TBS2603SE HDMI Video Encoder User Guide

TBS2603SE is professional H.265/H.264 HDMI video Encoder. Supports to 1080P_60hz in and encode to 1920x1080@60fps out. It's with friendly user interface and providing the most complete output protocol for different requirements.

Login:

The default IP of Encoder TBS2603SE is "192.168.1.217", webUI login username/password: admin/admin:
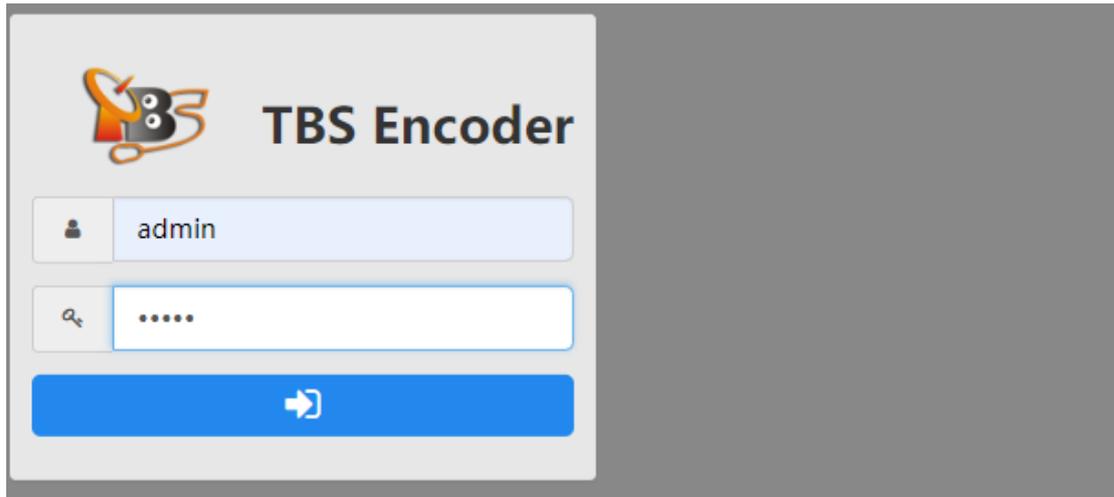
Appearance:
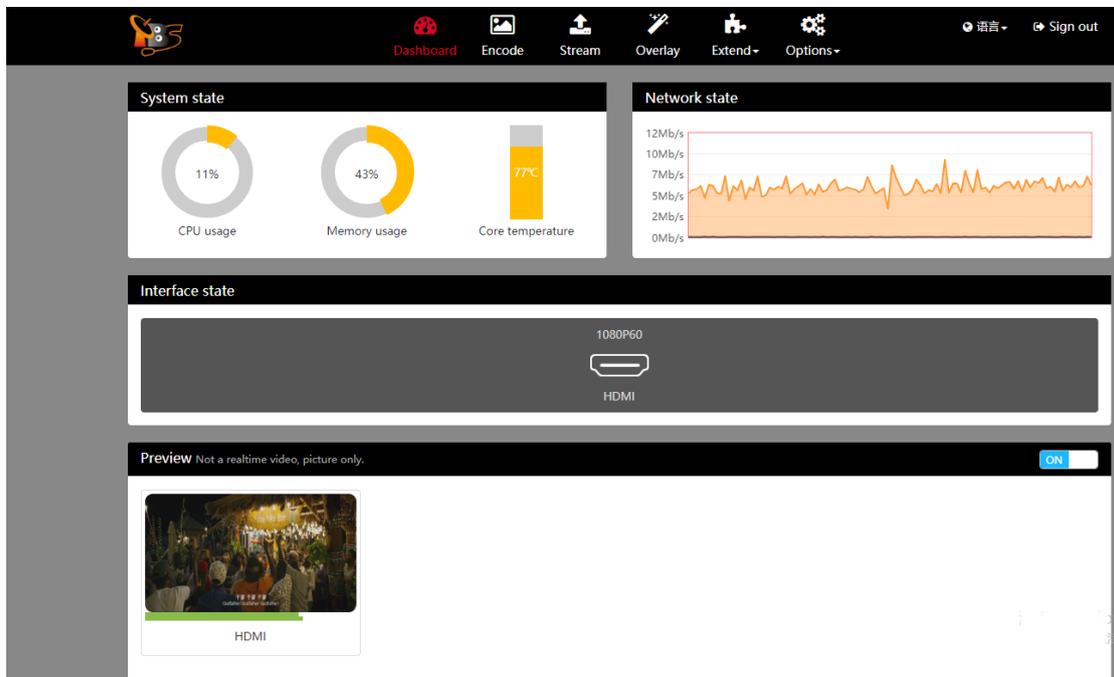
In our user interface, we'll have some parts: Dashboard, Encode, Stream, Overlay, Extend, Options.

1.Dashboard

Indicate something is which related to system status (CPU, Memory, Trafic) and input status:
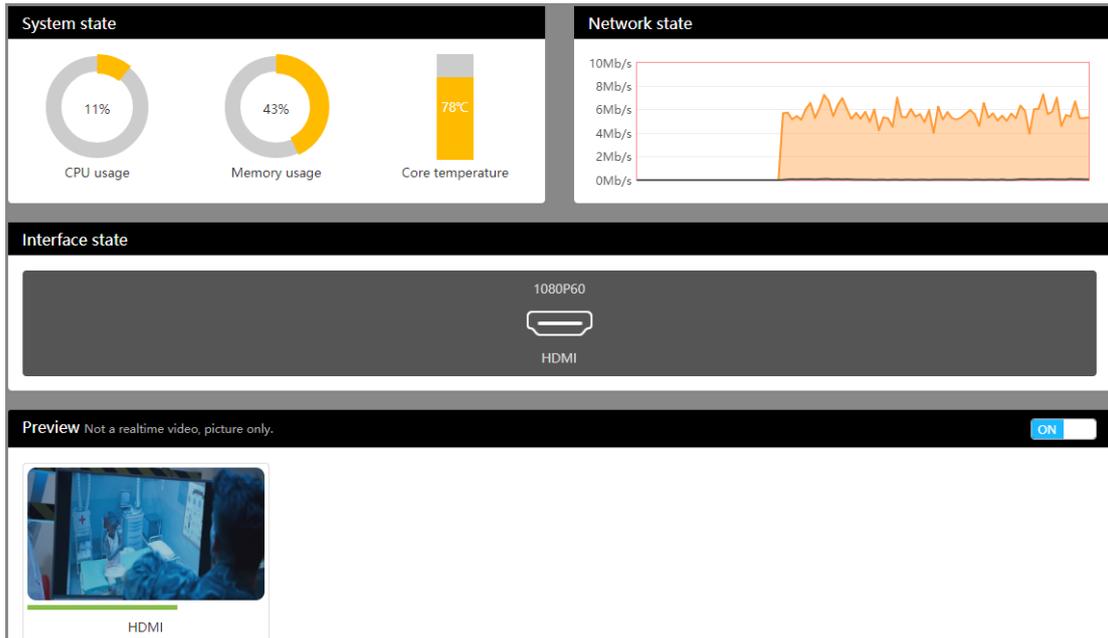
Interface state: indicate your source input, this Encoder support to maximum 1920x1080P_60HZ in.

Preview: input media preview. This is not live media, it's some pictures only. We'll capture the media content to picture every hundred milliseconds.

It's easy to check the input is active or invalid.

2.Encode

Some settings related to the "encode". This Encoder supports to 1920x1080_P60hz in and then encode to "1920x1080@60fps", this is the total and maximum encode resource.

So, please understand how to balance the resource. For example, the "HDMI" channel (main stream) encodes to 1920x 1080@60fps, others channels "sub stream, mix" please disable the "encode", because the resource is run out in this case. Like this:

If you encode to "1920x1080@30fps", you can enable the "sub stream" and encode it to 1920x1080@30fps or enable for another channel:

channel name	video size	codec	rate control	bitrate(kb/s)	framarate	GOP(sec)	enable
HDMI	auto ▾	H.264 High Profile ▾	AVBR ▾	6000	30	2	ON
	360p ▾	H.264 High Profile ▾	AVBR ▾	1000	30	1	ON
Mix	1080p ▾	H.264 High Profile ▾	AVBR ▾	4000	30	2	OFF
	360p ▾	H.264 High Profile ▾	AVBR ▾	1000	30	1	OFF

Save

Please make sure your "encode" resource keeps at 1920x1080@60fps or lower level. If It's over the maximum resource, Encoder will become unstable (Encoder becomes freeze, stream hangs, or package loss, and etc.)

Video size

Supports to 1920x1080, 1680x1056, 1280x720, and lower. Some uncommonly used resolution you can also define yourself in "advanced encode conf": the "width" and "height". For example, size "1920x1200":

Codec

The profile: H264 Baseline; H264 Main; H264 high; H265 Main.

Rate control

Bite rate control: CVR, VBR, AVBR, FXIQP

Bitrate

0.5Mb/s----20Mb/s. Bitrate has a direct relations with the media quality, can't be set to too lower. If you have enough bandwidth, you can set to a higher. Normally, H264/h265 encode we recommend you set to 2-8Mbps. And of course, if it's a lower resolution output you can set to a lower bitrate like 0.8Mbps.

Frame rate

25—60fps

Frame rate setting tips:

1> Frame rate should be a half of Multiple of the input. For example, your input is 1920x1080P_60hz in, we'll recommend you encode to "30fps" or "60fps", not 25/50fps. Even though, you can set to and normally streaming, but it will affect the media quality.

2> More frames and will be smooth video. But, the total encode resource/performance is 1920x1080P_60hz in and encode to 1920x1080@60fps.

GOP

It's calculated in seconds, not in fps. Actually, it's similar to "key frame/key interval". For example, 720P_60hz in, and here set frame/GOP to 60fps/2s, it means the "key frame" is 120.

Audio config

"HMDI, sub-stream, Mix" all channels is using a same audio codec. Audio encoding is processing by CPU,

If enable separately, it will take more CPU resource. So, a same Encoder is using a same audio codec.

Codec "PCMA is only suitable for RTSP protocol.

Network stream

We also support "network stream" input to mix or help you convert the protocol. The stream should be H264 or H265 video codec.

Please pay more attention to CPU and Memory Status before input the network stream to balance the CPU and Memory resource. If you're encoding the source from HDMI port, we don't recommend you input the network stream.

3.**Stream**

Output protocols setting.

We support HTTP, HLS, RTSP, RTP/UDP unicast/multicast, RTMP/RTMPS (tunneled through HTTPS.)

Stream can be configured to multiple outputs. For example, you can enable HTTP, HLS, RTSP:

♨ Stream config	⚙ TS Config	⚙ HLS Config	🎯 Push Config	⚓ Play URL					
channel name	HTTP	HLS	RTMP	RTSP	multicast	multicast addr	push	push url	
HDMI	ON	ON	OFF	ON	OFF	192.168.1.136:5566	OFF	rtmp://127.0.0.1/liv	
	OFF	OFF	OFF	OFF	OFF	233.233.3.1:3000	OFF	rtmp://127.0.0.1/liv	
					Save				
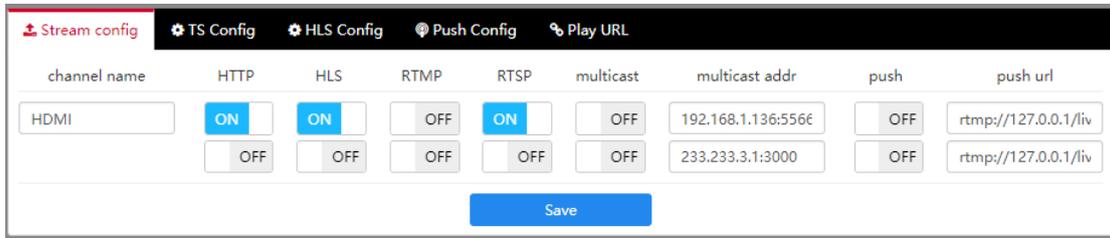
URLs, please check "Play URL":

♨ Stream config	⚙ TS Config	⚙ HLS Config	🎯 Push Config	⚓ Play URL	
channel name		Main URL			Sub URL
HDMI		http://192.168.8.120/live/stream0 http://192.168.8.120/hls/stream0.m3u8 rtsp://192.168.8.120/stream0			
			Save		
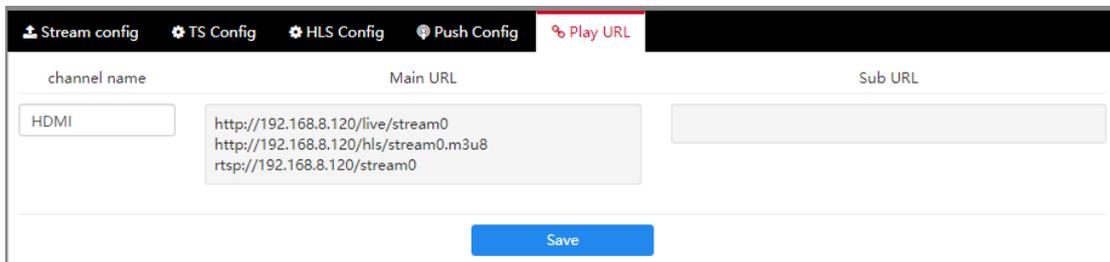
TS Config:

Configure ts properties like "PID (VID), AID, PMT, Service ID", "Package size 188*1—188*10", "TTL".

AID setting is hidden/invisible, and it will be auto configured:

AID=PID + 1

♨ Stream config	⚙ TS Config	⚙ HLS Config	🎯 Push Config	⚓ Play URL						
channel name	PID	TTL	Flow Control	Bandwidth	PMT PID	ServiceID	StreamID	NetworkID	PacketSize	RTP Head
HDMI	100	5	ON	100	4096	1	1	1	13 ▾	OFF
Mix	134	5	ON	100	4096	1	1	1	13 ▾	OFF
					Save					

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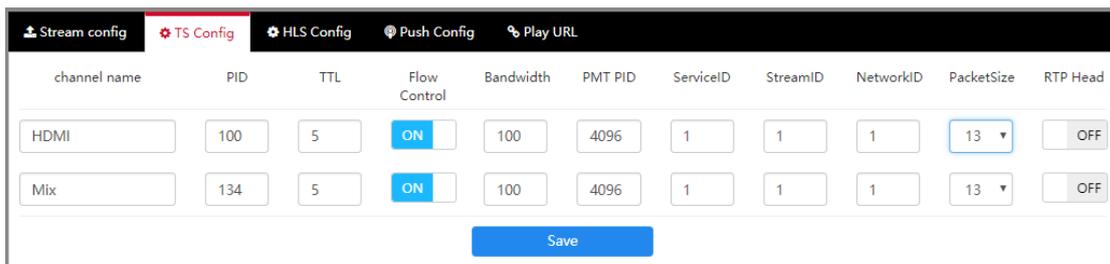
How to enable "RTP" protocol:

Step 1: Stream---TS config-----Enable "RTP Head" first;

Step 2: Stream config---Encable "multicast" and then configure the address & port.
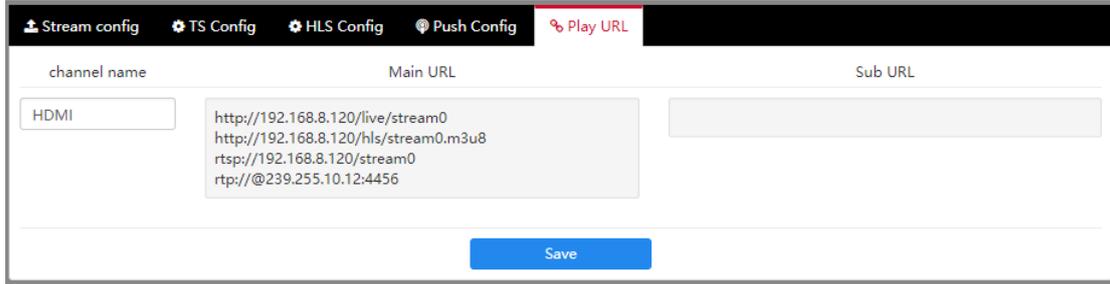
HLS Config

Some setting which related to HLS: Segment length(s), List length, Base url, Name format.

Segment length can't be set to high. To more higher, it means more Memory resource will be taken, becaue HLS content is buffered in Memory (RAM). And please pay attention to Dashboard Memory status.

For "Base url, Name format", normally, no need to set it.:
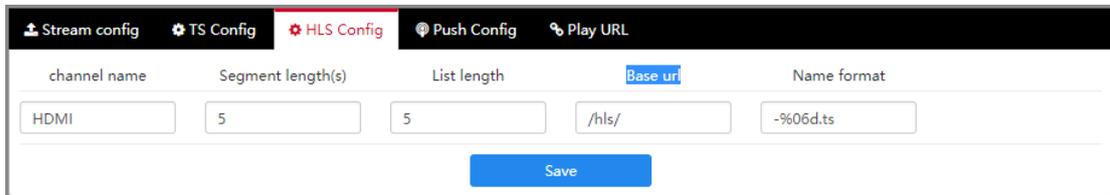
RTMP PUSH

Many customers like to push to sharing site like Youtube, Twitch, Facebook, Vimeo and ect. Here we'll take Youtube-push as an example,

Youtube URL is "a.rtmp.youtube.com";

App name: live2

Stream key: tr2h-0cdw-cadd-xxxx

So you can configure "rtmp:// a.rtmp.youtube.com/live2/ tr2h-0cdw-cadd-xxxx"

to "Stream---Stream conf---push" blank. Like this:
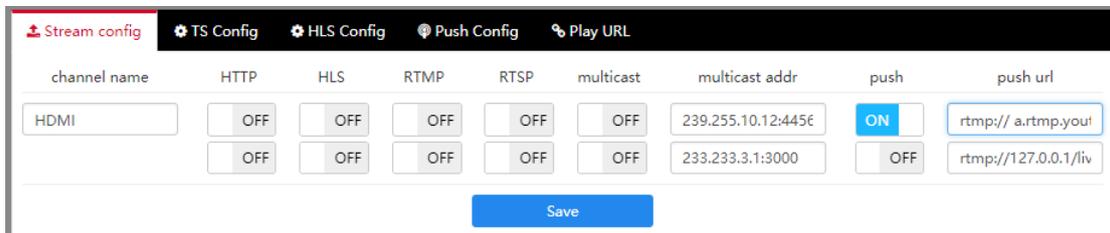
Twitch is almost same as Youtube:

rtmp://live.twitch.tv/app/live_*********_***************************

Some platform which is needed rtmps like Facebook, please configure to "rtmps://xxxx/live/key"

And some platform it's needed a port, please configure like this:

rtmp://localhost:1935/live/streamname

Multiple Push:

Encoder TBS2603SE supports "multiple push", it means stream can be push to different platforms simultaneously.

For example, you can push to Youtube, Facebook,Twitch (and ect.) simultaneously.

Extend page----Multiple Push:

4. Overlay

We support insert "Text, Logo, Mosaic, System time" to stream.

5.Extend

Video Mix

Video mix and split screen function. The mix source can be from HDMI and Network streams.

Mix (Extend) function must be enabled in page "Encode" first. In another word, mix function should be open first:

ROI

region of interest. region of interest (ROI) is an image region selected from the image, which is the focus of your image analysis. Delineate the area for further processing. Using ROI to define what you want to read can reduce processing time and increase accuracy

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Click and drag your mouse to select a region which you're interested, like this:
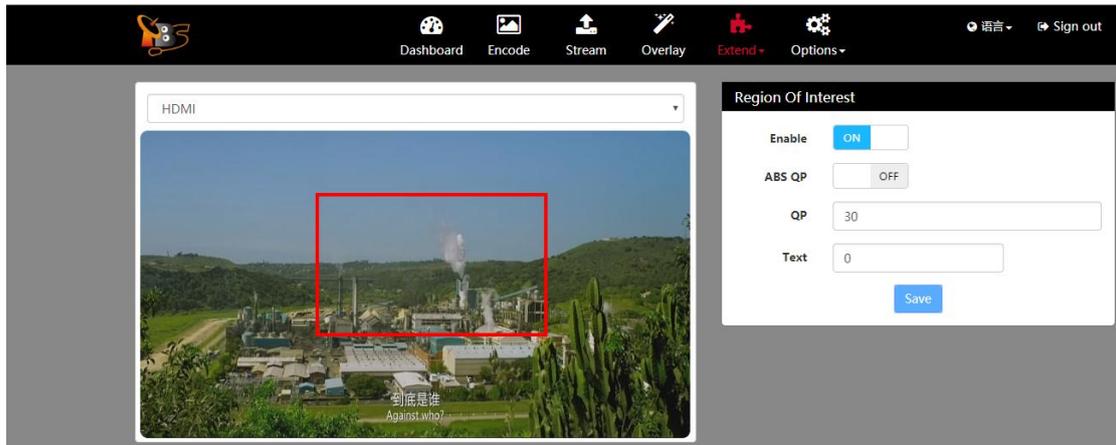
And the result shows as the following:

6.Option

Some setting which is related to system:

IP setting; webUI login password; system time, NTP; Timing-reboot; firmware upgrade; Reboot, Reset; Port setting.

IP setting:

The default IP of Encoder TBS2603SE is 192.168.1.217.　You can also change it to match your local Network. IP, Net mask, Gateway, DNS must be correctly configured.

DHCP function:

We support DHCP, please make sure your network have an DHCP server like a Router is running. Otherwise, Encoder can't get IP.

And in some case, Encoder is remote control (far away from you) and out of your control, please be careful to open DHCP.

How to check what's Encoder IP in DHCP mode:

Currently, it seems only Router can provide the DHCP server, so you can go to your Router setting page to check what's IP delivered to your Encoder.

And another, this Encoder no LCD display, so the static IP should be your priority. Any wrong operation, or difficult to check what's IP Encoder got after set to DHCP, please try to do "Reset" for your Encoder:

Press the "reset" button and hold it around 7 seconds, and then release it, IP will back to the default 192.168.1.217, username/password to "admin/admin".

System time, NTP, reboot time

Sync to PC: sync the system time to the visiting PC's time; Encoder reboot and "time-sync" is gone.

System can also get the time from NTP server:

Make sure your Encoder IP, DNS is correctly set, NTP server is active, and then Encoder will get the time from NTP server.

Reboot time:

Timing and reboot Encoder. Actually, for this Encoder, the Power Consumption is less than 6W. Normally, no need to set "timing-reboot".

System upgrade

Any new firmware release we'll package to update.bin, please upload "update.bin". After "upload" finish need to reboot Encoder to active your upgrade.

Port config

Set the webUI port and ts port.

HTTP port: the default is 80. In some case, need to set your Router to map http port out to make sure Encoder can be visited from different place or from a different network (port forward).

Or in some case, you want to do a streaming to Internet, need to open the port in your Router.

HLS and HTTP is using a common port. If you want to change the HLS port, just go to change the HTTP port.

Port config						
	HTTP	RTSP	RTMP	HTTPTS	Telnet	SSH
Static port	80	554	1935	8090	23	22
Reserve port	80	554	1935	8090	23	22
NAT port	80	554	1935	8090	23	22
				Save		

How to configure "Port forwarding":

Most users do not have a pubic IP, Encoder is connected to local network. In this case, the outside can visit your Encoder directly.   Need to set your Router and open the port, then you can do streaming to Internet or visit webUI from the outside (different network, or different places, cities).

Normally, it's in **"Router----Advanced----Port forwarding or Virtual Server":**

HTTP port:

The default HTTP port is "80", set your Router and open (map) the port. For example, Encoder IP=192.168.1.217

Router "Internal" port set to ------"80"; Router "External" port set to-----"5520"(Internal and & External port can be set to same. But for security, please set to a different).

WAN IP is 113.116.444.xxx

So you can visit webUI in http://113.116.444.xxx:5520 (change the local IP to WAN IP).

TS port:

If you'd like to do a streaming to Internet, you can also open the ts port in your Router. For example, url=http://192.168.8.120:6909/stream0

Router Internal port set to "6909"; Router External port set to "6900", so the new URL for outside should be http://113.116.444.xxx:6900/stream0 (local IP change to WAN IP, and also the port to external port).

Another protocols like HLS or RTSP, the "port forwarding" configuration is same as above.

Any question about how to configure Encoder TBS2603SE, please write to us:

support@tbsdtv.com