



MVE405S

USER MANUAL

HEVC H.265 SDI Encoder



Import, Manufacturing and Distribution by
vuetec.tv UG (haftungsbeschränkt)
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MVE405S - HEVC H.265 Video + Audio Encoder

The HEVC encoder MVE405S is a hardware device used for high-definition video signal (720P / 1080P, etc.) encoding and network transmission, using the latest and high-efficient high-definition digital video compression technology H.265, with the characteristics of reliable, high-definition, low bit rate and low latency.

The launch of this product, using a hardware DSP encoder, fills the gap in the industry, which is a direct replacement for the traditional capture card or software coding method. Input the HDMI video signal to conduct the encoding process, after compression processing of the DSP chip, output the standard TS network stream.

The system is more stable and image quality is more perfect, which can be used in a wide variety of needs for high-definition video and high-resolution and high frame rate acquisition-based IP network transmission. Its powerful scalability makes it more easily to respond to the needs of different industries and can be used as live video encoder too.

Industrial controlled and precision design, the small size, the power consumption is less than 5W, offers an easy and energy efficient installation.

Includes

- 1 Quad Encoder incl. Power Supply 110-240 V AC / 2 A

Features

- Four individual H.264\H.265 HDMI Encoding
- Equipped with 4 channel SDI video input
- Dual channels encoder which can output TS dual stream with different signals
- Support settings of the bit rates and resolution for each channel as required
- Widely used in variety of digital distribution systems such as CATV digital head-end, satellite and terrestrial digital TV etc.
- Be able to replace of HD capture card and support VLC decoding

The Encoder Hardware

The transport-stream hardware encoder MVE405S features;

- Support standard H.265\H.264 encoding
- Save bandwidth up to 33% when choose H.265 codec, i.e 1.5 MBps bandwidth will be workable to transport 1080P video.
- Audio coding support MPEG1 Audio Layer2
- CBR/VBR/ABR code rate controlling, 16 kbit/s ~ 16 Mbit/s
- Support Network interface full-duplex mode 1000M
- Support HTTP, UTP, RTSP, RTMP, ONVIF, unicast and multicast
- Output stream format: TS/VES/AES
- The WEB operating interface, configuration interface in English and Chinese are optional
- Support web management
- Support resolution setting
- Support switching between mono and stereo audio
- Support decoding the set-top box
- Support transmit in LAN and WAN

Hardware I/Os

All I/Os are placed at rear for easy installation.



- Power input: 110-240 V AC input , using IEC3 power cord

4 sections of encoder, each:

- Status indication: Lit if there is internet connection, off when there is no network. At reset, if the light is not on after 10 seconds, the device is restarted.
- Power indication: Lit to indicate if the power is normal
- Reset button: it is used to reset the device, when turned on, press and hold for 10 seconds, the device IP will back to factory IP, 192.168.1.168
- SDI input: it is used for SDI signal input (HDMI model MVE405H available)
- Analog audio input: use to combine analog audio sources with SDI signals
- Ethernet port: 10/1000M network port

Specifications

Video:

Video input	HDMI-A 1.3 (HDCP conform)
Resolution	1080p / 1080i / 720p 1600x1200 / 1400x1050 / 1440x900 / 1280x1024 / 1280x960 / 1280x800 / 1024x768 / 800x600 etc.
Frame rate	60 Hz max.
Coding	H.265 Main Profile encoding H.264 Main Profile encoding H.264 Baseline Profile encoding H.264 High Profile encoding
Rate	0.8 ~ 12 Mbit/s
Rate control	CBR / VBR
GOP type	Adjustable
Video preprocessing	de-interlacing noise reduction, sharpening
Latency	<200 ms

Audio:

Encoding format	AAC, MP3
Input connector	Digital: HDMI embedded Analog: 3,5 mm TRS
Sampling rate	self-adaption
Bit rate	32k, 44.1k, 48k, 64k, 96k, 128k, 160k, 192k
Sampling accuracy	24 bit
Code rate	64 ~ 320 kbit/s

Network:

Network port	RJ45 Ethernet
Data rate	<1000 Mbit/s
Head stream	HTTP, UTP, RTSP, RTMP, ONVIF protocol
Data stream	TS Standard Stream, Dual Code Stream
Configuration	WEB based operation interface
Firmware	Updatable through internet

Electrical & Mechanical:

Input Power Requirements:	AC 110-240 V @ 1 A
Power Adapter:	AC 90 V~240 V
Power Consumption:	< 25 W
Dimensions:	440 mm × 250 mm × 44 mm
Weight:	2300 g

Environmental:

Operating Temperature:	-20°C ~ +60°C
Storage Temperature:	-20°C ~ +80°C
Relative Humidity:	0% ~ 95% (non-condensing)
MTBF:	>100,000 hours

Operating System

Each section of the MVE405S is independent and can be controlled by the WEB GUI interface. Connect the encoder to a PC using the Ethernet connection. To access a standard WEB browser is best.

Log-In to the System

Standard Log-In

Change the administrator's computer IP address (in case of WIN 7) as : 192.168.1.* to avoid IP conflicting with dashboard IP. (mark "*" numbers range will be 0-254 except 168)

Open the Log-In Dash Board in your web browser. Enter 192.168.1.168 in URL address, the Log-In window appears. Type the user name and password.



Default Address

The System comes with default address and password.

Default address	192.168.1.168
Default User	admin
Default Password	admin

Reset & Initialization

Input the power supply to turn on encoder and press reset (RST) on the encoder's front constantly for about 10 seconds. The system will be restarted and initialized. The default IP of the encoder is 192.168.1.168 after initialization.

System Menue

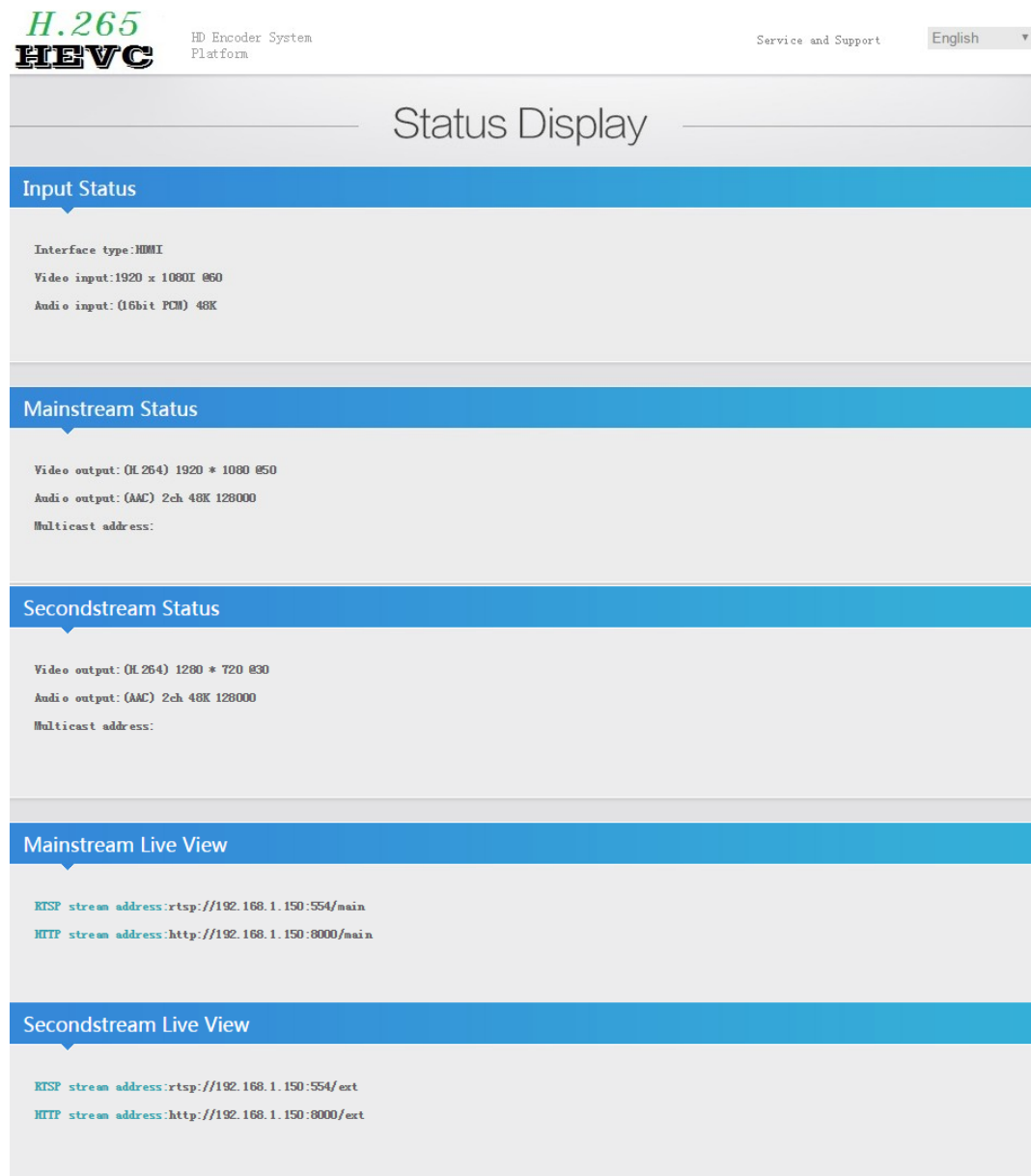
Using the WEB-GUI just after Log-In the System Menue appears.

Status	Network	Main stream	Second stream	Audio	System
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It contains six sections of information or settings.

Status Display

The Status Display shows the current settings of the HEVC encoder system.



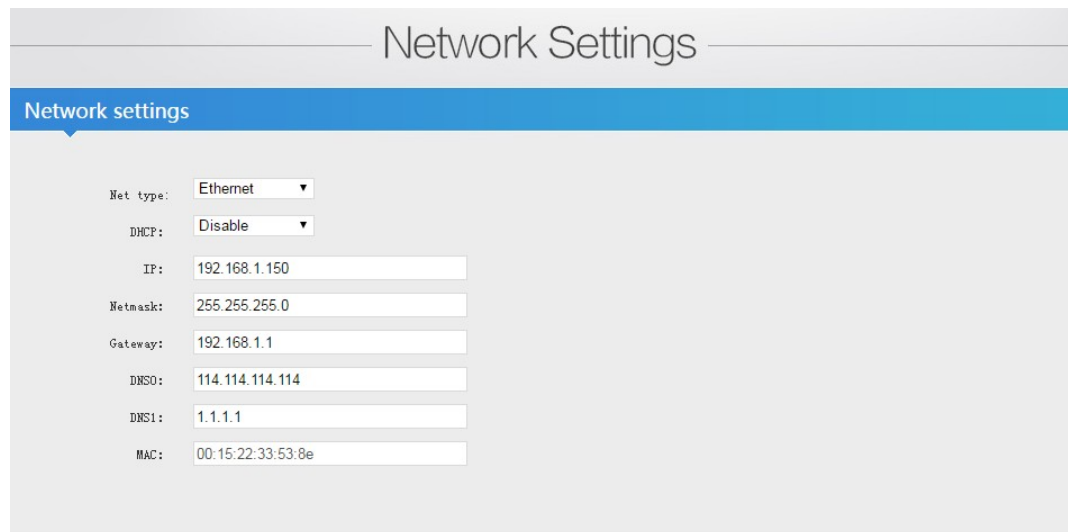
The screenshot shows the 'Status Display' page of the HEVC H.265 encoder system. The page has a header with the 'H.265 HEVC' logo, 'HD Encoder System Platform', 'Service and Support', and a language dropdown set to 'English'. The main content area is titled 'Status Display' and contains six sections, each with a blue header and a light gray body:

- Input Status:**
 - Interface type: HDMI
 - Video input: 1920 x 1080i @60
 - Audio input: (16bit PCM) 48K
- Mainstream Status:**
 - Video output: (H.264) 1920 x 1080 @50
 - Audio output: (AAC) 2ch 48K 128000
 - Multicast address:
- Secondstream Status:**
 - Video output: (H.264) 1280 x 720 @30
 - Audio output: (AAC) 2ch 48K 128000
 - Multicast address:
- Mainstream Live View:**
 - RTSP stream address: rtsp://192.168.1.150:554/main
 - HTTP stream address: http://192.168.1.150:8000/main
- Secondstream Live View:**
 - RTSP stream address: rtsp://192.168.1.150:554/ext
 - HTTP stream address: http://192.168.1.150:8000/ext

- Input Status: Shows the video and audio format at the input HDMI
- Mainstream Status: Shows the settings for the main stream
- Secondstream Status: Shows the settings for the second stream
- Mainstream Live View: Shows the live stream address for the mainstream
- Secondstream Live View: Shows the live stream address for the secondstream

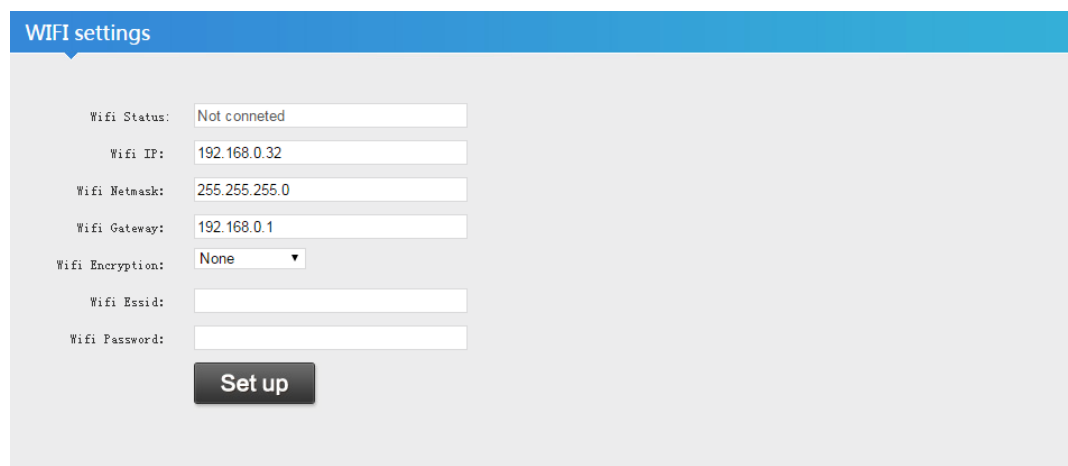
Network

In this section the network settings are accessible.



Ethernet:	Select Ethernet as network
DHCP:	Enables DHCP mode
IP:	Shows the current IP address, here you can enter your individual IP
Netmask:	Shows the current netmask, here you can enter your individual netmask
Gateway:	Shows the current gateway, here you can enter your individual gateway
DNS:	If you want to push stream by RTMP to media server, the DNS need be same as your router's .
MAC:	The physical address of the device, after you reset it, it will change.

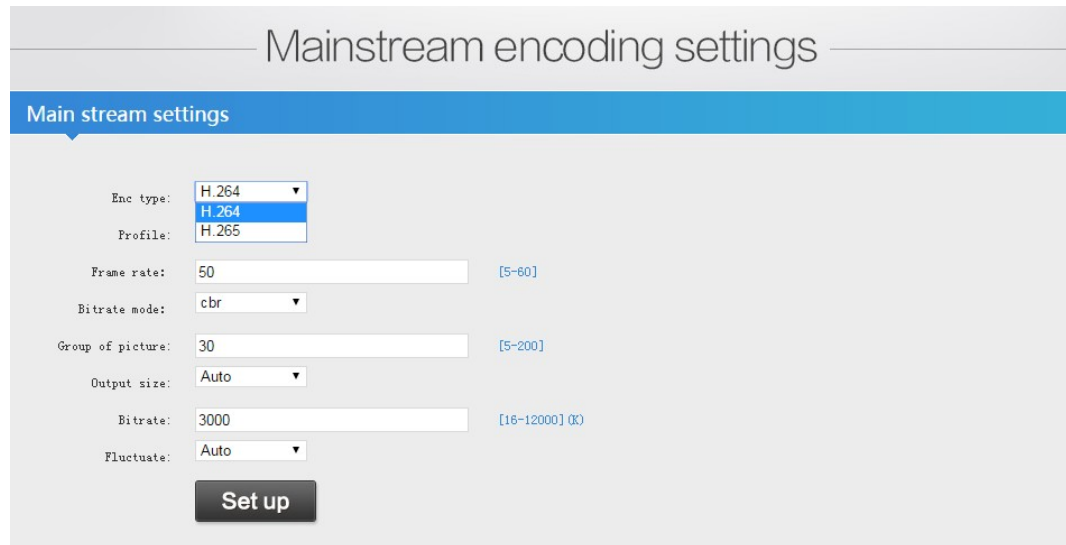
In case this is a WiFi version of MVE405S an additional window appears.



Wifi settings:	You need buy the wifi version of the device if you need wifi connecting . The device will be WIFI status after reboot when there is no network cable connected.
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Mainstream

In this section the mainstream settings are accessible.

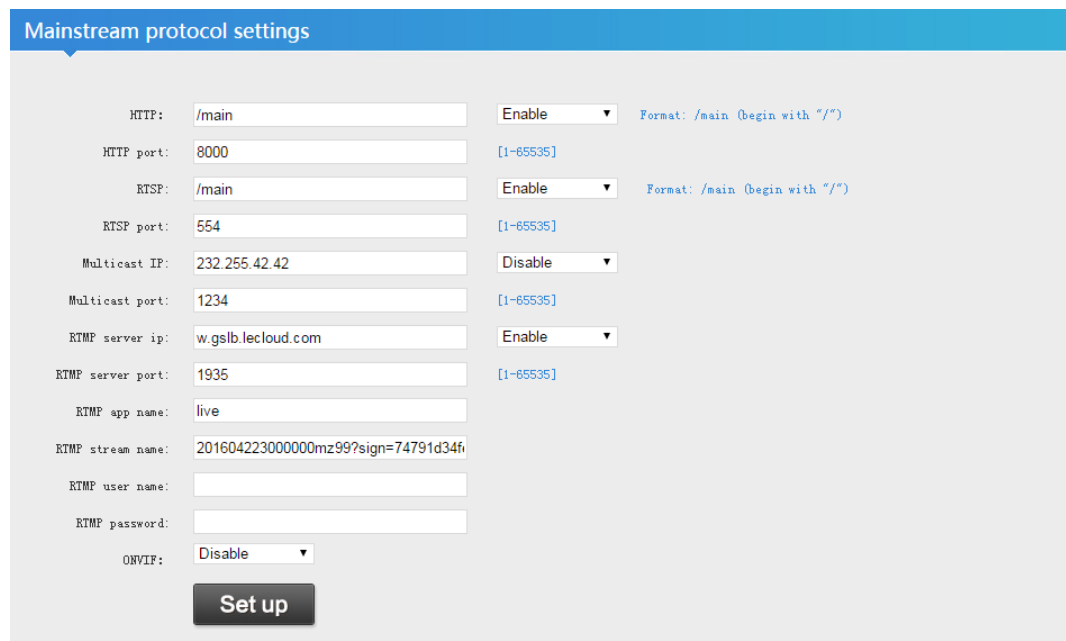


The screenshot shows the 'Mainstream encoding settings' window. It has a title bar 'Mainstream encoding settings' and a sub-header 'Main stream settings'. The settings are as follows:

Parameter	Value	Range/Notes
Enc type:	H.264	
Profile:	H.264	
Frame rate:	50	[5-60]
Bitrate mode:	cbr	
Group of picture:	30	[5-200]
Output size:	Auto	
Bitrate:	3000	[16-12000] (K)
Fluctuate:	Auto	

A 'Set up' button is located at the bottom.

Encoder type:	Selector for the type of compression H.264 & H.265
Profile:	Selector for baseline profile / main profile / high profile
Frame rate:	Selector for frame rate 5 to 60 fps (when the input resolution is 1080i50, the frame rate will choose 25)
Bitrate mode:	Selector for VBR / CBR
Group of picture:	Selector for 5 - 200 pictures
Output Size:	When you select Auto, the input and output resolution is the same
Bitrate:	Selector for bit rate 16 - 1200k (Network bandwidth setting)



The screenshot shows the 'Mainstream protocol settings' window. It has a title bar 'Mainstream protocol settings'. The settings are as follows:

Parameter	Value	Range/Notes
HTTP:	/main	Enable
HTTP port:	8000	[1-65535]
RTSP:	/main	Enable
RTSP port:	554	[1-65535]
Multicast IP:	232.255.42.42	Disable
Multicast port:	1234	[1-65535]
RTMP server ip:	w.gslb.lecloud.com	Enable
RTMP server port:	1935	[1-65535]
RTMP app name:	live	
RTMP stream name:	201604223000000mz99?sign=74791d34f	
RTMP user name:		
RTMP password:		
ONVIF:	Disable	

A 'Set up' button is located at the bottom.

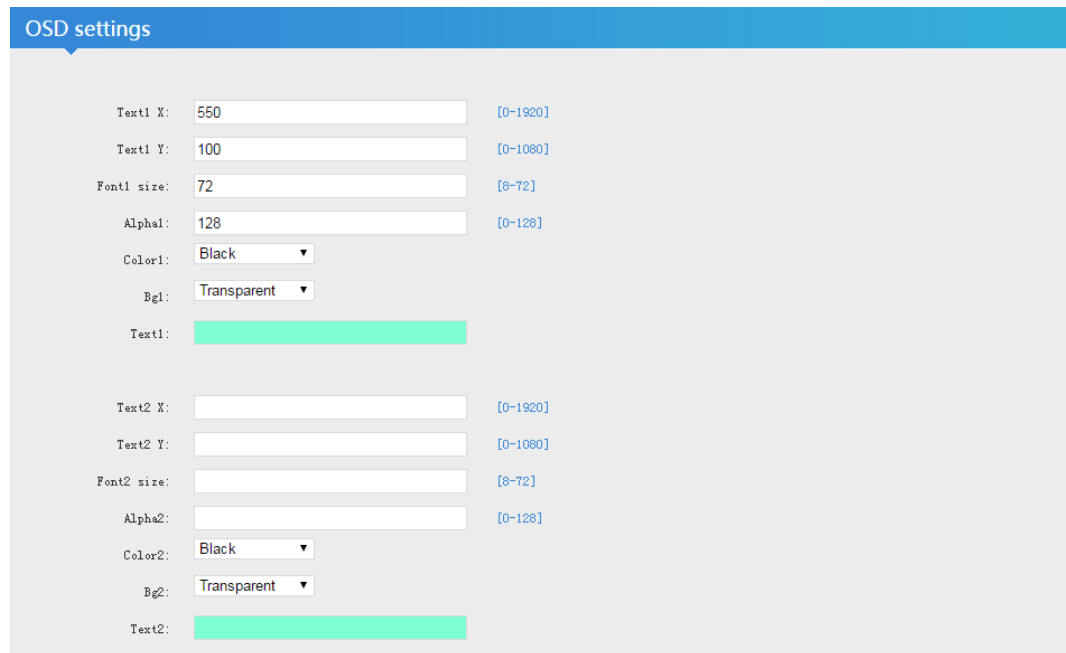
HTTP protocol:	main enable / Disable
HTTP port:	selectable 1-65535
RTSP protocol:	main enable / Disable
RTSP port:	selectable 1-65535
Multicast IP:	232.255.42.42, can be modified to disable / RTP / UDP
Multicast port:	selectable 1-65535

RTMP server address: Can be modified according to the streaming server IP or domain name
 RTMP server port: selectable 1-65535
 RTMP app name: Customized
 RTMP user name: Customized
 ONVIF: Enable / disable security monitoring with protocol

OnScreen Display

The MVE405S HEVC Encoder allows to insert individual watermarks or logos. Use the OSD menu to arrange setting for position of the picture or text you want to put in the web-interface.

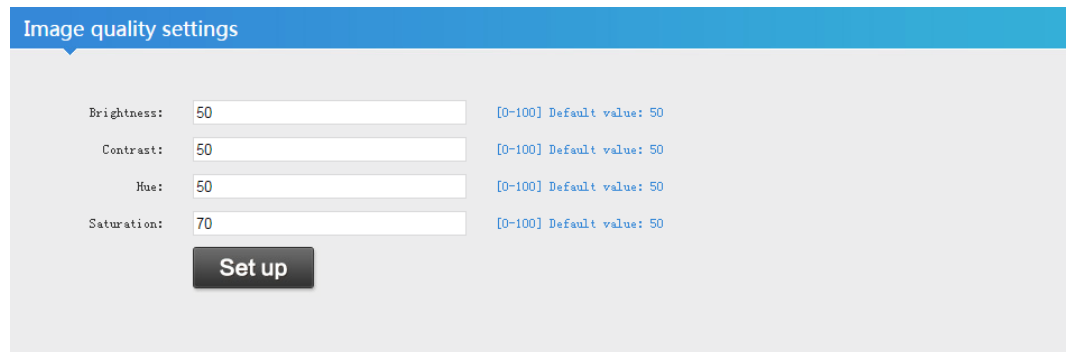
Two different Text inserts can be arranged.



Text X: Horizontal start point for text [1 - 1920]
 Text Y: Vertical start point for text [1 - 1080]
 Font size: Selectable font size 8 - 72 pt
 Opacity: Selectable font opacity 0 - 128
 Font color: Selector for font color
 Background color: Selector for background color or transparency
 Text: Window to type the text

Image Quality Settings

Under normal circumstances it is not necessary to change the default settings for the image processor. If you try to encode critical video material corrections for enhanced image quality can be done in the Image Quality Settings menu.

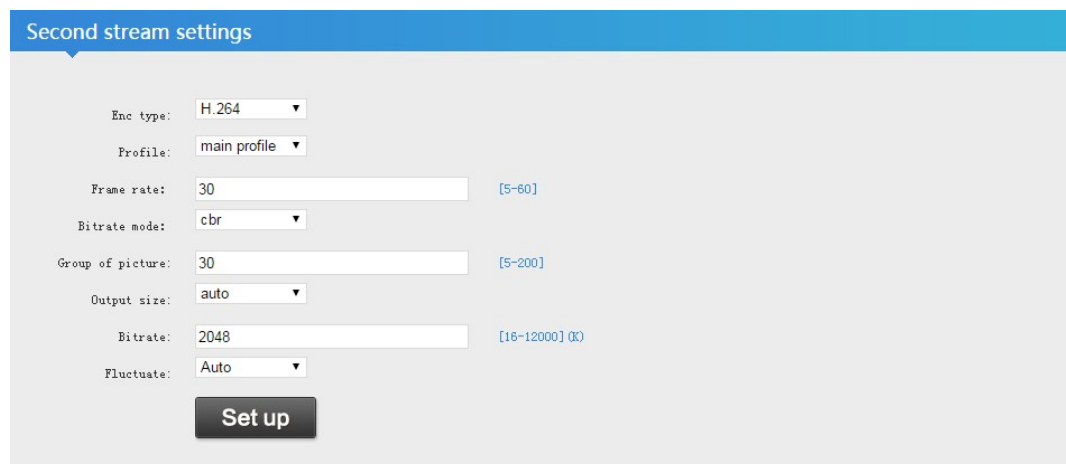


The screenshot shows the 'Image quality settings' menu with a blue header. Below the header, there are four input fields: Brightness (50), Contrast (50), Hue (50), and Saturation (70). Each field has a range and default value in blue text: [0-100] Default value: 50. A 'Set up' button is located at the bottom center.

Brightness: to modify the brightness of the image (0 to 100)
 Contrast: to modify the contrast of the image (0 to 100)
 Hue: to modify the hue of the image (0 to 100)
 Saturation: to modify the saturation of the image (0 to 100)

Secondstream

In this section the secondstream settings are accessible.



The screenshot shows the 'Second stream settings' menu with a blue header. Below the header, there are several settings: Enc type (H.264), Profile (main profile), Frame rate (30), Bitrate mode (cbr), Group of picture (30), Output size (auto), Bitrate (2048), and Fluctuate (Auto). Each setting has a range and default value in blue text: [5-60], [5-200], [16-12000] (X). A 'Set up' button is located at the bottom center.

The settings are same like Mainstream.

Secondstream protocol settings

HTTP:	/ext	Enable	Format: /ext (begin with "/")
HTTP port:	8000	[1-65535]	
RTSP:	/ext	Enable	Format: /main (begin with "/")
RTSP port:	554	[1-65535]	
Multicast IP:	232.255.42.41	Disable	
Multicast port:	2234	[1-65535]	
RTMP server ip:	192.168.0.4	Disable	
RTMP server port:	1935	[1-65535]	
RTMP app name:	live		
RTMP stream name:	ext		
RTMP user name:			
RTMP password:			

Set up

Audio Settings

In this section the audio settings are accessible.

Audio encoding settings

Audio encoder

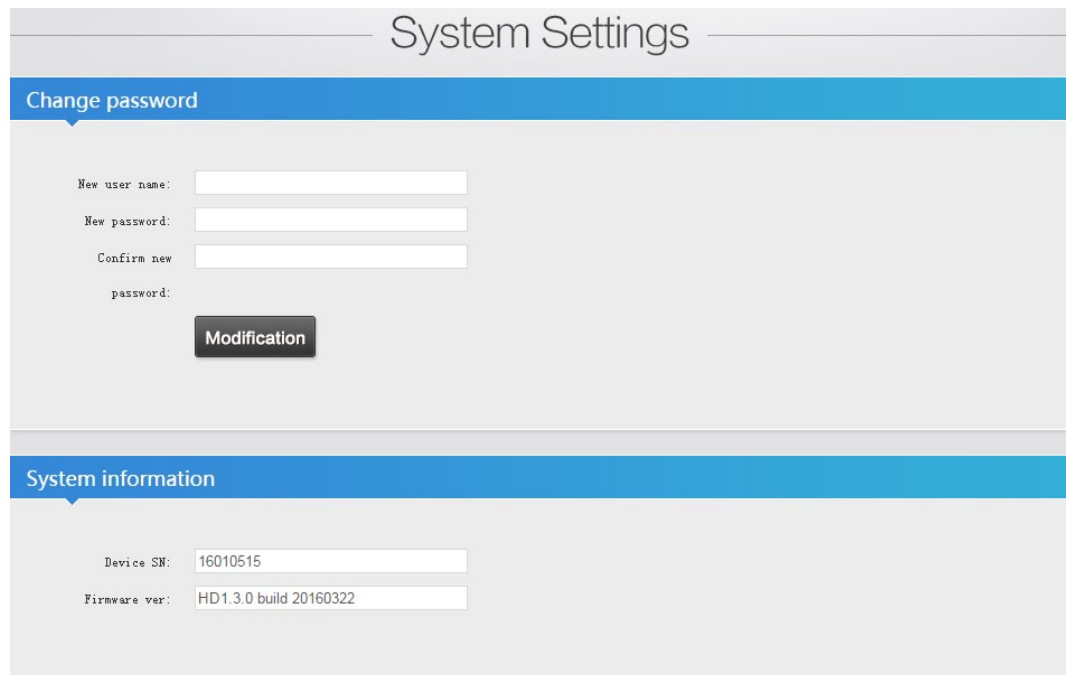
Audio bitrate:	128000
Audio type:	AAC
Audio resample:	Disable
Audio digital gain:	Disable
Onvif audio type:	G711
Audio input mode:	Digital

Set up

- | | |
|---------------------|--|
| Audio bitrate: | Selector for 48 / 64 / 96 / 128 / 160 / 192 / 256 kbit/s |
| Audio type: | Selector for AAC or MP3 |
| Audio resample: | Selector for disable / 32 kHz / 44.1 kHz |
| Audio Digital Gain: | Selector for disable 2X / 4X / 8X (It's for adjusting the volume flow) |
| Audio input mode: | Selector for Digital / Analog input (Please choose analog input when you want to use the external analog audio input.) |

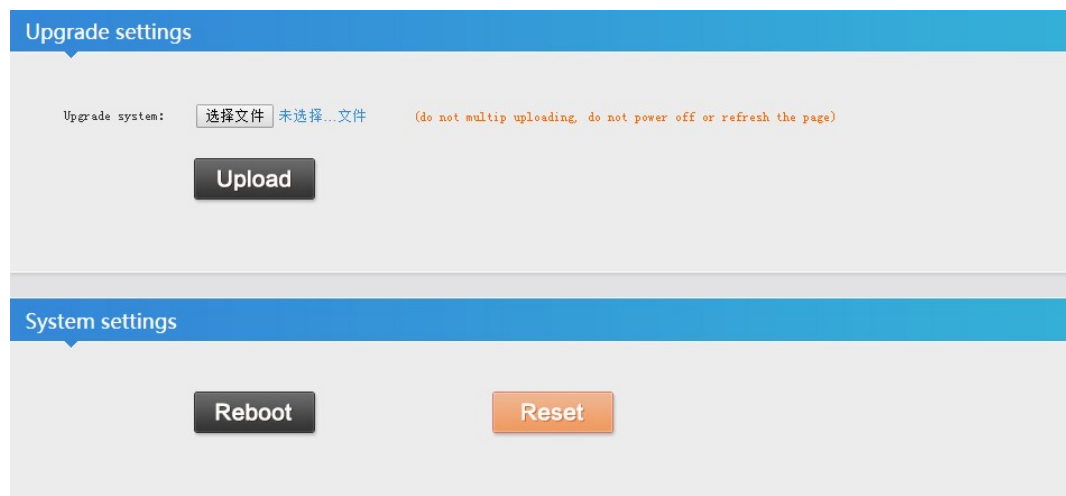
System Settings

In this section the system settings are accessible.



Change password: Here you can change the default user name and password to your individual user name and password. Click MODIFICATION to confirm.

System information : Shows device serials number and firmware version



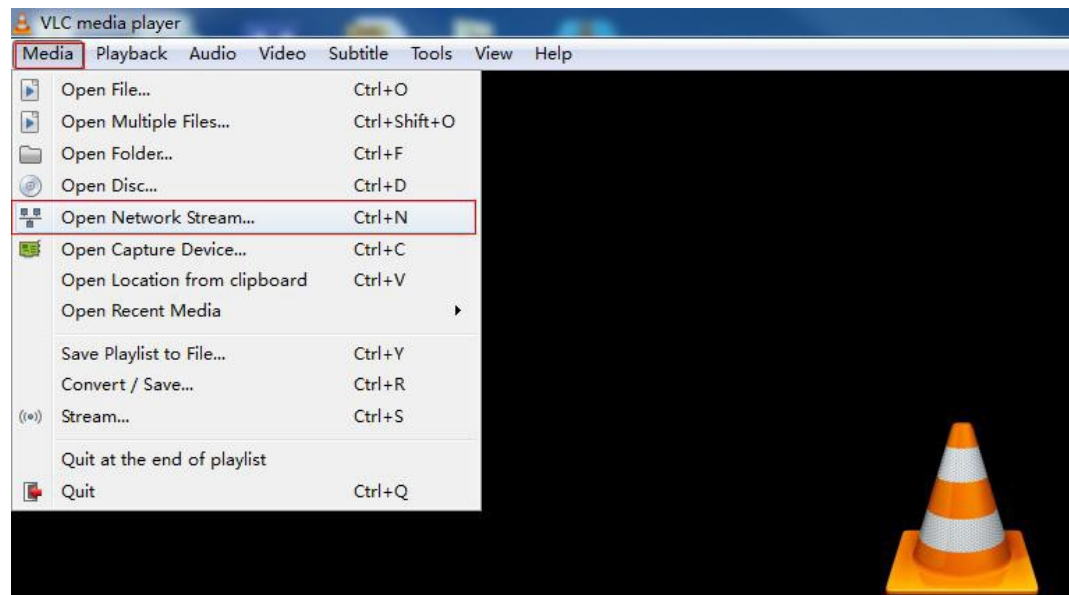
Upgrade setting: Search for software upgrade package and UPLOAD
NOTE: CHOOSE THE COMPRESSED UPGRADE PACKAGE(*.RAR FILE) WITHOUT DECOMPRESSING PACKAGES. DO NOT REFRESH THE PAGE AND OTHER OPERATIONS DURING THE UPGRADE.

System Settings: To confirm your individual settings click REBOOT. The system will reboot and start again using the latest settings.

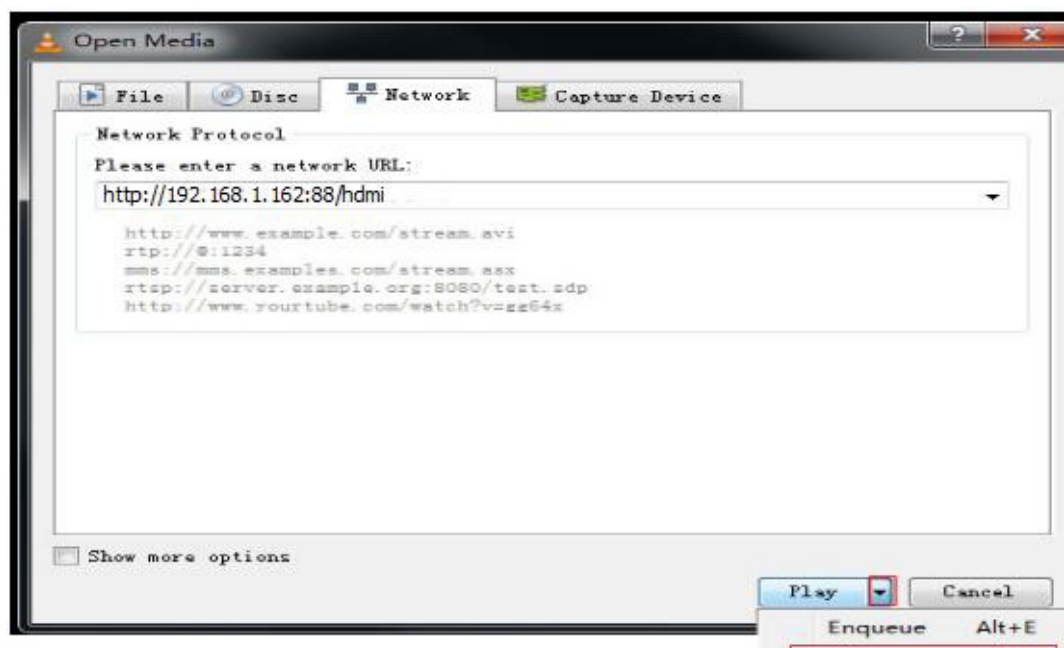
VLC Operation

The MVE405S is compatible to be used with VLC open media player software.

Start the VLC application at your PC and open the Network Stream.



Enter the IP address of the encoder to play the stream video.



Click PLAY to start the video.

Frequently Asked Questions

Q: Can I control all four sections under one IP address?

A: *No. Each section is independent and have to be controlled separately.*

Q: How to access to the encoder web-interface by default IP ?

A: *The computer's IP network segment need be same as the encoder's default IP. ex: if the encoder's default IP is 192.168.1.168, then you need change your computer's ip to 192.168.1.*(mark "*" numbers range will be 0-30&30-254).*

Q: H.265 will save bandwidth than H.264?

A: *YES, H.265 will save nearly 33% bandwidth than H.264.*

Q: What is the maximum resolution after encoded ?

A: *Our encoder support a maximum resolution of 1080p, but it depends on your signal source , if your signal source is 720p, then max encoded resolution is 720p.*

Q: How to push stream to media server to do live broadcast by Ustream, Youtube or like that?

A: *Because most server can not support H.265 for the moment, so if you want to push stream to server, you need choose encoding level to H.264, and then set RTMP protocol. Put your server's IP, server's port, app name and stream name to the web-interface after enable RTMP protocol. Please kindly note that you need set the DNS same as your router's by network setting.*

Q: Does the encoder support push stream to WOWZA?

A: *YES*

Power Supply

The unit is powered by the internal AC power supply accepting universal voltage [100 V - 240 V AC 50/60 Hz input range].

Note:

The MVE405S features environmentally conscious packaging material to protect the MVE405S system during transportation and can be used for temporary storage when better forms of storage are not available.

Housing

The MVE405S is designed as a rack mountable unit to be installed in standard 19 inch racks occupying one RU space.





SAFETY PRECAUTIONS

- To prevent fire or shock hazard, do not expose this equipment to an environment of high humidity and/or dust. Do not use in an unprotected outdoor installation or any area classified as overly damp or wet.
- The temperature for installation should be kept between 0°C - 60°C. Avoid direct sunlight exposure or extreme changes of temperature over a short period of time.
- Do not disassemble the unit or put it on an unstable base.
- Do not drop it and avoid heavy impact.
- Ventilation: Any openings in the enclosure are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings, if any, must not be blocked or covered. This unit should not be placed in a built-in installation unless proper ventilation is provided.
- Cleaning: Unplug the unit from the mains outlet before cleaning. Do not use liquid cleaners or aerosol cleaners, only use a damp cloth.
- **Do not overload outlets and extension cords as this may result in a risk of fire or electric shock.**
- Enclosure Entry of any kind is dangerous. Never push objects of any kind, including liquids, into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
- Service: Do not attempt to open or service this unit yourself as opening or removing covers may expose you to dangerous voltage of other hazards.
- There are no user-serviceable parts inside the unit. If the unit requires service please contact your authorized dealer, or an authorized repair service company.

Conformity Declaration

to EMV guideline (89/336/EC) and to low-voltage guideline (73/23/EC chapter 10)

The importer/manufacturer: vuetec.tv UG, Hasselbusch 124a, 24558 Henstedt-Ulzburg

declares hereby, that the product:

- Product name: HEVC Encoder
- Model number: MVE405S
- Year of construction: 2016

corresponds to the regulations of the guidelines described above:

The following harmonized norms were used:

- **EN 55011** ISM Equipment, Group 1, Class A
- **EN 55022** Conducted Emissions, Class B
- **EN 50081-2** Generic standard interference transmission, industry area
- **EN 50082-2** Generic standard interference immunity, industry area
- **prEN55103-1** EMV product family norm for Audio-, Video and audio-visual facilities as well as for studio light control facilities for the professional usage, -Part 1: Limiting values and measurement procedure for disturbing emissions
- **prEN55103-2** EMV product family norm for Audio-, Video and audio-visual facilities as well as for studio light control facilities for the professional usage, -Part 2: Requirements on the interference immunity
- **EN 61000-3-2** Power Factor Harmonic Correction
- **EN 61000-3-3** Flicker & Voltage Fluctuation Limits
- **EN 61000-4-2** Electrostatic Discharge Immunity
- **EN 61000-4-3** Radiated Electromagnetic Fields
- **EN 61000-4-4** Fast Transients-Burst Immunity
- **EN 61000-4-5** Input Surge Immunity
- **EM 61000-4-6** Conducted RFI
- **EN 61000-4-11** Voltage Dips

The following national or international norms (or parts/clauses from this) and specifications were used:

- **DIN EN 6099** Verbindungsmaterial für Niederspannungsstromkreise für Haushalt und ähnliche Zwecke; Teil 1: Allgemeine Anforderungen
- **IEC 127-6** Geräteschutzsicherungen

Henstedt-Ulzburg, 29.09.2016

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