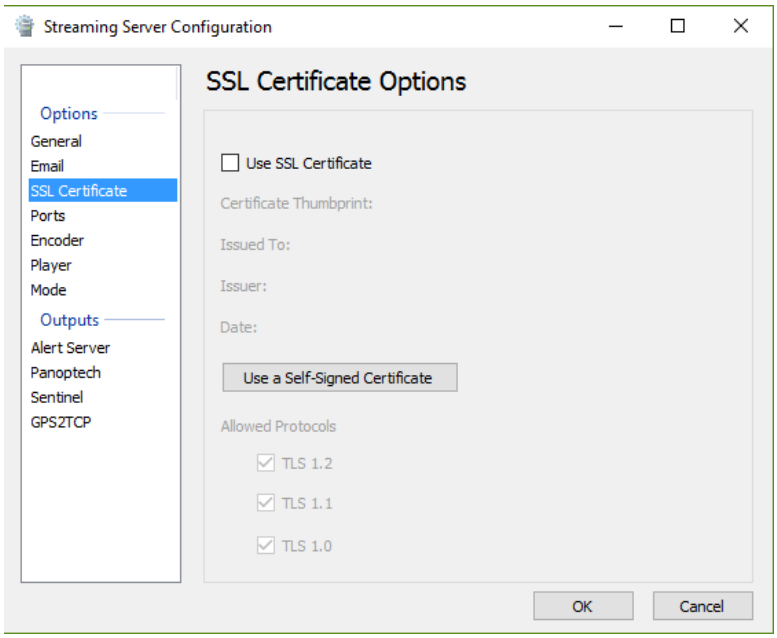
Navigate to StreamingServer



Navigate to StreamingServerConfig



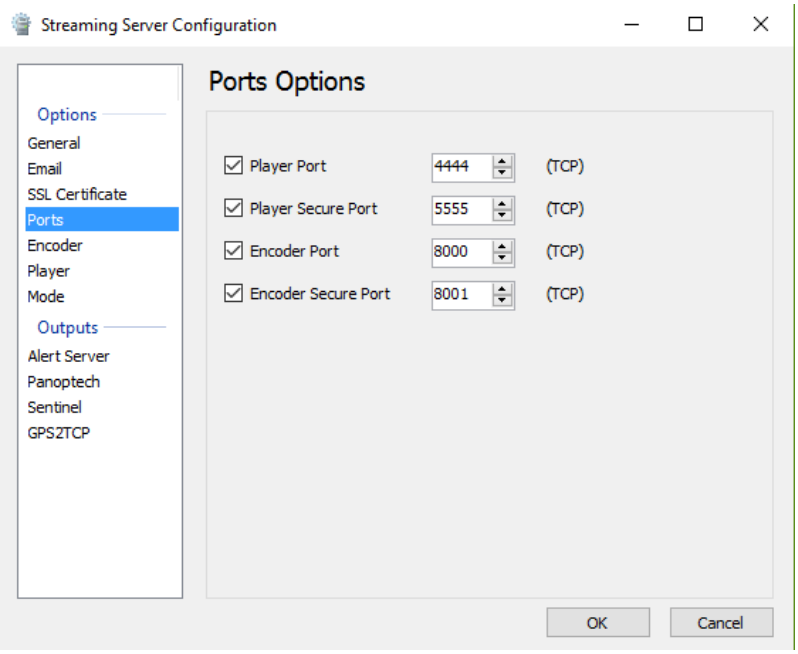
Once you have clicked this, you will have this screen in front of you.



Here you have all of your streaming server configurations settings. The SSL Settings are located 3rd down on the list.

On this screen, you can see the option to use SSL and the opportunity to use a self-signed certificate.

If you click Use SSL Certificate, the additional secure ports will be opened up to you.



You can locate this tab just below the SSL certificates.

As a default, the secure ports are 5555 and 8001 (These can be modified as per your setup)

You have two options with the SSL, Self-signed and CA.

Self-Signed

Self-Signed is a self-signed certificate is an identity certificate that is signed by the same entity whose identity it certifies. This term has nothing to do with the identity of the person or organisation that actually performed the signing procedure. In technical terms, a self-signed certificate is one signed with its own private key.

Regarding the use within Vemotion, You are creating a private key between server and encoder.

The certified chain is a trusted validated chain and starts and ends with the root certificate containing both the public (encoder) and private key

On initial connection to the server, the 'public' client (encoder sending data over the internet) checks the certificate from the server is valid by checking the trusted root certificate.

This connection is trusted as you have created it, then the chain will be trusted allowing the stream to be sent to the server.

In non IT terms, the encoder will send the data over the secure port (8001) and check if the player (server) port (5555) has the correct SSL Certificate loaded on to it. A virtual handshake is made, and the connection is now authenticated.

CA (Certificate authority)

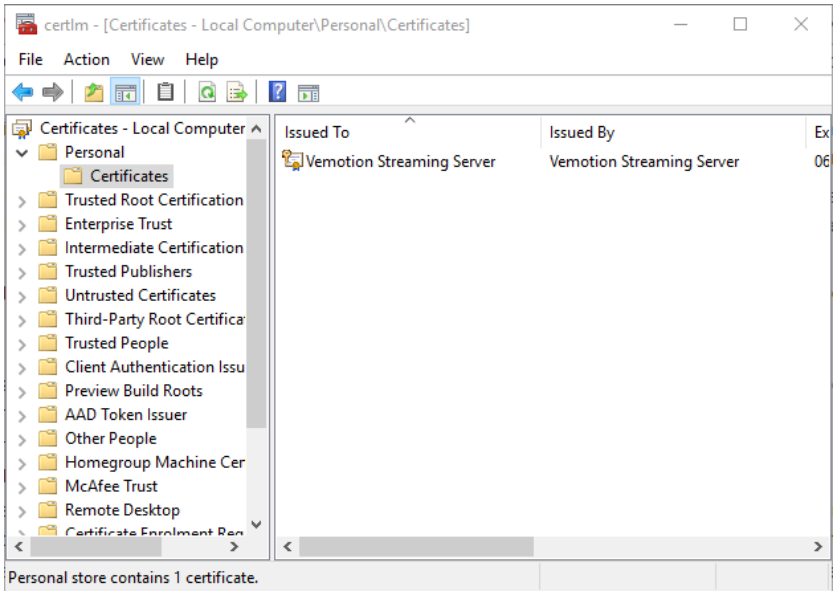
A certification authority (CA) is an entity that issues digital certificates. A digital certificate certifies the ownership of a public key by the named subject of the certificate. This allows others (relying parties) to rely upon signatures or on assertions made about the private key that corresponds to the certified public key. A CA

acts as a trusted third party—trusted both by the subject (owner) of the certificate and by the party relying upon the certificate. The format of these certificates is specified by the X.509 standard.

Regarding the use within Vemotion, These are certificates that are authorised by a governing body to a specific owner/organisation. If your group uses these, Please have your server/IT team load the relevant certificates on to your server and encoders so your own CA can authenticate each connection.

Hint:

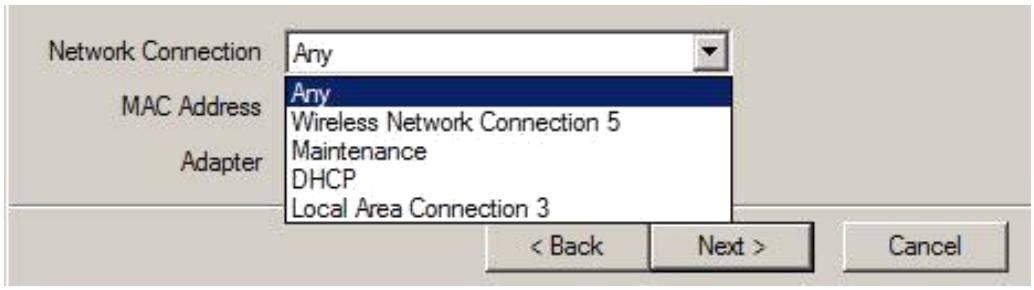
You can locate you loaded certificates by opening your Local Computer Certificates below:



This screen can be opened by writing Cert in your PC's search bar.

In the picture, you will see the Vemotion self-certificate generated by the SSL config screen.

Network Connection



Here in the Network connection drop down box you have the option to connect to a specific Network connection. You may for example have multiple routers attached to the hardware unit and a specific encoder can utilise a specific network.

Summary Page

This give as overview of what you have entered, if you are happy:

Press finish.

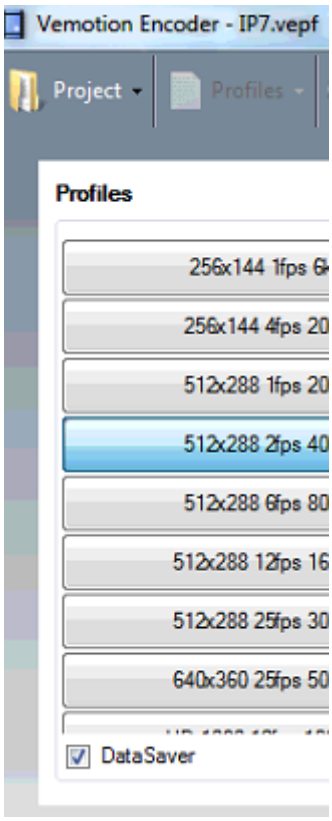
Save the project file by pressing save as and save to the C drive

You can also save this file to a USB should you wish to transfer to another encoder stream. Remember to change the stream ID in Output page as this will always be bespoke to a specific encoder.

START ENCODING and if a camera is connected you should see an input and output video stream in the encoder.

Data Saver

Finally once you have set up your profile you have the option of a data saver tick box. If this is ticked it means that if there is little movement in the transmitted picture, only the areas of movement will be transmitted, therefore saving precious data.

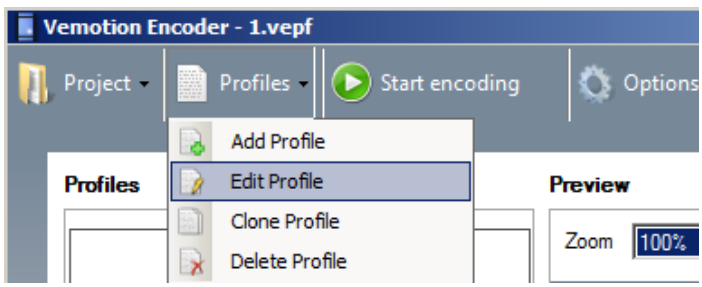


Editing, adding or cloning a profile

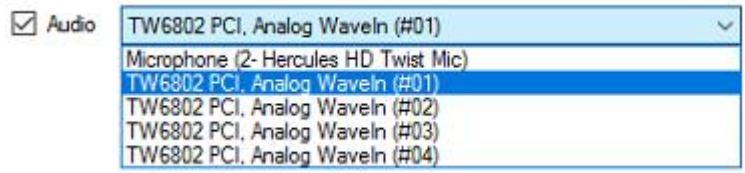
If you want to change you profiles you can stop encoding, go to profiles and choose to add, edit or clone a profile. Edit can be done to make a small change like adding audio or if you wish to add a new profile from the beginning choose add. Clone will allow you to add a new profile and be able to tweak certain elements of the profile so it will clone the IP address you are sending it to and the resolution.

Adding audio

In order to add audio to the encoder you must EDIT profile

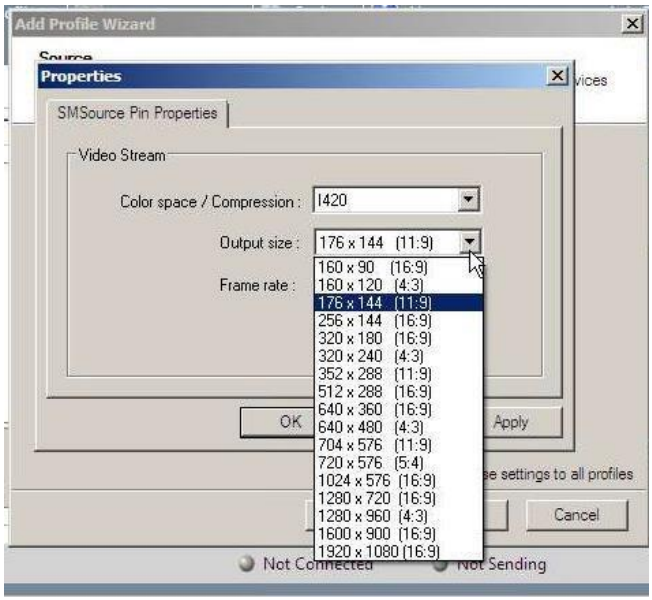


On the source page a tick box will appear for audio, choose in the drop down the audio required 1, 2, 3, or 4 of the Analog Wave in. This relates to phono A1, A2, A3, and A4 of the D type octopus cable - 4 BNC and 4 phono. V1 and A1 will relate to camera input 1, for example. Tick apply to all profiles.



Format

The Format button allows you to configure the stream profile for IP cameras. For Analogue cameras the input source is kept at CIF (352x288) for the vast majority of profiles, this can be resized down if need in the video options page. If you do wish a 704x 576 input for a higher bandwidth this can be specifically input here. Click apply when you have selected your choices.



Understanding the video resolution standards for both standard definition and HD formats will help you with your choices of output sizes to match with the camera and profile streams desired.

CIF, known as either Common Intermediate Format or Common Interchange Format, is the standard bearer for most Web conferencing solutions. If you are transmitting over a low bandwidth network CIF may be the ideal resolution. CIF itself is defined as having an image resolution of 352x288.

QCIF, or quarter CIF, offers a 176×144 resolution by halving both the horizontal and vertical resolutions of the base CIF.

Lower resolutions are also available to support low bandwidth video transmissions.

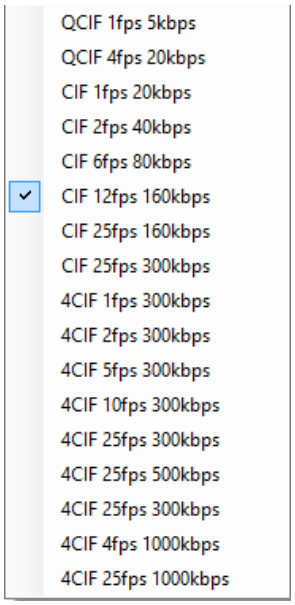
4CIF offers double the image quality at a resolution twice that of CIF at 704x576.

The introduction of high definition (HD) video has added both new choices in video transmission. HD video, not surprisingly, adopts the formats found in HDTV broadcasts and has three primary standards: 720p, 1080i and 1080p. In all three cases, the number in each reflects in the number of horizontal lines in the resolution,

with the letter denoting either progressive or interlaced scanning. All HD video formats utilize a 16:9 aspect ratio, producing a rectangular, widescreen image. So 720p offers a resolution of 1280x720 and progressive scanning, while 1080i delivers video resolutions of 1920×1080, but uses an interlaced scanning method for display. Likewise, 1080p offers the same 1920x1080 resolution with progressive scan.

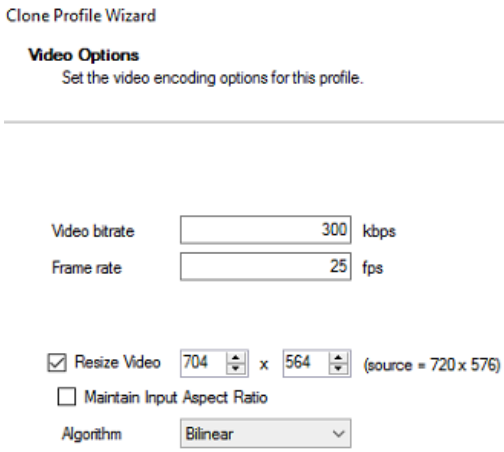
While high definition television broadcasts adhere to these three standards, video conferencing products are now offering quarter high definition (QHD) as an alternative to CIF. A definitive answer on video resolution for QHD varies, in the drop down box there are multiple options for a 16:9 aspect ratio, which translates to reducing both the horizontal and vertical dimensions of 1080p or 720p respectively. With low bandwidth bearers you may wish to try 1080p resolution at a very low frame rate to afford the benefit of the resolution but not max out the bandwidth available.

Understanding that the mobile network bandwidth you have available maybe highly variable at, not only different locations but also different times of the day. Setting up a range of profiles like the below will giving you the maximum flexibility to get the best out of your deployments at any one time.



Video options page

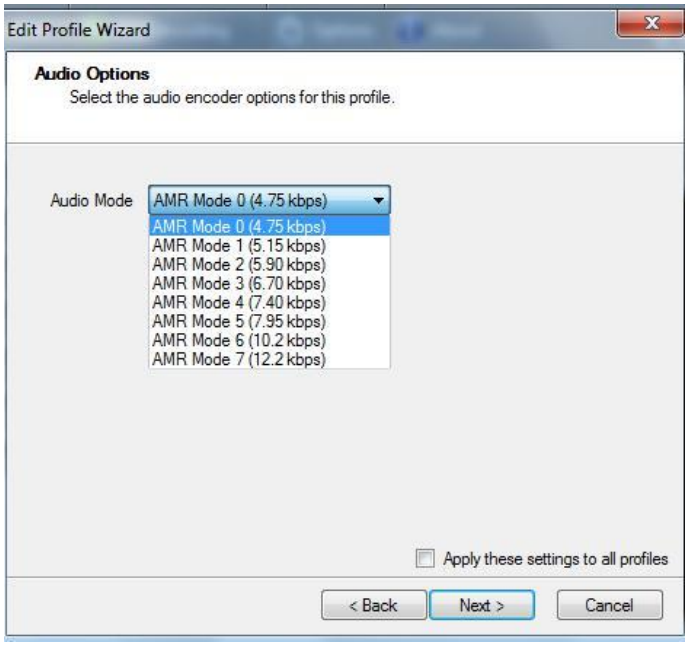
Here you can set the specific bitrate, frame rate for the transmitted video stream.



Use the resize button to use the software to adjust the resolution down to that which is required.

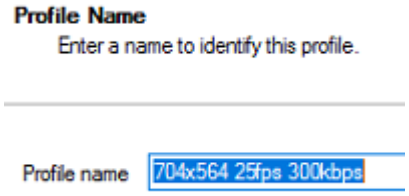
Audio Options Page

This will only appear if you have ticked Audio on the source page. It will allow you to choose the bandwidth for audio, this will take up part of the overall bandwidth and will lessen the bandwidth afforded to the video stream, so choose wisely!



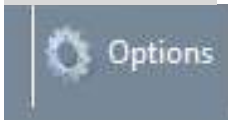
Profile name

The profile will be added according to what you have input into the video options page.

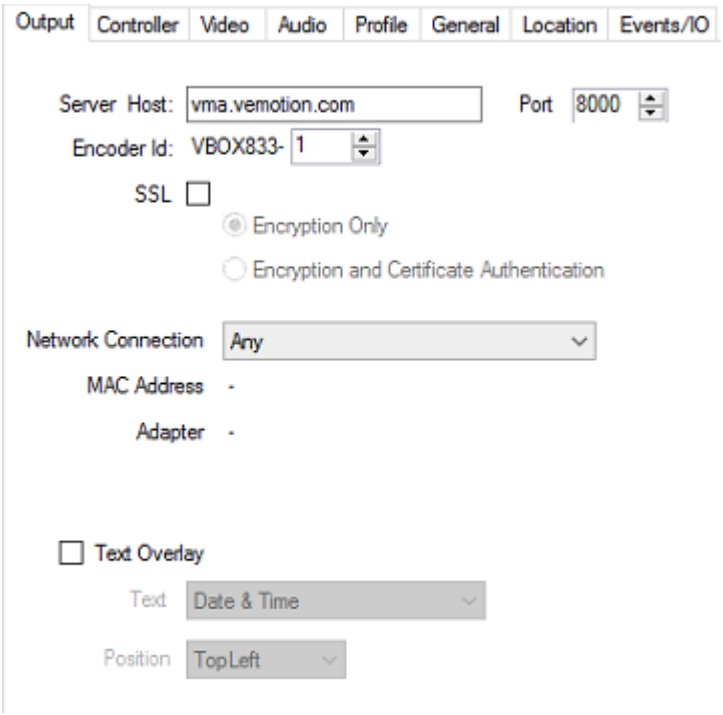


Click through to finish and then REMEMBER TO SAVE PROJECT!

Options Button



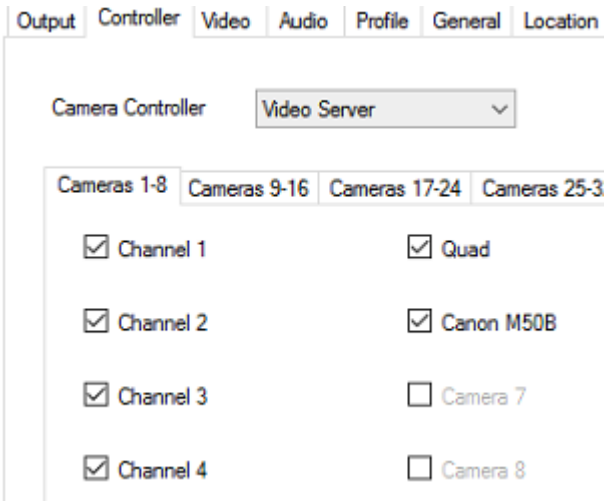
Options will only be available if you are not encoding so press stop encoding if it is not visible. When you press options you have various tabs, please see picture below;



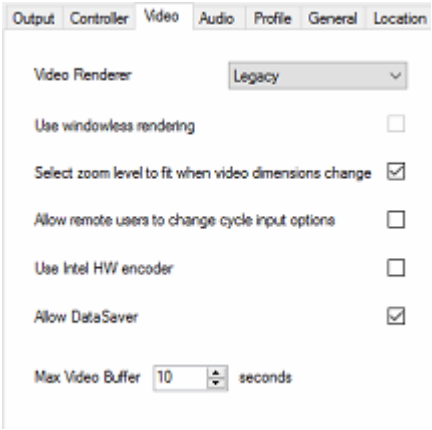
Output tab – this mirrors the Output page in the Profiles set up. Once the default profile has been set up and saved this is where you would change the Server host, Encoder ID, SSL, network to transmit and time and date stamp, should this be required

Controller tab

Allows you to pick and choose what camera you want the encoder to stream



Video tab



Video Renderer drop down is only for the preview box on the encoder and legacy is used as it is less power consuming on the CPU.

Select zoom level to fit when dimensions change keeps the preview windows visible in the encoders User Interface when profile change results in a video dimension change.

Allow remote users to change cycle input options. Automatically cycles through the camera inputs. i.e. select camera 1 for x seconds, change to camera 2 for x seconds, change to camera 3 for x seconds etc.

The Intel Hardware decode is not selected by default in order that the data saver will work. The hardware decode should only be used if many encoders are planned to be transmitting at the same time.

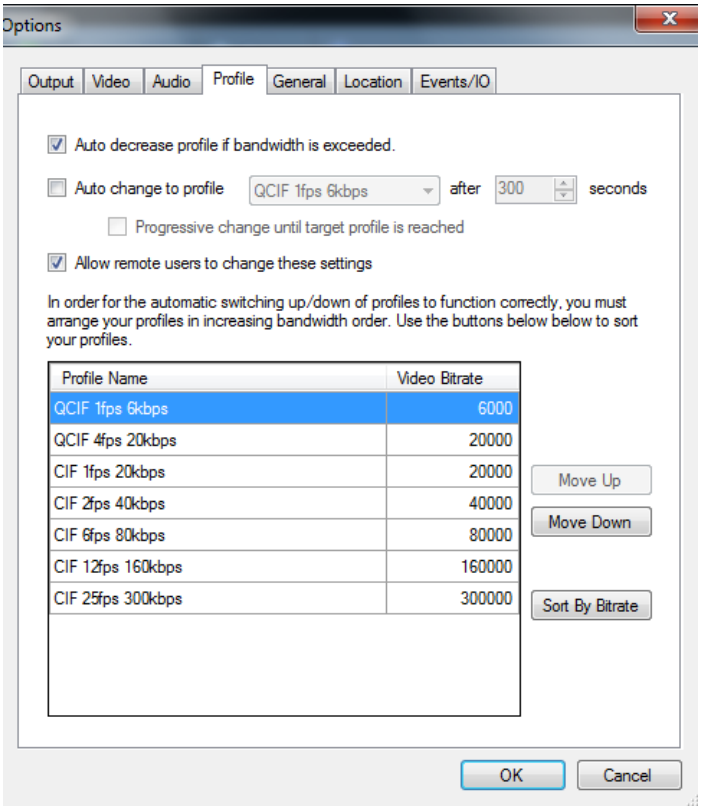
Max video Buffer - This means the encoder will buffer 10 seconds worth of video before it decides the bandwidth is insufficient and performs an auto profile switch down. (or stops sending to the server to allow it to catch up)

Audio tab

- has a push to talk capability, tick the box should this be required and you have the appropriate audio capture card. You will then see on the viewer in the PTZ page a PTT button that can be used to communicate.

Profile tab

The Profiles tab allows you to set up the encoder to react to the transmission bandwidth available.



Here you can stipulate via the first tick box, that if the transmission bit rate exceeds the bandwidth that you currently have available the encoder will automatically drop you to the next available profile that you have set up in your profiles. You can also select a profile to become the profile of choice by ticking auto change to profile. Choose the profile desired and the time elapsed before the profile changes. For example you may have been setting up and viewing in a very high bitrate and forgotten to change to a lower setting. Instead of using up data rates on your sim card it will automatically return to a lower setting in a certain time period. You can also use this to flex the bandwidth up, it may be that the bandwidth has been exceeded whilst you are mobile and it has automatically flexed down. By auto changing the profile to a set profile after an amount of time the encoder will try to go back to the higher bandwidth. The third box when ticked allows remote viewers to be able to alter the profile according to their needs. If this box is not ticked no one will be able to change the profile settings until you can connect into the Encoder again.

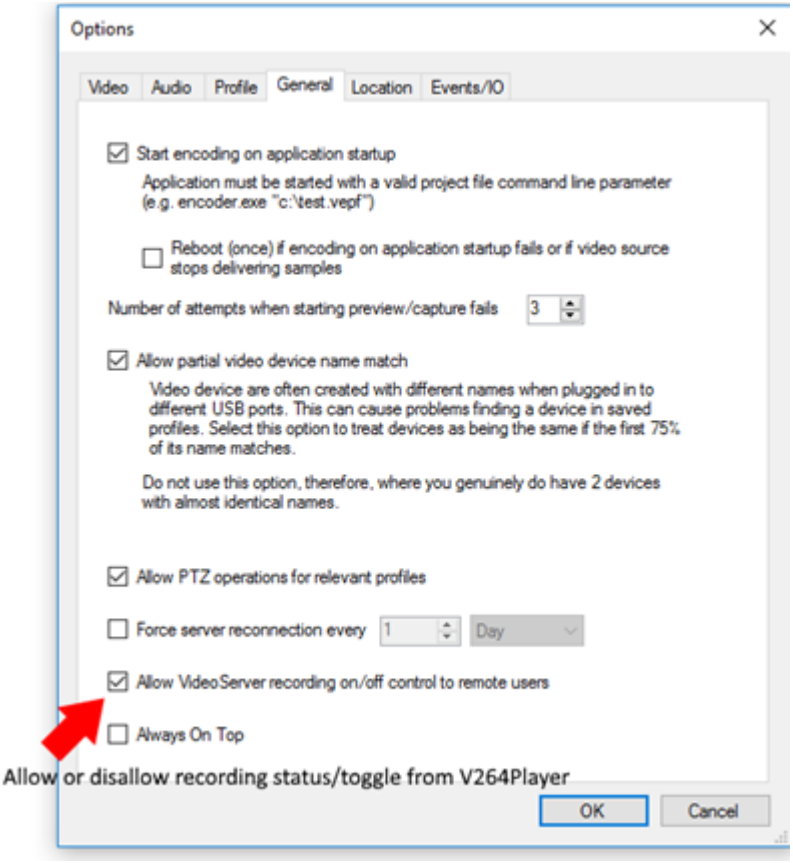
Sort by bitrate allows you to put the profiles in bit rate order if you have added bespoke profiles to your default profiles. This must be in order for the encoder to auto decrease the bandwidth to the next lowest bitrate.

General tab

Make sure the Video Server recording on/off is ticked, denoted by red arrow below.

This adds a configuration setting in encoder/options to determine whether channel recording status (and therefore the ability to toggle recording on/off) is sent to V264Players or not.

If this is unchecked, no V264Player users will see the recording status, or be able to toggle it on/off. Also the ability to allow users to turn the recording on and off through V264 is on a permission basis only. These permissions are given in the Streaming server software as Recordings/Event Control.

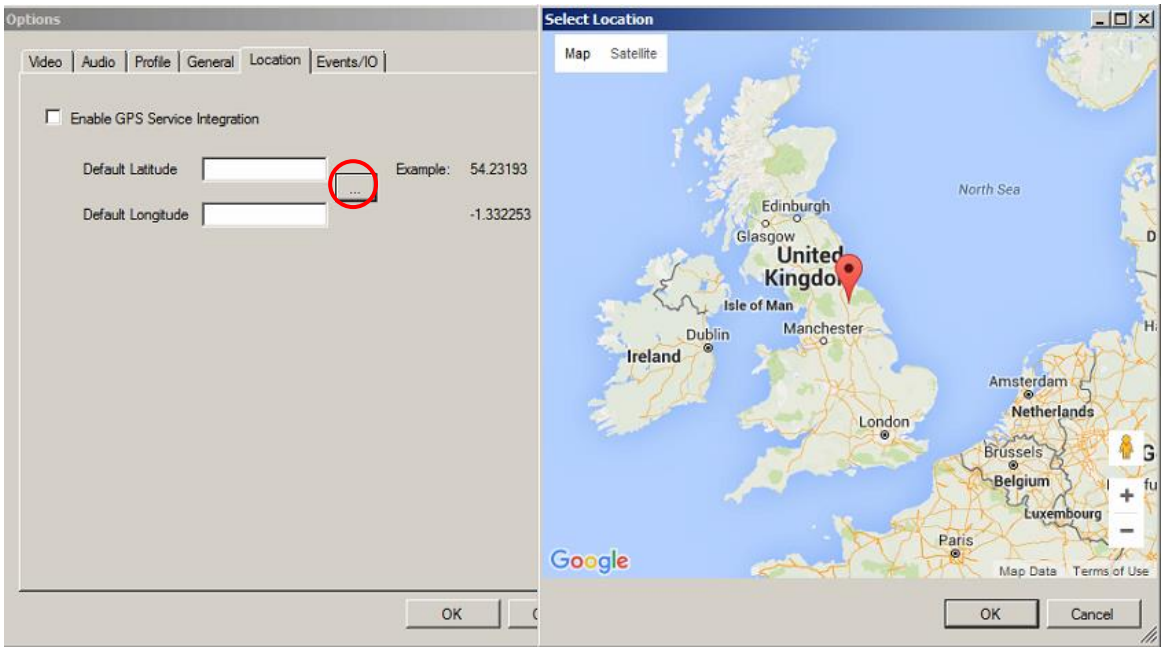


If camera sources do ever stop delivering a picture a reboot may be forced by ticking the second box down.

Location tab

GPS will require extra configuration. Some units already have GPS integrated, such as the VB-35 and VB-36. If your unit was delivered pre July 2016 this may not be enabled. Other products such as the VB-30 you can program a USB GPS device by loading the drivers. Once GPS has been done successfully, tick the Enable GPS Service Integration. GPS will now be enabled.

If no GPS is enabled you can pin point your location manually by pressing the button circled in red. The select location page then comes up so you can drop and drag the marker to the desired location where you encoder is situated.



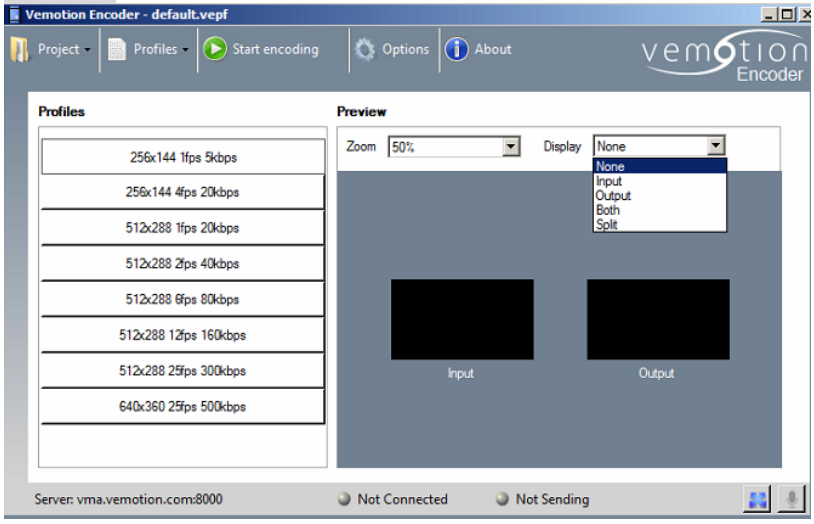
By enabling GPS this will send the GPS coordinates to the Windows V264 Player, open the Properties tab and you can then double click on the GPS coordinates and it will bring up a marker on the map.

Events tab

Contact Vemotion for events set up and triggers. Not all units have this capability. A brief overview below;

VB-30 GPIO (4ch) is a bespoke connector on the unit below the DVI connector. The inputs are triggered by grounding to 0V. A relay will be needed if using anything other than just a switch to earth. The outputs are 5V TTL which, in most cases, will need a relay to switch more powerful equipment.

Preview



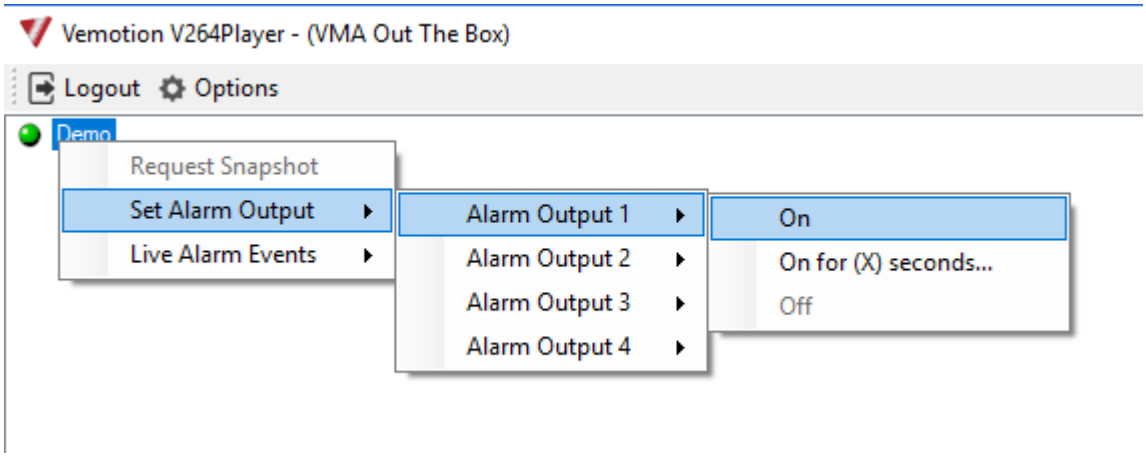
Once you have configured the unit and have started encoding you may wish to change the Preview options to suit your needs. It is recommended to conserve processing power that the Preview is set to None before the unit is deployed for operational activities.

TRIGGERS AND PTZ

Pin outs of each unit can be found below. The VB30 units are shipped with a ribbon cable for connectivity.

Please note relays are required the output from the units cannot directly operate equipment.

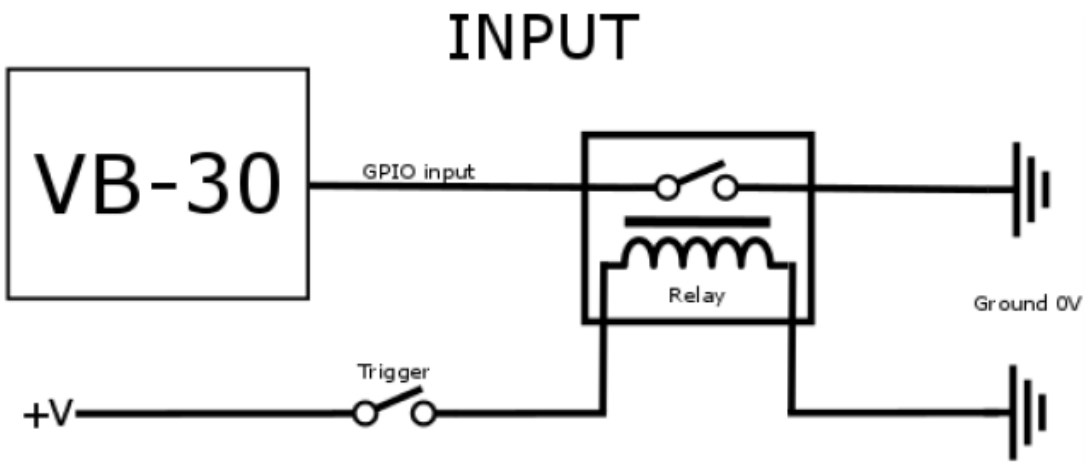
Operating the outputs is done in the player by right clicking the stream and selecting the operation required.

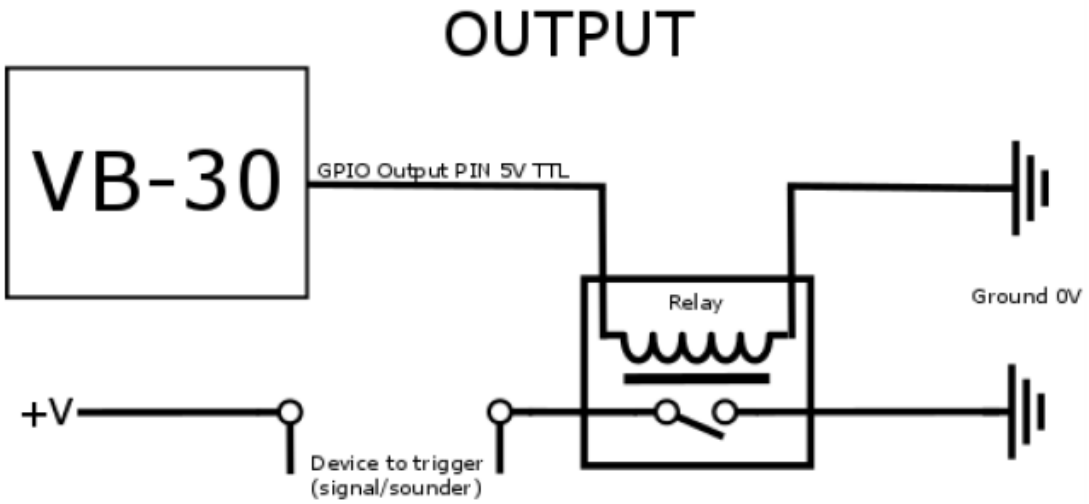


VB-30 GPIO schematic and Input

Pin Definition

Pin#	Definition	I/O	Description
1	N.C	-	No connection
2	N.C	-	No connection
3	DI_0	I	Digital input channel 0
4	N.C.	-	No connection
5	DI_1	I	Digital input channel 1
6	DO_0	O	Digital output channel 0
7	N.C.	-	No connection
8	DO_1	O	Digital output channel 1
9	DI_2	I	Digital input channel 2
10	D_GND	GND	Digital GND
11	DI_3	I	Digital input channel 3
12	DO_2	O	Digital output channel 2
13	N.C.	-	No connection
14	DO_3	O	Digital output channel 3
15	N.C.	-	No connection
16	D_GND	GND	Digital GND



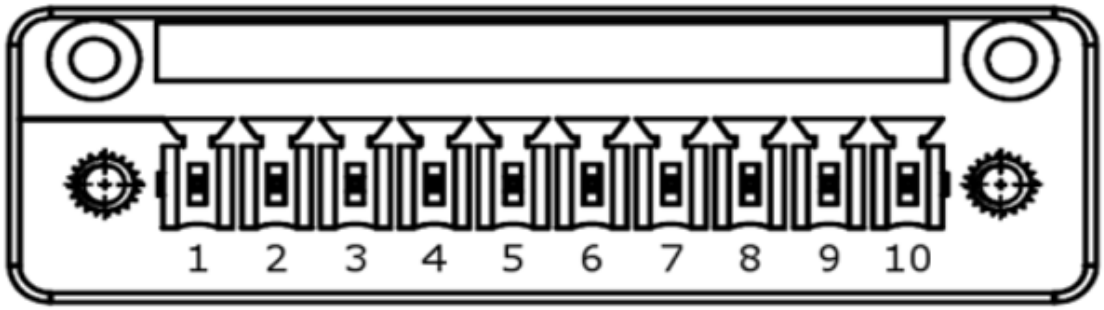


VB30mu GPIO Schematic and Pinout

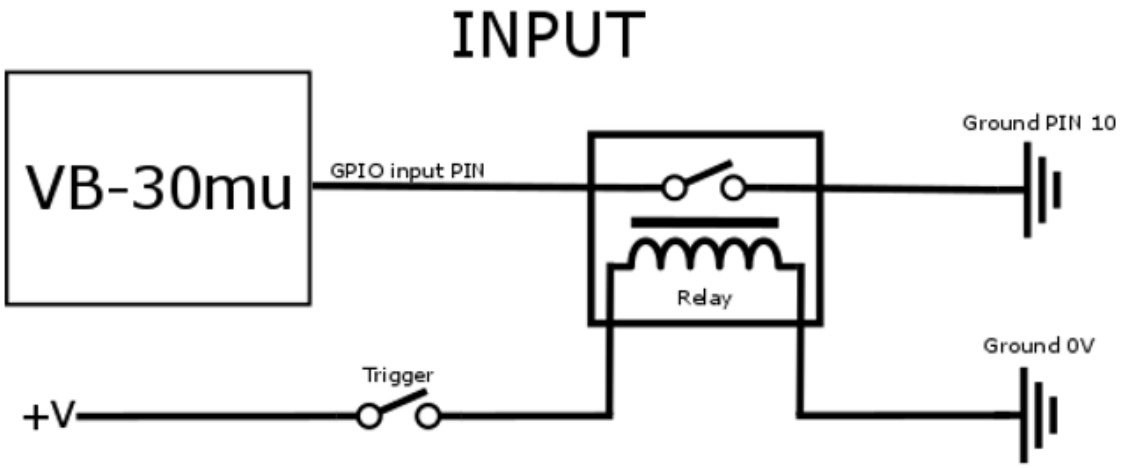
VB-30mu hardware driver (required) is available at:

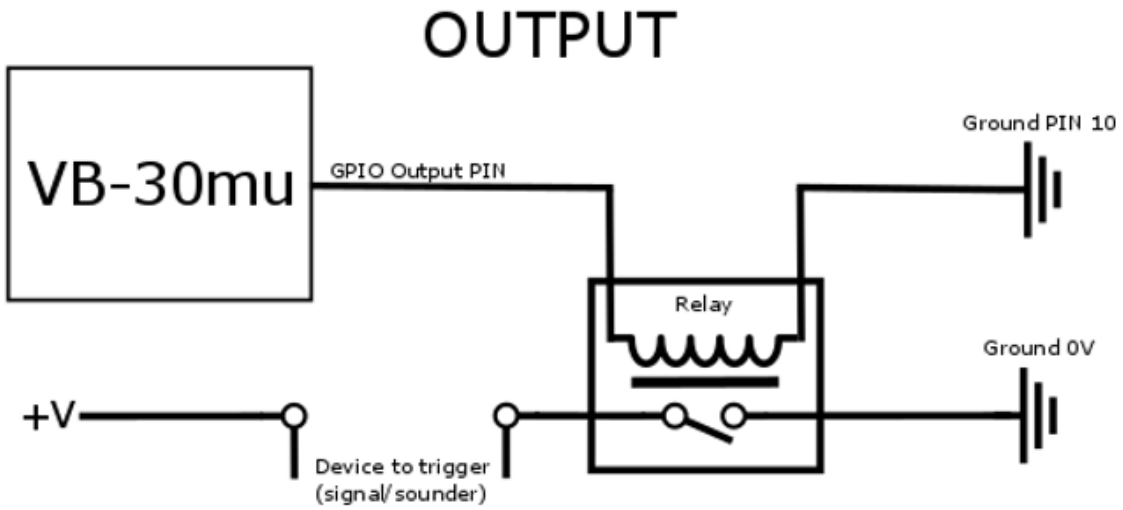
http://downloads.vemotion.com/prerequisites/vb-30mu_GPIO.zip

Correct configuration of Vemotion IO service is also required. Please see the guide in the download.



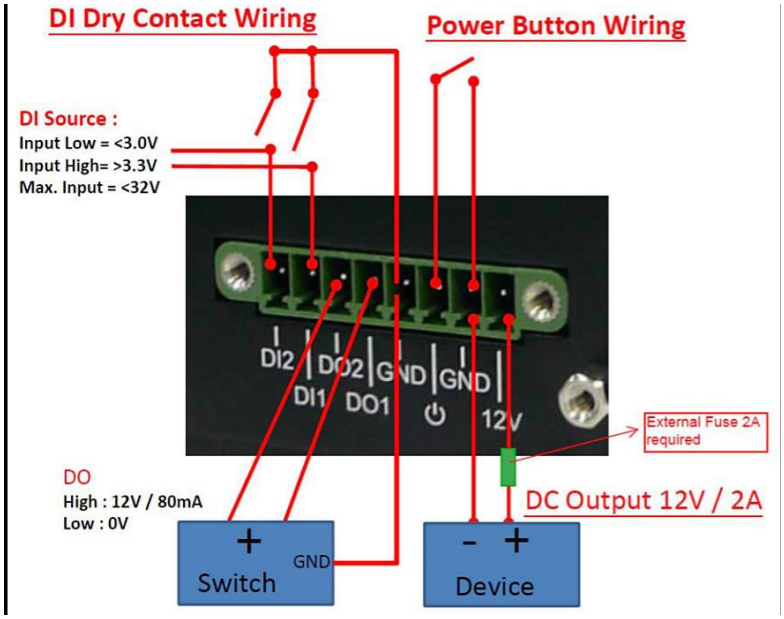
PIN	1	2	3	4	5	6	7	8	9	10
Function	DIO7	DIO6	DIO5	DIO4	DIO3	DIO2	DIO1	DIO0	VCC	GND





VB-35 GPIO

(2ch) uses a green 8-way socket and a screw terminal connector. The inputs are triggered with a +VE between 3.3v and 32v. The outputs are 12v TTL which, in most cases, will need a relay to switch more powerful equipment.

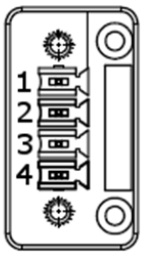


PINOUTS for PTZ

VB-30mu Pin pinouts for PTZ

The VB-30mu only has one comport and this is COM 2. The port is set to RS-485 as default however this can be changed through the BIOS if required. Pins are set out as below for integrations with PTZ cameras.

PIN	RS-485/422	RS-232
1	TX-	GND
2	TX+	RXD
3		TXD
4		DCD



VB-30mu Changing from RS-485 to RS-232

For this you will need a monitor & keyboard plugged into the unit. Firstly pull the power from the VB-30mu. Then reapply power and as soon as you have done this you need to keep pressing and releasing the delete key. This will then take you to the Setup Utility.

- Using the -> go from the Main to the Advanced tab.
- Using the down arrow highlight SIO FINTEK81803 then press enter
- Again using the down arrow press 2x to highlight 'type' which should at this time be set to the default RS485. Press enter then scroll to RS232 and press enter. Press F10 and it will ask you to exit and save change. Press Enter on the Yes command.

Your COMPORT is now RS-232

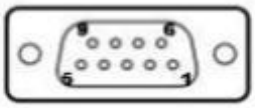
Disabling Wi-Fi polling for external USB on VB-30mu

- Startup Task Manager
- Select More Details
- Select Start-up

- Here you can disable the Wifi Searching

VB-30 Comports, Power, Pin pinouts for PTZ

- COM1 Top Right = RS485
- COM2 Top Left = RS232
- COM3 Bottom Left = RS422
- COM4 Bottom Right = Video input



	COM1/COM3			COM2/COM4
Pin#	RS-232 Mode	RS-422 Mode	RS-485 Mode (Two-wire 485)	RS-232 Mode
1	DCD			DCD
2	RX	422 TXD+	485 TXD+/RXD+	RX
3	TX	422 RXD+		TX
4	DTR	422 RXD-		DTR
5	GND	GND	GND	GND
6	DSR			DSR
7	RTS			RTS
8	CTS	422 TXD-	485 TXD-/RXD-	CTS
9	RI			RI

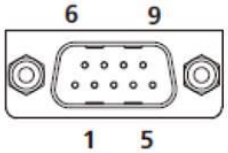
VB-30 power cable V+ is the cable with the solid white line

PTZ Pin outs for VB-35

Pin	Signal		
	RS232	RS422	RS485
1	COM1_DCD	TXD-	TXD-/RXD-
2	COM1_RXD	TXD+	TXD+/RXD+
3	COM1_TXD	RXD+	NC
4	COM1_DTR	RXD-	NC
5	GND	GND	GND
6	COM1_DSR	NC	NC
7	COM1_RTS	NC	NC
8	COM1_CTS	NC	NC
9	COM1_RI	NC	NC

Pin outs for VB-36

VB-36 COM 1 & 2 can be set 232 or 485 a per table below;

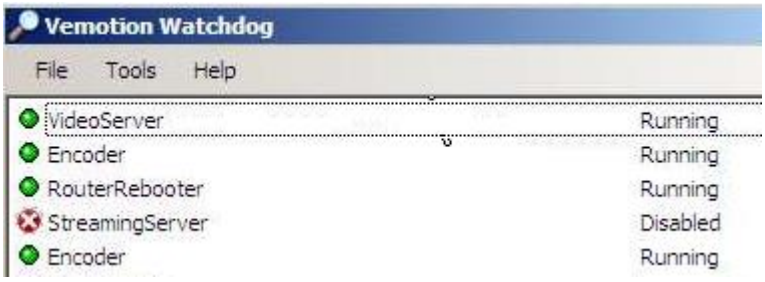


Pin	Signal	Pin	Signal
1	COM2_DCD (RS-485_TXD-/RXD-)	2	COM2_RXD (RS-485_TXD+/RXD+)
3	COM2_TXD	4	COM2_DTR
5	GND	6	COM2_DSR
7	COM2_RTS	8	COM2_CTS
9	COM2_RI#		

WATCHDOG

Vemotion Watchdog software has been designed so that as soon as power is applied to the unit both the Vemotion Video Server and Vemotion Encoder will start automatically. If it does not automatically start, check it is saved in C:\Users\admin\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup

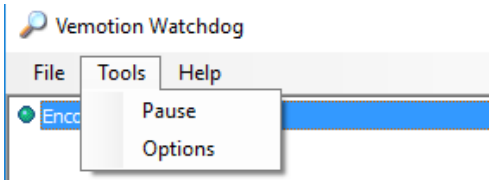
This software can be used with any Vemotion products. Even if it is closed down it will still remain running in the background. Please contact Vemotion should you wish to know more information.



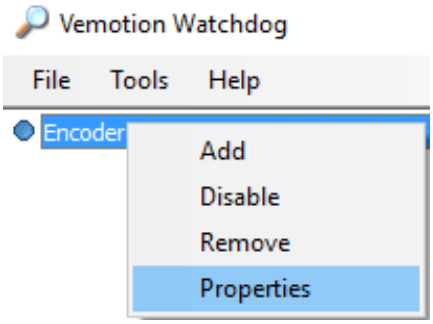
The only information you may have to change is, if you alter the profiles and you wish to save them as a specific named project. For example set up and save either an analogue of IP set of profiles. All Vemotion encoder projects should be saved in the C:drive.

Exchange Encoder Profile

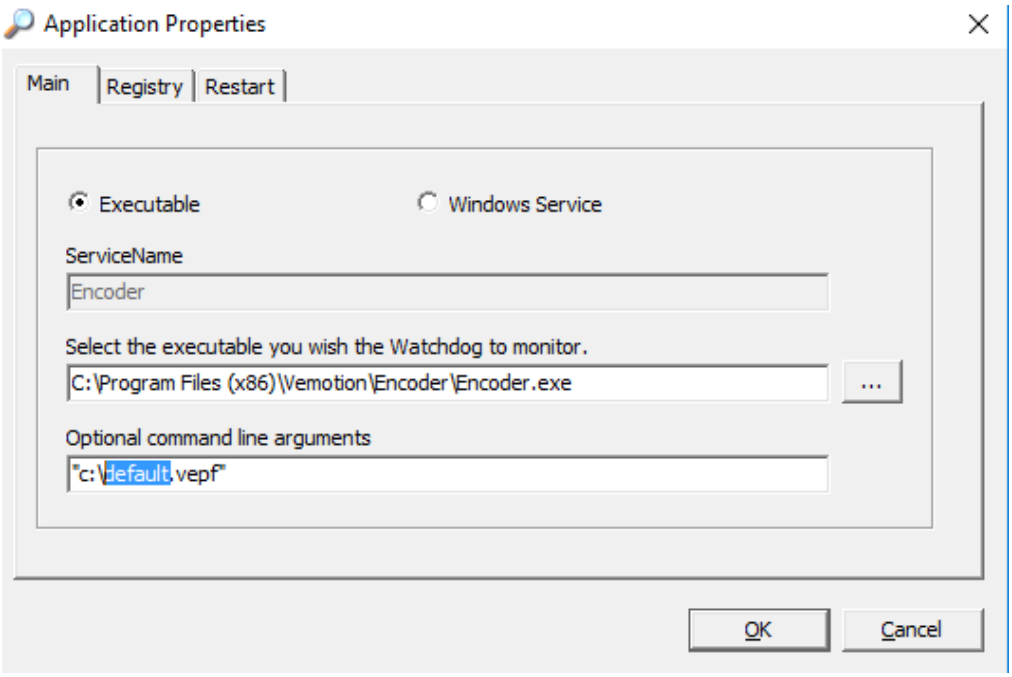
To exchange encoder profiles, click tools and pause the Vemotion Watchdog;



Right click on the encoder and go into properties;



This will bring up the following page;



Select the executable you wish watchdog to monitor which is the Encoder.exe file found at;

C:\Program Files (x86)\Vemotion\Encoder\Encoder.exe, it is possible to search for where the file is stored by clicking the three dots.

This should not change from project to project however. The command line that must be changed is the **"c:\default.vepf"**

Whatever your file is call in the C drive, must replace the default word, e.g if the file is called analogue it must be **"c:\analogue.vepf"**

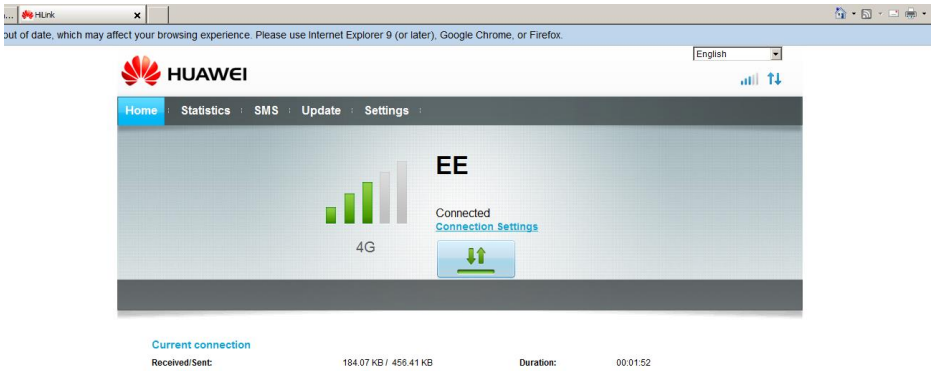
Press OK.

Click Tools/Resume and the new Encoder project will automatically start.

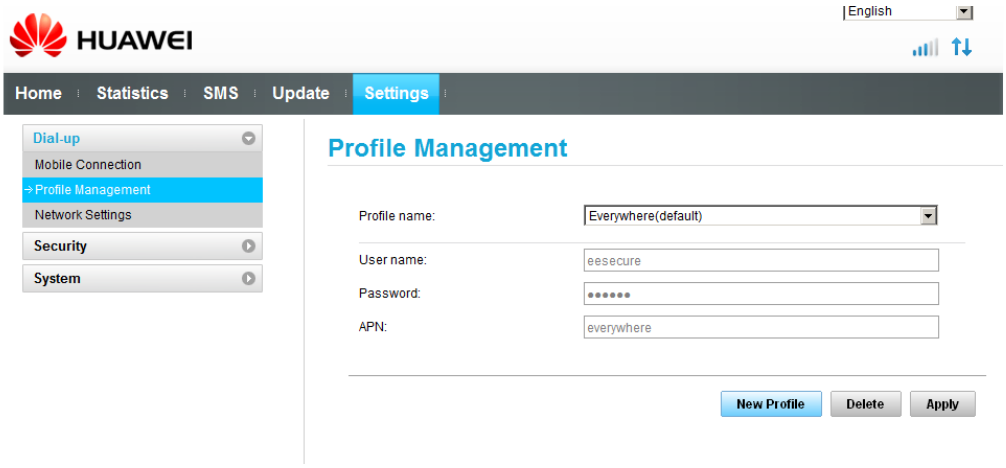
SIM CARD SET UP

VB-30

On the VB-30 you have an external modem supplied with the unit. Insert the sim into the external modem and then plug into the USB marked 4G. The Huawei software will start up on insertion to show the below;



Go to settings and profile management to put the APN in if required and press apply.



VB-35 & VB-36

The VB-35 has one internal modem and the VB-36 has either one or two internal modems depending on the unit purchased.

VB-35 and VB-36

This units are delivered with 2 sim slots but only one should be used. One is sealed off.

The VB-36 can have two modems so in this case both sim slots will be made available.

The VB-35 has two sim slots, you only have one modem, so one will be sealed off with a label saying not used.

Whilst the unit is powered up, insert the sim. Make sure you gently slide the sim tray back in, if there is any resistance then the sim tray is not lined up correctly. (Take the DB9 connector out if you cannot access properly). Then pull the power completely for at least 10 seconds, do not just do a restart, the power has to be completely pulled out of the unit.

Replace power supply and let the unit restart.

The network button at the bottom right of your screen will have a blue circle going round until it registers the sim.

Once the blue circle has disappeared left click the network button and choose the network you wish to connect to and click connect. At this point it will either bring up the page you can enter your APN or if it does not, left click on the cellular network to highlight it, right click and click on properties. This should bring up a page with three tabs, Subscription, Profile and Security. Click on profile and enter the APN, user name and password. Also make sure you have set 'always connect automatically' in the drop down box. It should now connect to the network and the sim is registered.

If any more info is required please contact Vemotion – +44 (0) 8444 906 906 or info@vemotion.com

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