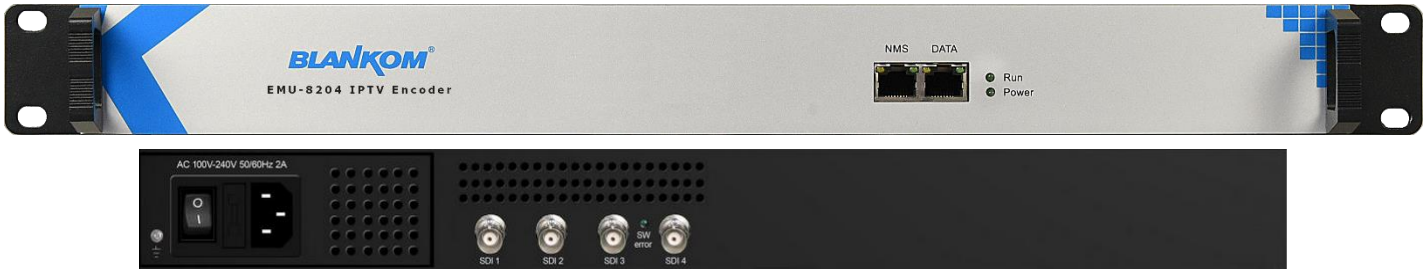
BLANKOM an IRENIS brand ...Selling Signals

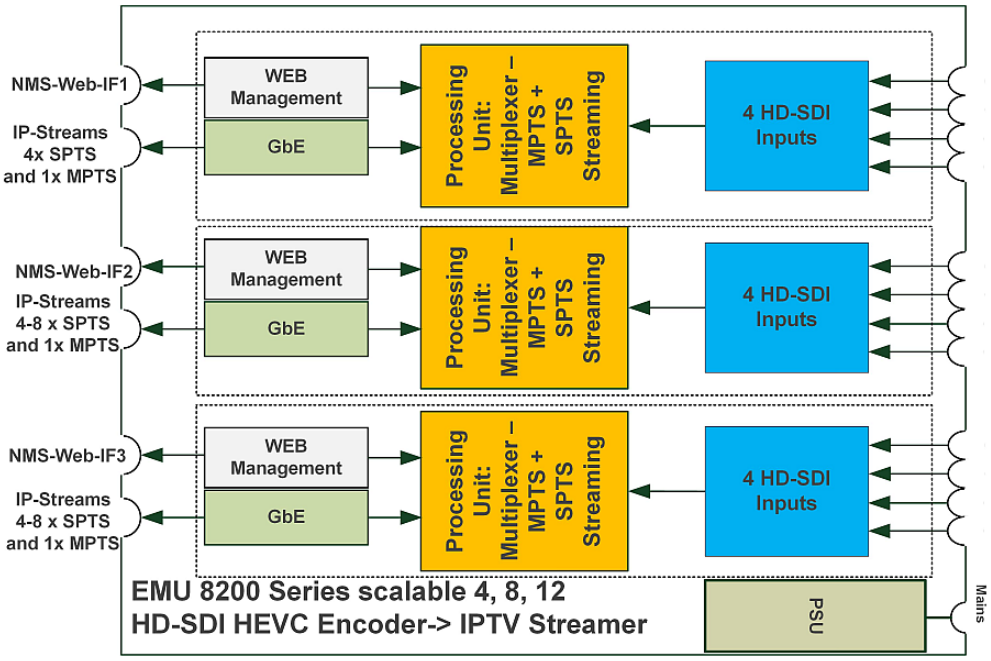
EMU 8200

IPTV HEVC/h.264 Encoder with 4/8/12 Inputs



- 4 SDI input, 8 SPTS IPTV and 1 MPTS output (EMU 8204)
- 8 SDI input, 8 SPTS IPTV and 2 MPTS output (EMU 8208)
- 12 SDI input, 12 SPTS IPTV and 3 MPTS output (EMU 8212)
- On-Screen Graphics, Scrolling Text, QR Code insertion optional
- Accurate PCR adjusting
- PID filtering and re-mapping
- PSI/SI rebuilding and editing
- "Null PKT Filter" function
- Audio: MPEG1L2, AAC, AC3pass
- Remote control by a modern web based management
- Updates via Web-interface,
- IPv6 supported now for NMS and Streaming

4 ... 12 HD-SDI input IPTV Encoder with Text or Graphic Logo-Insertion



BLANKOM EMU 8200 series:

MPEG4* AVC/H.264 and HEVC/h.265 HD IP Encoder is a professional HD audio & video encoding and multiplexing device.
Input: 4, 2x4 or 3x4 HD-SDI Video input interfaces, supporting HEVC and MPEG-4* Video encoding and MPEG 1L2, AAC and AC3 passing audio encodings.
This very compact Encoder simultaneously encodes up to 4, 8 or 12 HD-SDI compatible HD Audio & Video channels to IP out as a multiplexed 1..3 MPTS and 4, 8 or 12 SPTS IP streams as UDP/RTP/RTSP Multi-/Unicast per Module.
Every encoded Video-picture can be added with Text, Graphic or QR-code overlays: As optional feature available.
High integrated and cost effective design fits perfect into widely use cases in varieties of digital distribution systems such as cable TV digital head-end, satellite digital TV broadcasting etc.
** Dep. On common Resolutions*

BLANKOM® an IRENIS brand ...selling Signals

EMU 8200

Technical specifications:

Input	4/8/12×HD-SDI inputs (4 each Module)			
Video Encoding	Encoding Format	HEVC/ H.265 , MPEG 4 AVC/H.264		
	Resolution (HD-SDI) Note: because of its modular Fujitsu chip it demands per module on each input the same signal resolutions	**Input**	**Output**	
			HEVC/H.265	**MPEG-4 AVC/H.264**
		4x1080P-50	4x1080P-50	2x1080P-50
		4x1080P-60	4x1080P-60	2x1080P-60
		4x1080I-50	4x1080P-50	4x1080I-50 2x1080P-50
		4x1080I-60	4x1080P-60	4x1080I-60 2x1080P-60
		4x720P-50	4x720P-50	4x720P-50
		4x720P-60	4x720P-60	4x720P-60
	Chroma	4:2:0		
	Bitrate	0.5Mbps...20Mbps (each channel)		
	Encoding Rate Control	CBR/VBR		
	GOP Structure	IBBP, IPPP		
	Advanced picture correction	De-interlacing, Noise Reduction, Sharpening		
Audio Encoding	Encoding Format	MPEG-1 Layer 2, LC-AAC, HE-AAC, HE-AAC V2, AC3 Passthrough		
	Sampling rate	48KHz		
	Bit-rate (each channel)	48Kbps...384Kbps (MPEG-1 Layer 2 & LC-AAC) 24 Kbps...128 Kbps (HE-AAC) 18 Kbps...56 Kbps (HE-AAC V2)		
	Audio Gain	0...255		
OSD (optional)	**Text/logo/QR code Insertion Function O**n**S**creen**D**isplay **Overlay**			
Stream output per module	IP (1 MPTS and maximum 4 SPTS) output over UDP/RTP/RTSP per module, 1000M/100M Base-T Ethernet interface (unicast/ multicast); IPv4, IPv6 output IP null packet filter: MPTS- PID-8191dec adding or dropping			
System	Web based management, IPv4 and IPv6			
	English control interface			
	Ethernet software upgrade			
Miscellaneous	Dimension (W× L× H)	482mm×328mm×44mm		
	Approximately weight	5kg		
	Temperature	0...45℃(work), -20...80℃（Storage）		
	Power	AC 100V-220V±10%, 50/60Hz		

EMU-8200 Series HEVC/H.265 encoder's advantages:

1. Providing correct adapted Transport-Streams for modulators

These HEVC/H.265 encoder adopts Fujitsu chips which offers a most stable bitrate with lower fluctuation compared with other encoding chips, so optimal as TS -source for modulators. It is widely used in variety of digital distribution systems such as CATV digital head-end, satellite and terrestrial digital TV, etc.

2. Encoding with highest compression format—B frame (IBBP)

What is B Frame?

There are 3 major picture types used in the different video algorithms, they are I, P and B.
They are different in the following characteristics:
I-frames are the least compressible but don't require other video frames to decode.
P-frames can use data from previous frames to decompress and are more compressible than I-frames.
B-frames can use both previous and forward frames for data reference to get the highest amount of data compression.

Frame Type	Byte of data/KB	Compression Ratio
I	18	7:1
P	6	20:1
B	2.5	50:1

In one word, B frame is the highest compression format which makes it possible to process HD video at low bit rates. A HEVC/H.265 encoder is not able to reduce bandwidth unless it is operating with B frames. In the encoder-codec parameters, B frame is often described in the GOP (Group of Pictures) structure, like "IBBP".

Corresponding products:
- IP to 16 QAM DVB-C Modulator HDC-5016
- HDC-5004 IP to QAM Modulator with remuxed TV services i.e. for hospitality content addons to existing networks
- Digital Signage: IP Decoder HDD-275
- IPTV Middleware Server OMNISCREENTV + SetTopBoxes or Hospitality TV Sets from tested vendors
- BLANKOM IPTV STB: 7500+ / 6700+

Front EMU-8208 2x NMS-Web-IF ports, 2x Streaming Ports GbE

equipped with 2 Modules – each with 4 encoder-streamer-boards:

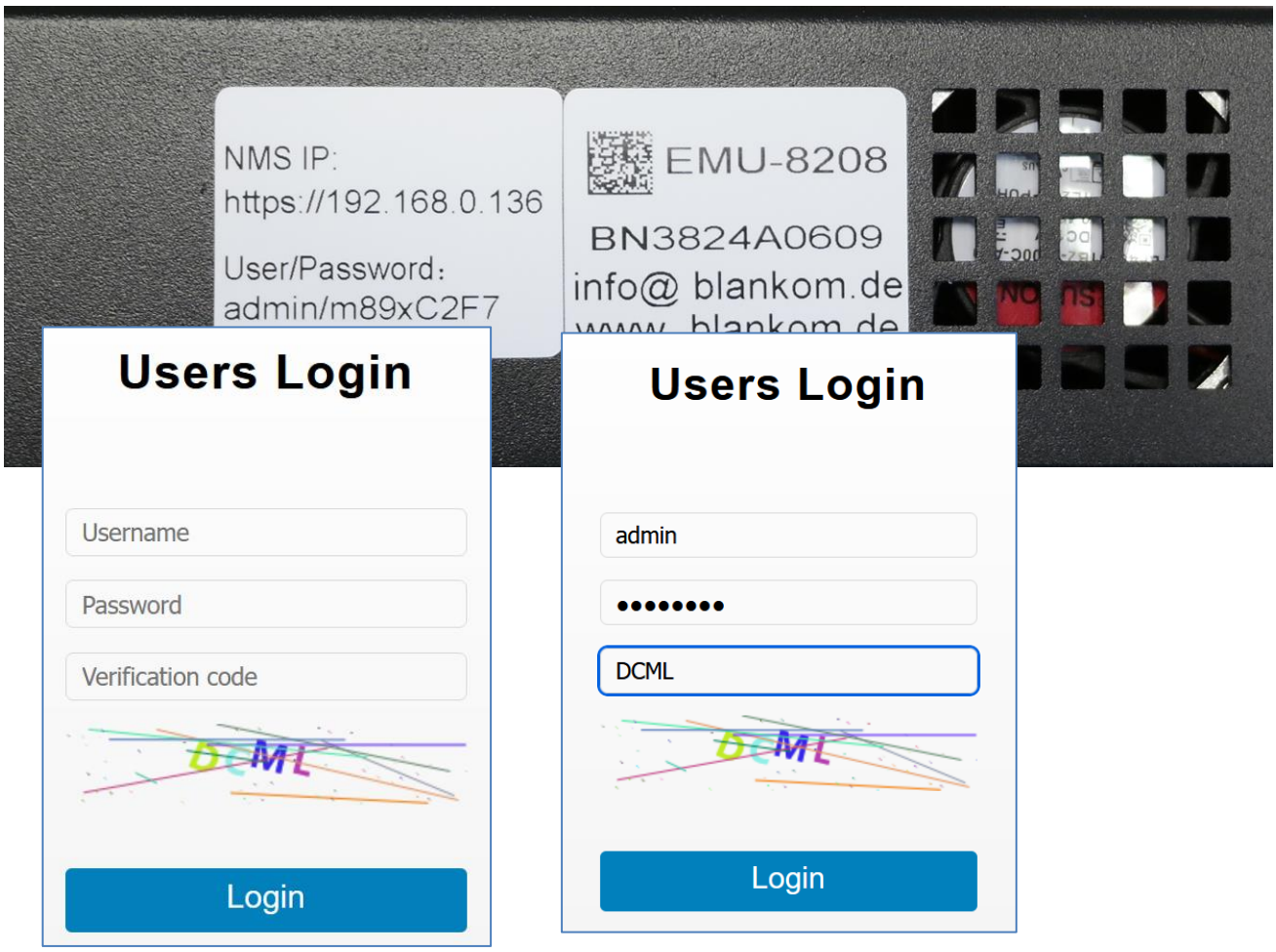
Rear-View

Please always check our web – Download section for actual Manuals as PDF.

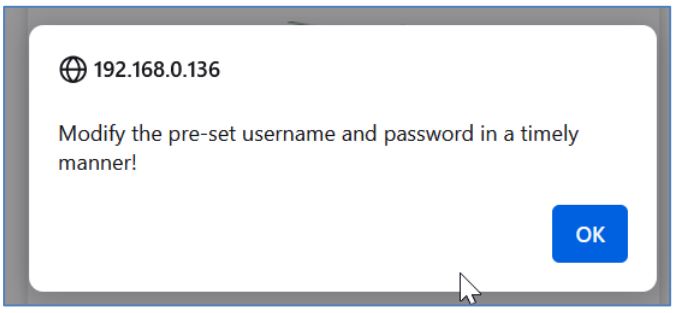
QUICK-START

Login Web-Interface each Module NMS: http://192.168.0.136:

The Login-data can be found on the sticker on it:

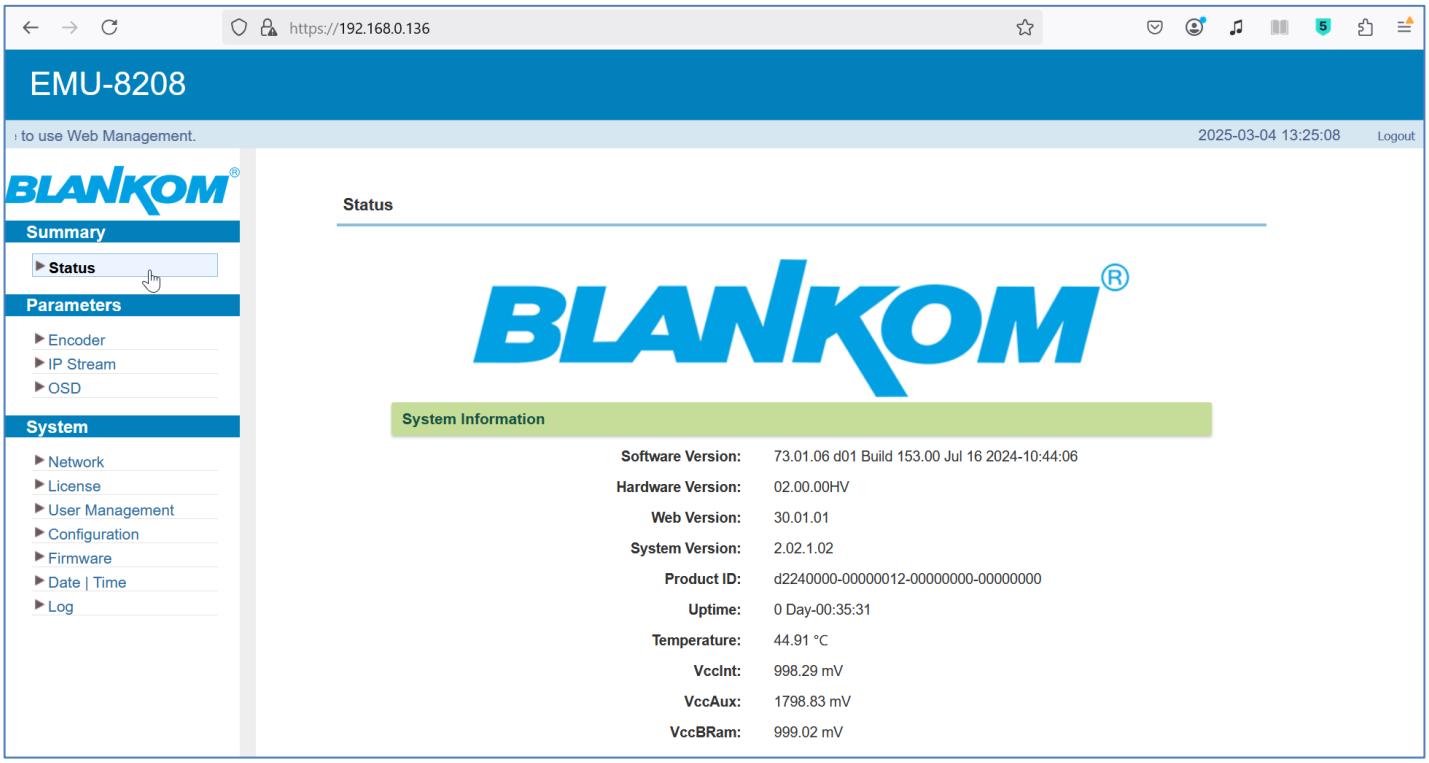


Note the message:



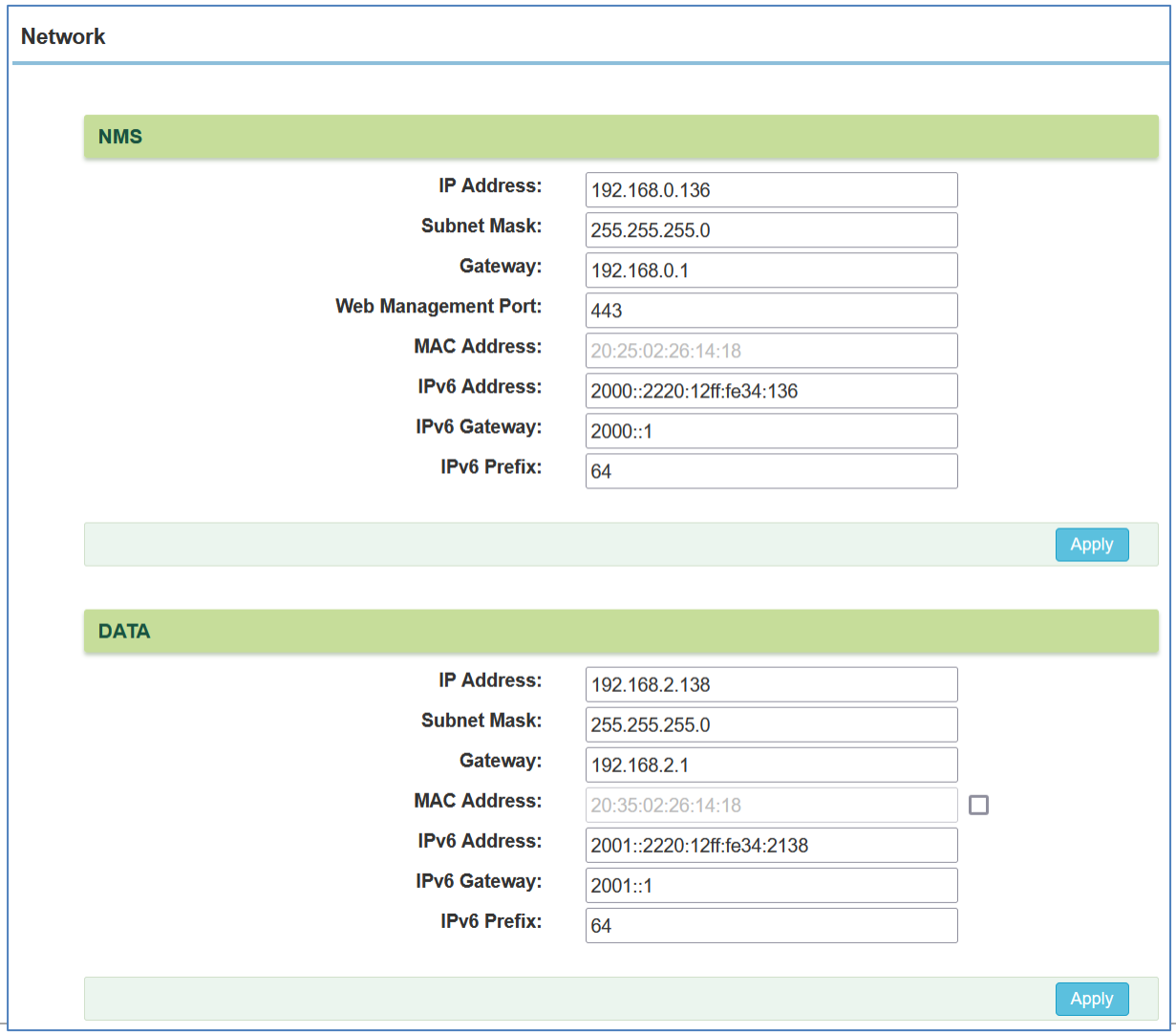
The default password works for both installed modules. We recommend to change them later on and store the data somewhere near the unit, or make a sticker, so that your next technician can find them…

Entry Page:



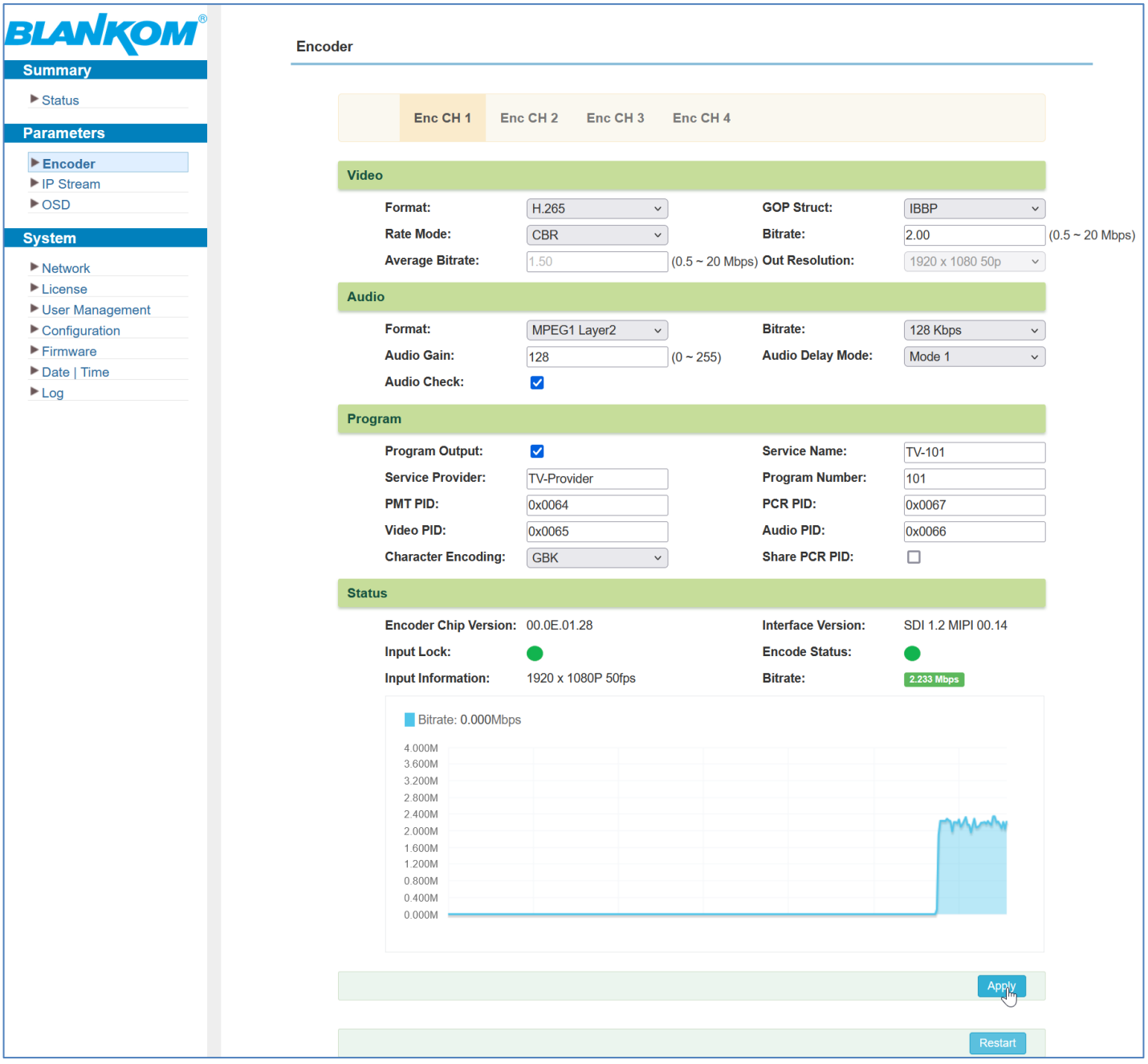
If you have questions to our service please always mention these data and sent by email please.

Network:

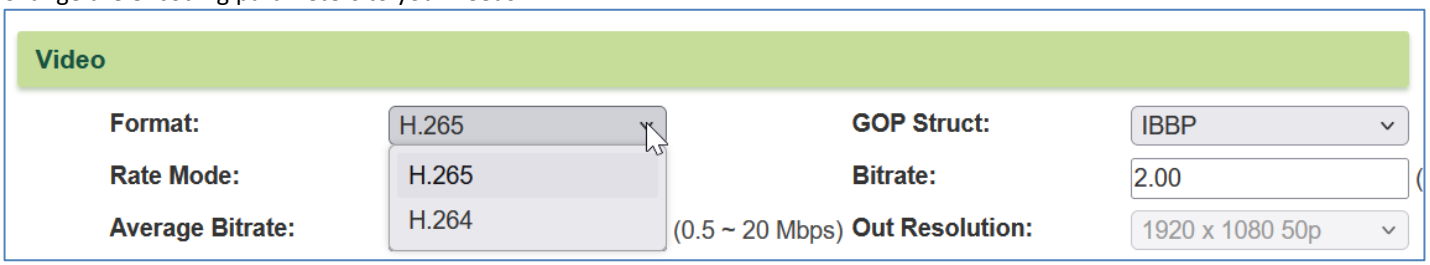


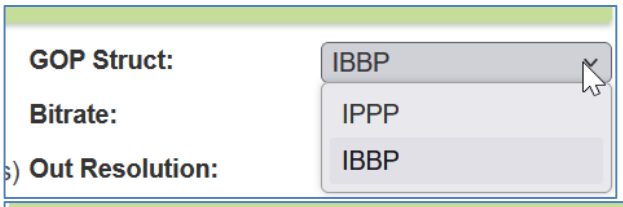
The network ports are supporting IPv6 now (since model improvement end of 2024)
Please change the values according to your local needs. Please avoid IP-collisions.

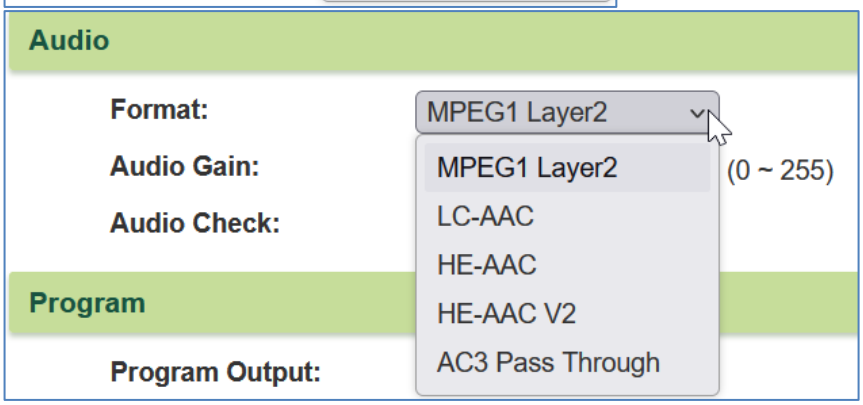
Encoder: *each has a similar config-menu per module 4 Channels:*

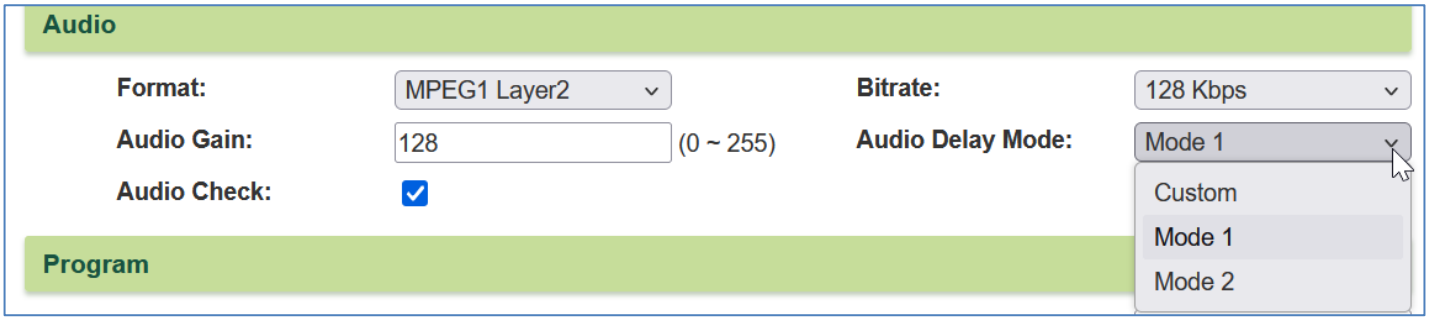


If Input is connected, it shows the values of the detected Video parameters after a few seconds.
Change the encoding parameters to your needs:



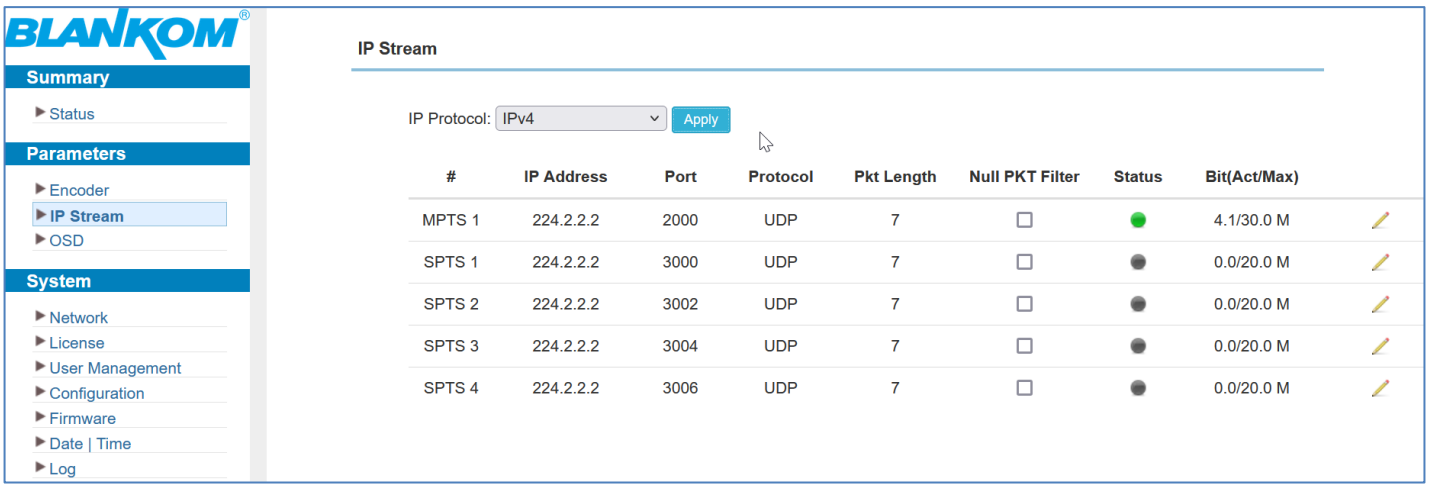




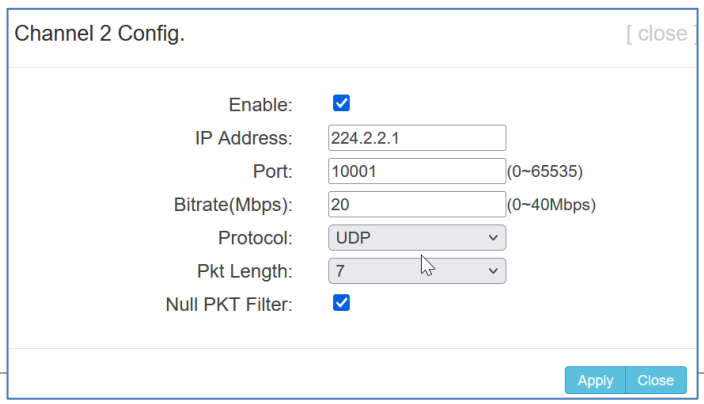


Finally APPLY the settings and maybe RESTART the Encoder if needed. Please be patient, it takes a while to re-sync the encoding chip.

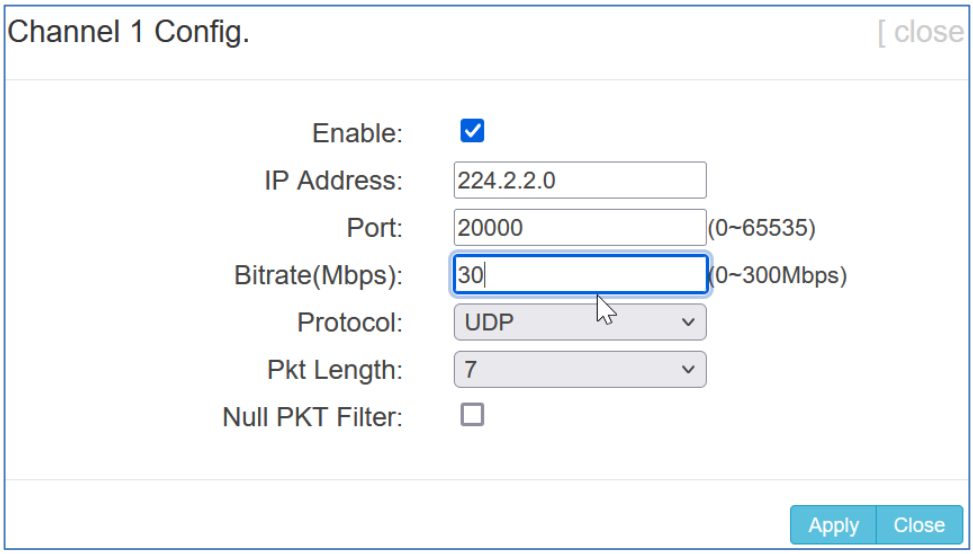
IP-Streams:



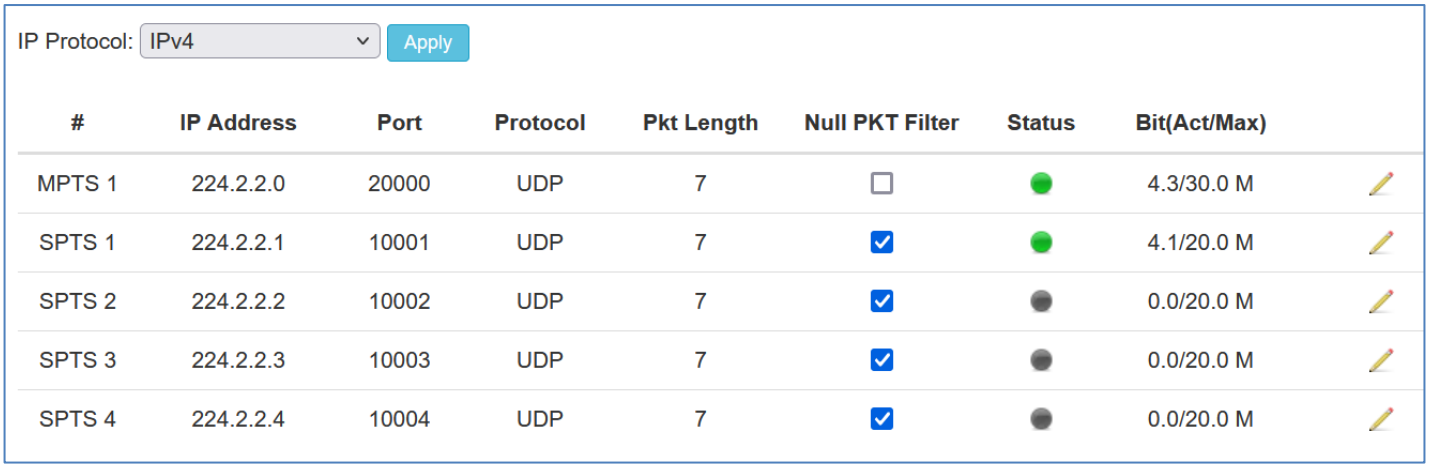
Please change all IP addresses to different ones to avoid IGMP conflicts: Channel2 = SPTS 1



Channel 1 = the multiplexed MPTS output:

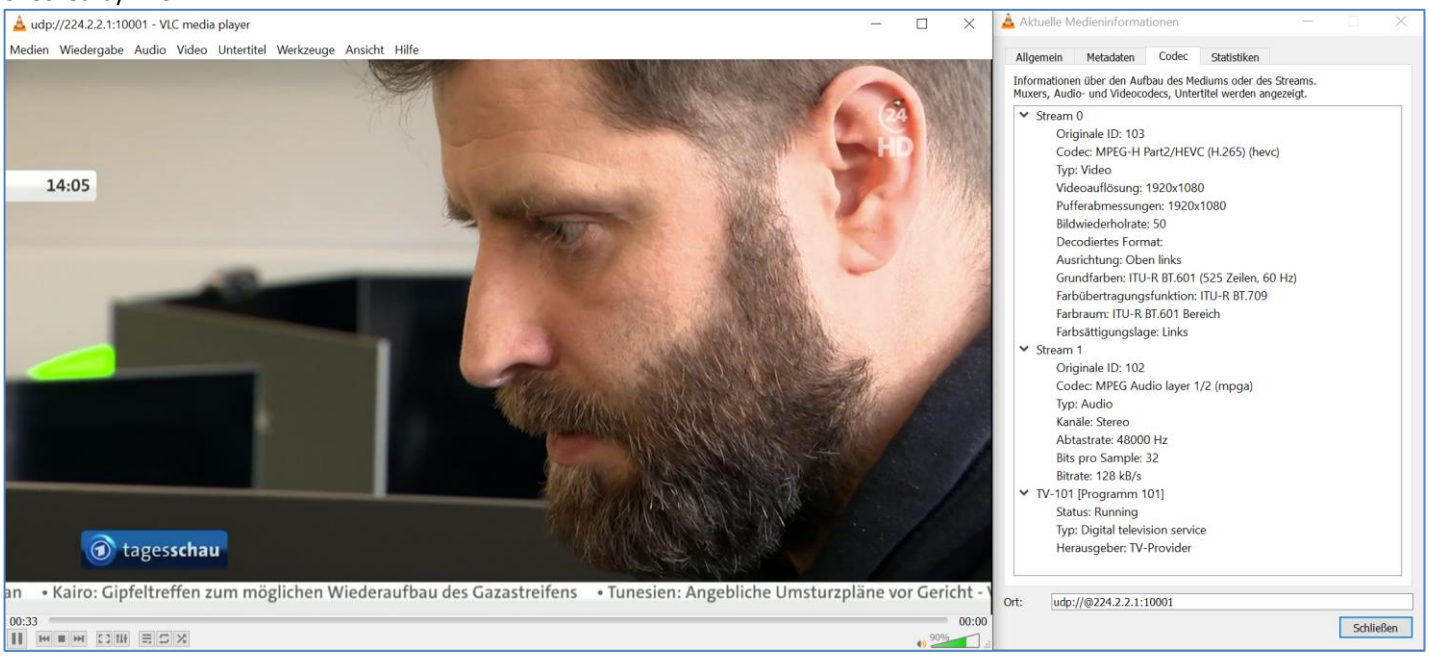


Please assure the Bitrate of this has to be at least the value of all 4 encoder bitrates in total added together. Otherwise the output will be disturbed. If you want to serve an IP to DVB-modulator with the MPTS, many of them needs CBR-Streams which includes the PID 8191dec named Zero-Packets filling. If you want to stream VBR, check the Null-Packet filter to ON.

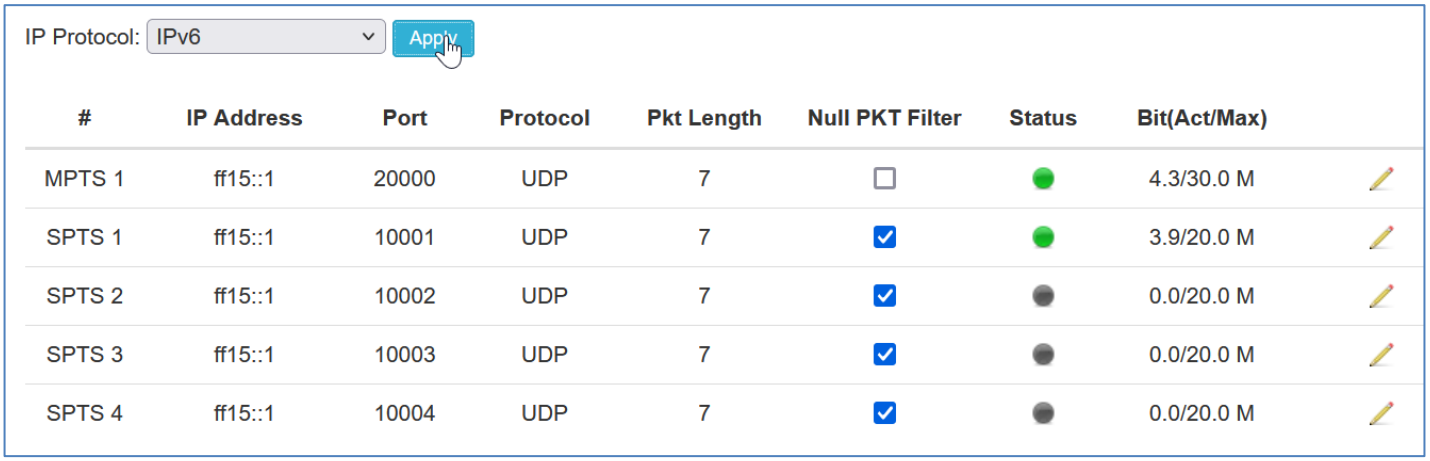


#	IP Address	Port	Protocol	Pkt Length	Null PKT Filter	Status	Bit(Act/Max)
MPTS 1	224.2.2.0	20000	UDP	7	☐	●	4.3/30.0 M
SPTS 1	224.2.2.1	10001	UDP	7	☑	●	4.1/20.0 M
SPTS 2	224.2.2.2	10002	UDP	7	☑	●	0.0/20.0 M
SPTS 3	224.2.2.3	10003	UDP	7	☑	●	0.0/20.0 M
SPTS 4	224.2.2.4	10004	UDP	7	☑	●	0.0/20.0 M

Checked by VLC:



If you want to use IPv6:



#	IP Address	Port	Protocol	Pkt Length	Null PKT Filter	Status	Bit(Act/Max)	
MPTS 1	ff15::1	20000	UDP	7	☐	●	4.3/30.0 M	✎
SPTS 1	ff15::1	10001	UDP	7	☑	●	3.9/20.0 M	✎
SPTS 2	ff15::1	10002	UDP	7	☑	●	0.0/20.0 M	✎
SPTS 3	ff15::1	10003	UDP	7	☑	●	0.0/20.0 M	✎
SPTS 4	ff15::1	10004	UDP	7	☑	●	0.0/20.0 M	✎

Please change the Addresses to your needs as well and assure, the used Gigabit-Switch supports IPv6 and the Multicast Streaming Filtering:
Switches actually pay attention to IPv4 IGMP and ICMPv6 MLD packets that go through them whenever a host requests to join or leave a multicast group. Usually this functionality is called "IGMP snooping" (for IPv4) or "MLD snooping" (for v6).

This makes multicast-aware switches slightly more than pure L2 devices. (RFC 4541 describes switch IGMP/MLD snooping in more detail.) In fact, RFC 4541 even recommends snooping switches to forward multicast frames based on L3 (IP) addresses rather than L2 (MAC), though the frames still retain their original L2 header (which wouldn't be the case with pure-L3 forwarding as routers do), so it's a layer-breaking mix of L2/L3 functionality.

(Not all switches actually snoop IGMP/MLD subscriptions; in particular, smaller unmanaged switches often do not care at all, and even in managed "enterprise" switches it is frequently disabled by default. So İN PRACTİCE, often the packets actually reach all hosts and are filtered by the host OS.)

Similarly, Wi-Fi access points frequently have a "Multicast Enhancement" feature which is also based on IGMP/MLD snooping, therefore also being slightly more than pure L2 bridges. (Radio is an inherently broadcast medium, but actual multicast frames are sent at low rates; "multicast enhancement" converts them to unicast frames – one copy per recipient – which are faster and more reliable to deliver.)

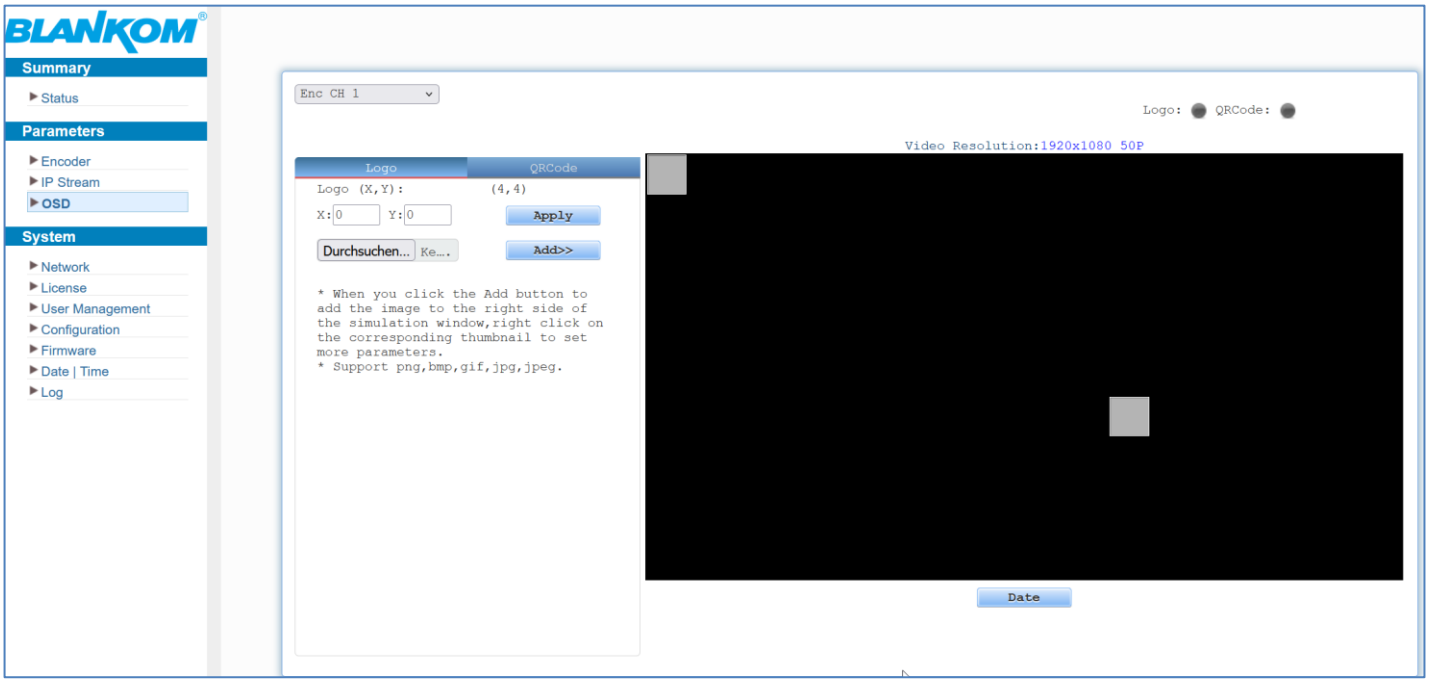
But note that certain multicast groups do not use IGMP or MLD at all – in particular, the ff02::1 "All Nodes" group doesn't use MLD and therefore is EFFECTİVELY a broadcast group (RFC 2710 section 5; RFC 4541 section 3), even if people don't like to admit it. Similarly 224.0.0.1 "All Nodes" (as well as the rest of 224.0.0.x) in IPv4 is functionally a broadcast group as IGMP is not used for it.

See also:

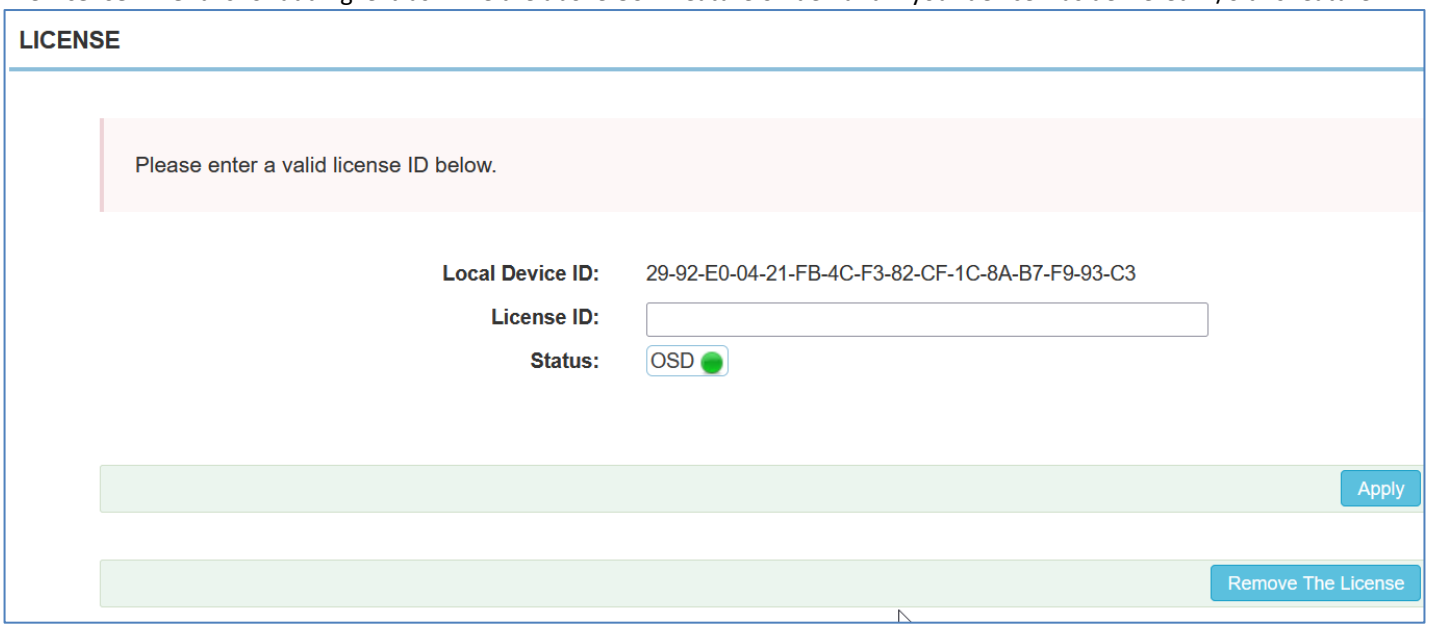
- RFC 1112: IGMPv1
- RFC 2236: IGMPv2 and RFC 2710: MLDv1
- RFC 3376: IGMPv3 and RFC 3810: MLDv2
- RFC 4541: Considerations for IGMP and MLD Snooping Switches

The On-Screen-Display menu:

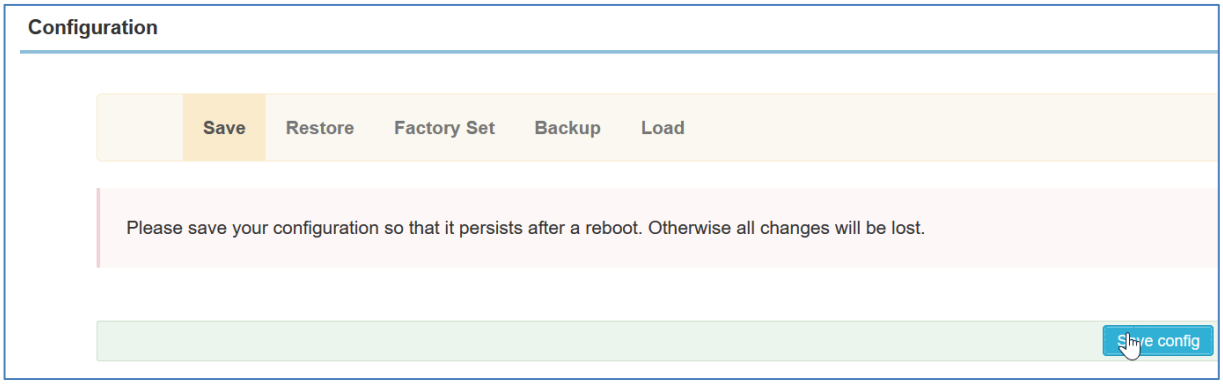
Here you can add logos (pictures or text into) or QR codes to your encoded Video as Overlays:



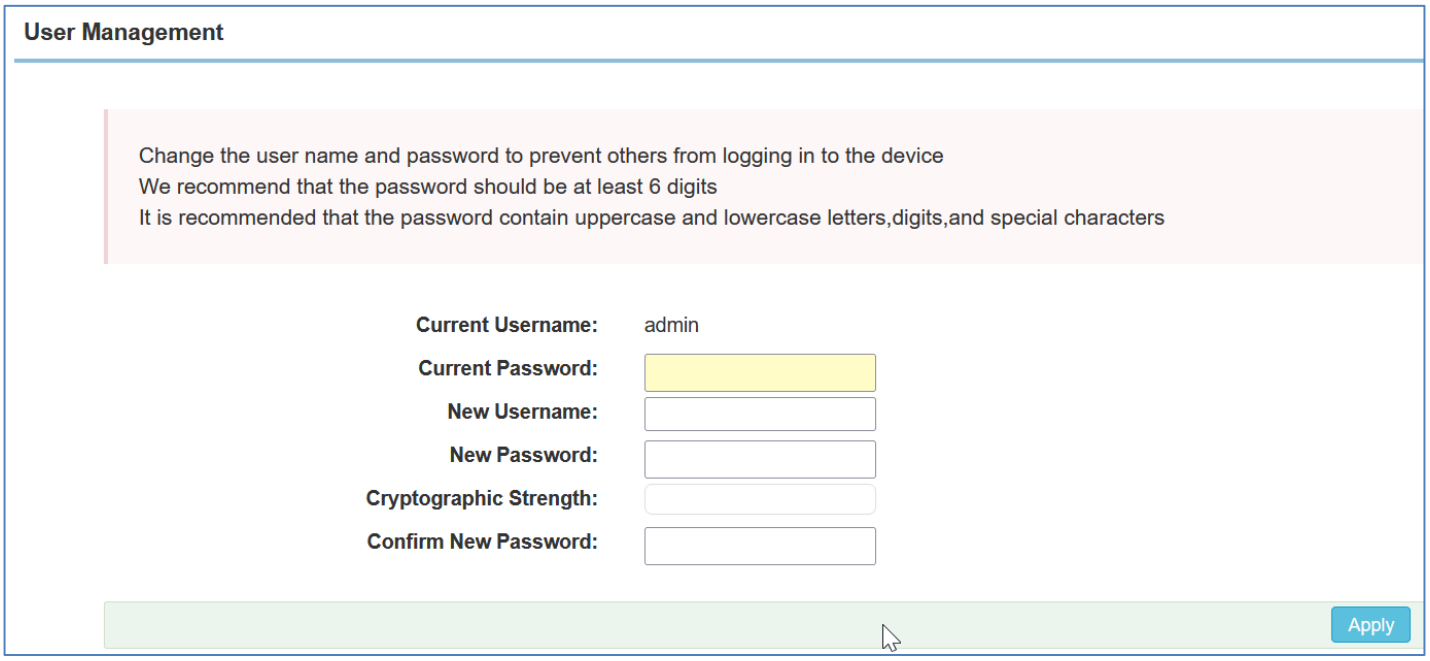
The **License –Menu** is for adding extras – like the above OSD- feature on demand if your device was delivered w/o this feature.



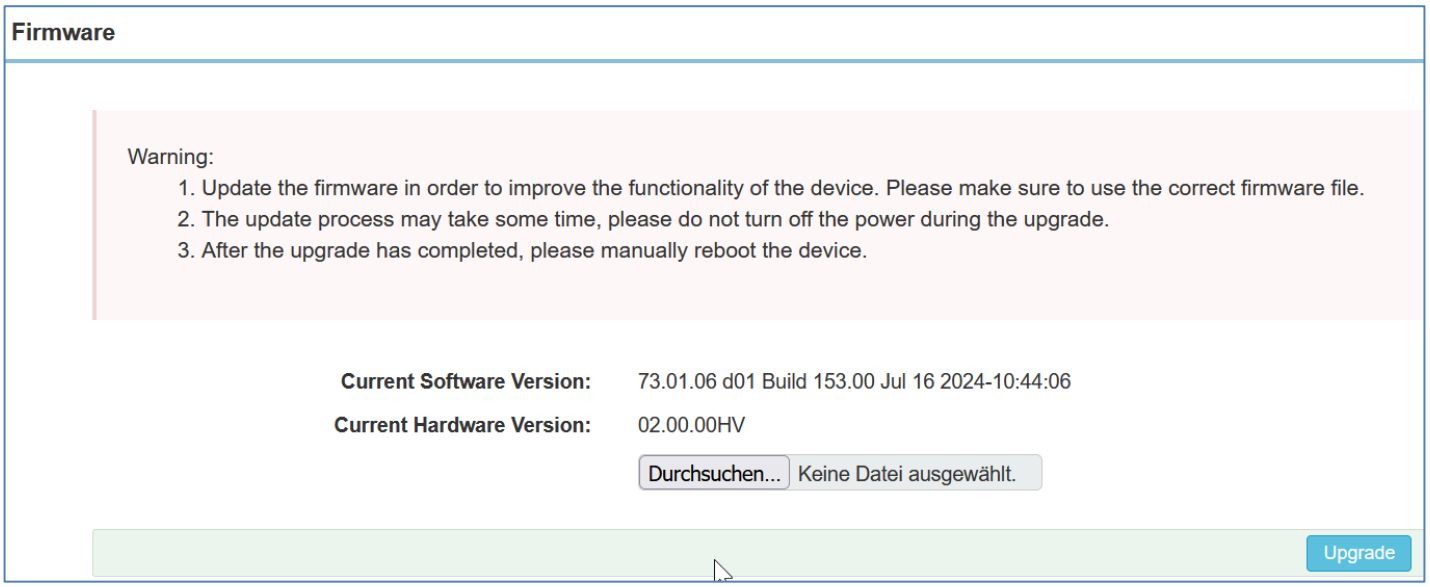
Configuration: Safe your config and/or restore or backup/load it from PC is recommended after you made your settings:



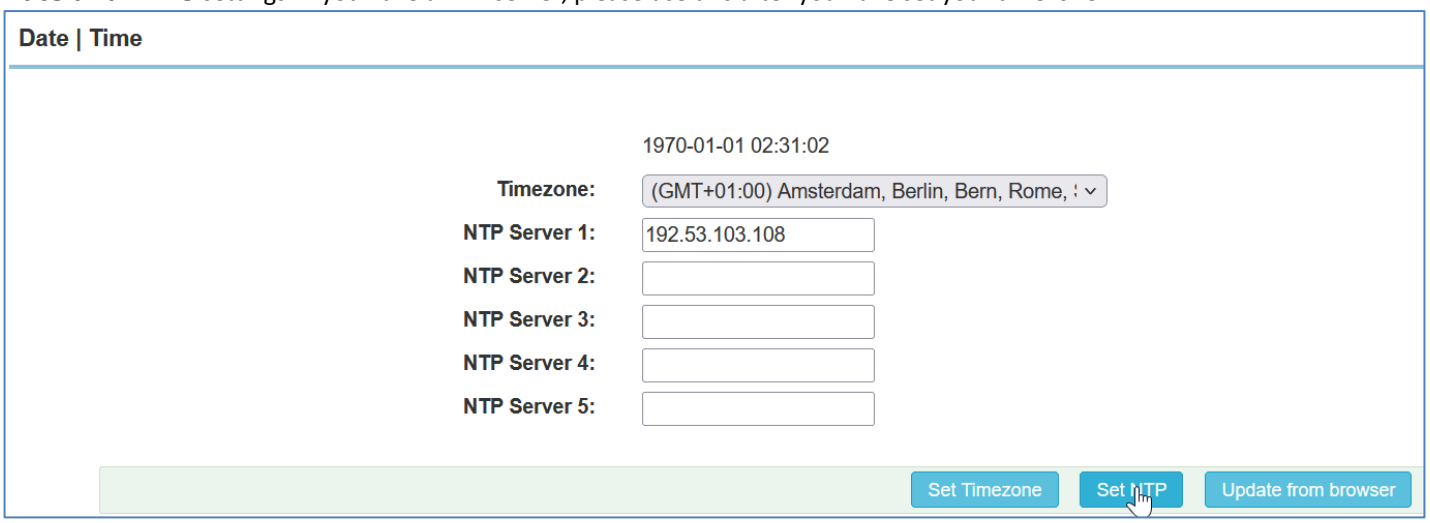
With the **USER management** menu you can setup new usernames and passwords:



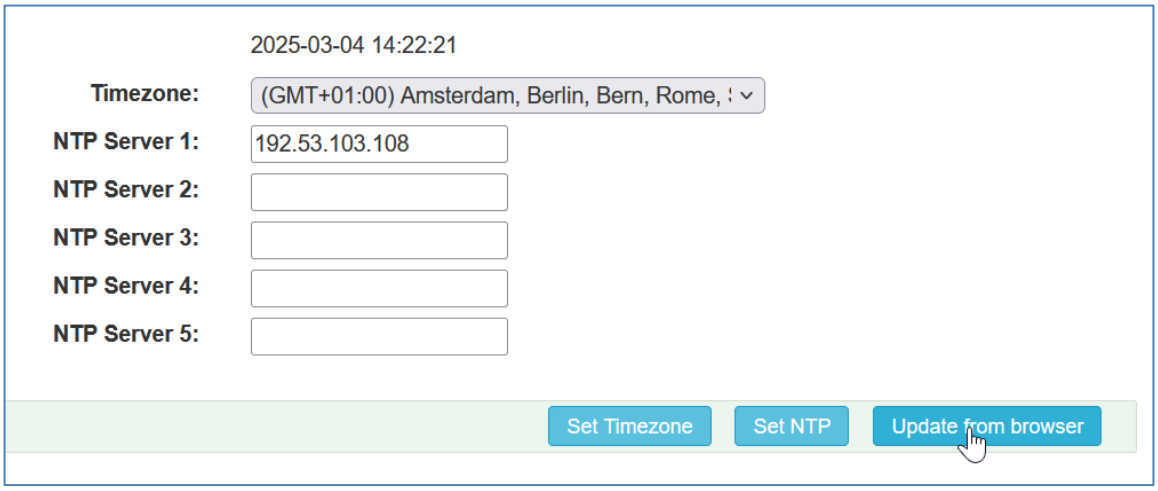
FIRMWARE:



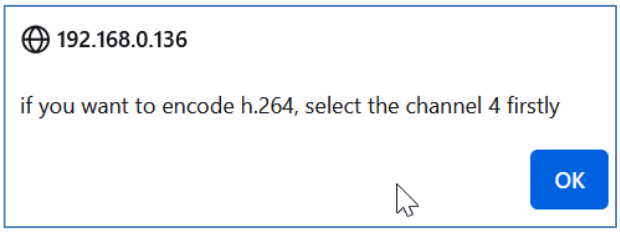
Date and Time settings: If you have a NTP server, please use this after you have set your timezone:



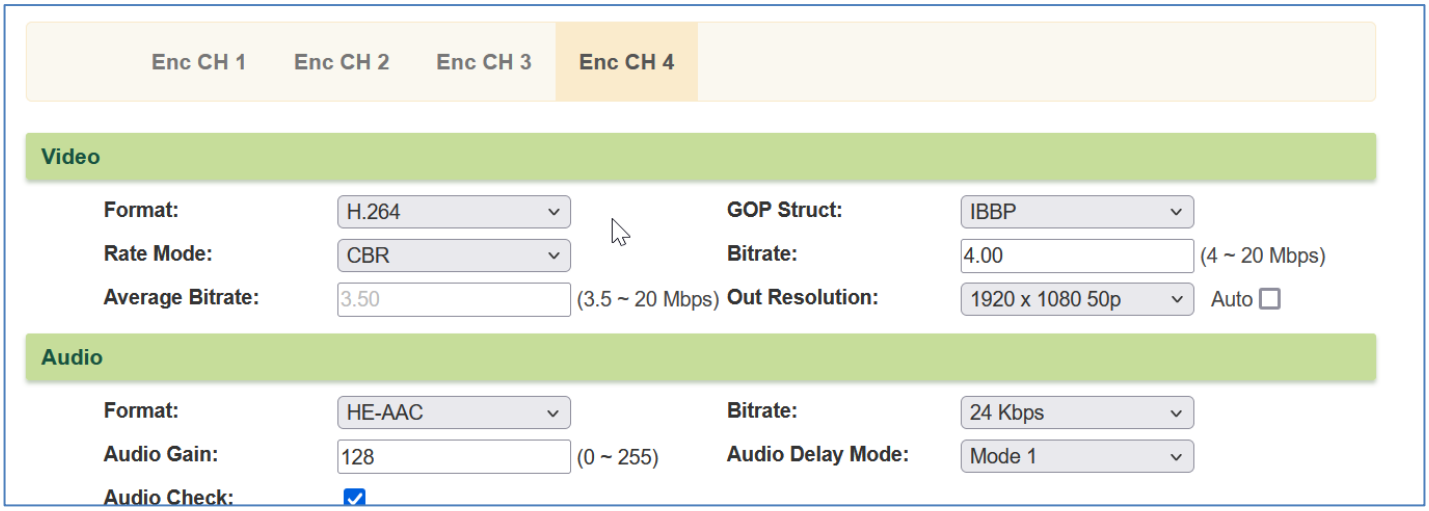
Or update it from your connected PC/Browser:



Remarks: Encoding: If you want to use h.264 AVC instead of HEVC (h.265) you must first bset Encoder Channel 4 to h.264 then the others will follow – you'll get a message:



:



Because this 4-Channel encoding modules are using a 4-channel encoder chipset and does not allow a mixed encoding Codec usage within a module.

Enc CH 1 | Enc CH 2 | Enc CH 3 | Enc CH 4

Video

Format:	H.264	**GOP Struct:**	IBBP
Rate Mode:	CBR	**Bitrate:**	4.00 (4 ~ 20 Mbps)
Average Bitrate:	3.50 (3.5 ~ 20 Mbps)	**Out Resolution:**	1920 x 1080 25p Auto ☐

1920 x 1080 50p
1920 x 1080 25p

Audio

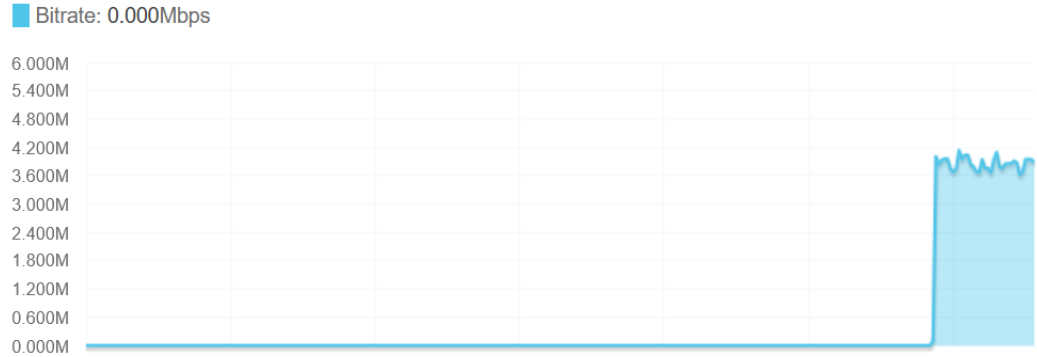
Format:	HE-AAC	**Bitrate:**	24 Kbps
Audio Gain:	128 (0 ~ 255)	**Audio Delay Mode:**	Mode 1
Audio Check:	☑		

Program

Program Output:	☑	**Service Name:**	TV-101
Service Provider:	TV-Provider	**Program Number:**	101
PMT PID:	0x0064	**PCR PID:**	0x0067
Video PID:	0x0065	**Audio PID:**	0x0066
Character Encoding:	GBK	**Share PCR PID:**	☑

Status

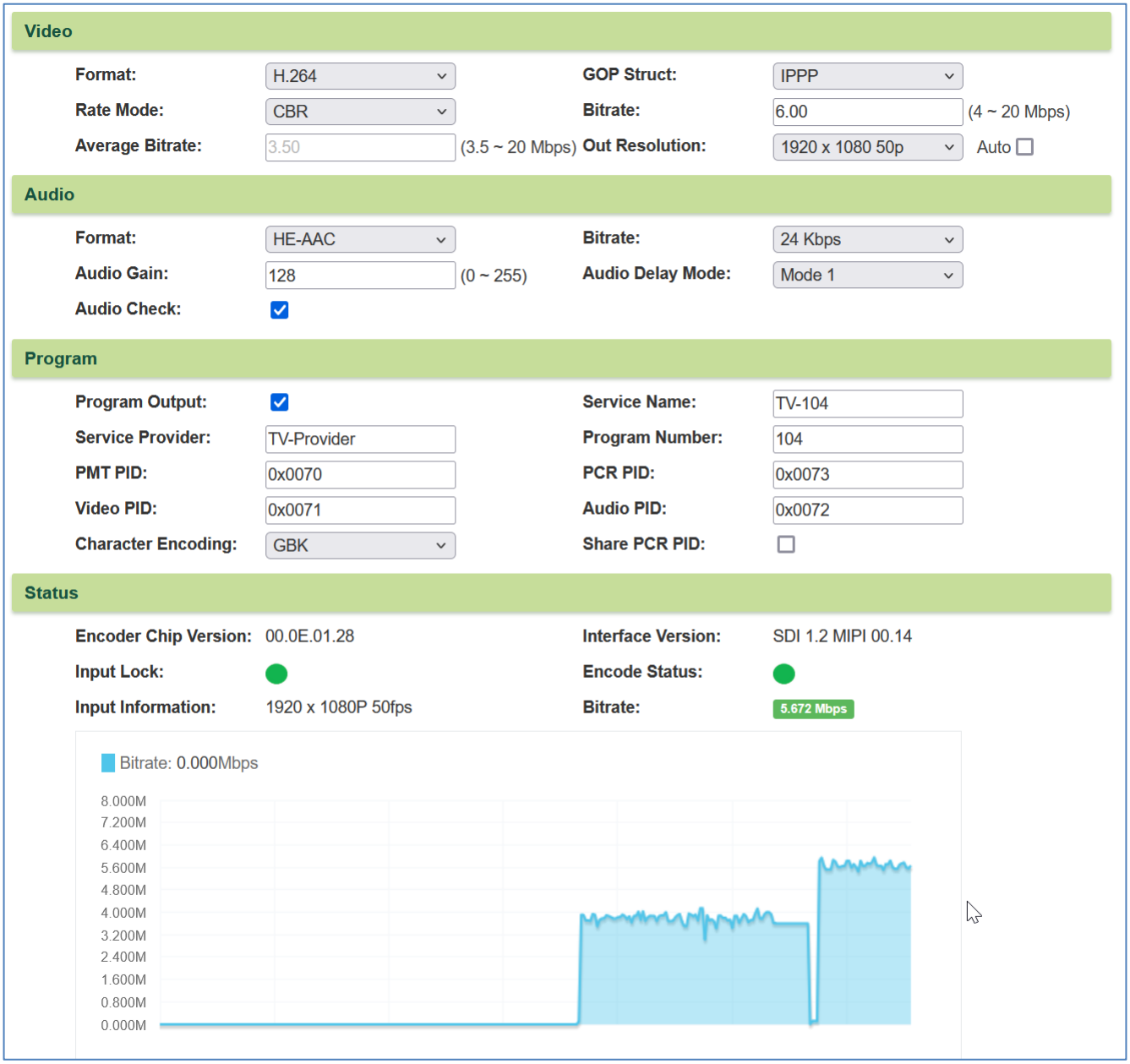
Encoder Chip Version:	00.0E.01.28	**Interface Version:**	SDI 1.2 MIPI 00.14
Input Lock:	●	**Encode Status:**	●
Input Information:	1920 x 1080P 50fps	**Bitrate:**	3.888 Mbps



Apply

Restart

If you changed a value i.e. from 1080p25 to non – AUTO p50 (or IBBP to IPPP, ...) you need to wait some seconds until the encoder re-synced:



Note>: There is a difference between Encoding – in CBR or VBR and the ***Streaming in VBR and CBR!*** You can check our websites www.blankom.de – know how or tutorials about this issues in encoding processes.

Encoding in CBR results in a more stable bitrate processing and VBR is more flexible see changed to VBR: