

HV-320 DVB-T FPV TV Transmitter Box Quick Installation Guide

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Package Contents

- HV-320 Transmitter Box
- 5V or 12V DC adaptor
- USB UART dongle •
- Firmware version: V0.0.5.4.70 •

Front Panel View



Back Panel View





Board View





Connect RF-output and the video input source

Feed the RF-out to the SMA connector.

Either HDMI or CVBS video input is supported, but only one source can be connected.



CVBS and Line-in

HDMI input

RF-out

Power on

Note: It's very important, in high gain mode, please attached an antenna before power on the box in high gain mode. The power amplifier may burn out without any antenna attached.

Apply DC 5V or 12V to the power jack. One and only one DC power source is enough.

- 1. HV-320E/EH can support either 5VDC or 6~16 DC input.
- For HV-320 with PA900/PA1200/ PA2400, it's recommended to use 12V DC only.
 (DC-in higher than 12.5V will damage the PA!!!)

+

After power on, the default transmission channel is CH 21, 474 MHz / 8MHz BW.



Easy HD Expressway!



Configure the Transmission parameters

The parameters can be configured with a PC tool, AVSenderUARTGUI.EXE. Connect the USB UART dongle to a PC and the UART pin headers to HV-320.



The wire connection between HV-320 and UART dongle is shown below.

Note the cross wiring between Tx & Rx.

USB UART Dongle Pin	HV-320 UART Configuration Port Pin
GND	GND
Тх	Rx
Rx	Тх

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When the USB-UART dongle is connected to the PC first time, it may take some seconds to install the driver.

After driver installed, you may check the new RS-232 COM port device assignment in device manager. COM4 is assigned in the following example.



Launch AVSenderUARTGUI.exe

Note:

If you fail to run AVSenderUARTGUI.exe please,

1. Install the components by

- A. Run Setup.exe in the folder <GUI_Setup > first for non-XP system.
- B. For XP platform, click to run the EXE file in each folder, including \DotNetFX40, and \vcredist x86.
- 2. If it still fails to run AVSenderUARTGUI.exe after running step 1.
 - A. Please try to remove manually all the installation of "Microsoft Visual C++ 201x Redistributable" on your PC in Control Panel first, as shown in the picture below.
 - B. Then, run step 1 to install the components again.



	『控制台項目 ▶ 程式和功能	
控制台首頁	解除安裝或變更程式	
檢視安裝的更新	若要解除安裝程式,請從溏單攫取程式,然後按一下「解除安裝」、「變更」可	t[修復]。
🔗 開啟或關閉 Windows 功能		
從網路安裝程式	組合管理 ▼	
	名稱 ^	發行者
	Microsoft .NET Framework 4.5 SDK	Microsoft Corpor
	Microsoft .NET Framework 4.5.1	Microsoft Corpora
	Microsoft .NET Framework 4.5.1 (繁體中文)	Microsoft Corpor
	Microsoft .NET Framework 4.5.1 Multi-Targeting Pack	Microsoft Corpora
	Microsoft .NET Framework 4.5.1 Multi-Targeting Pack (ENU)	Microsoft Corpor
	Microsoft Help Viewer 2.1	Microsoft Corpor
	Microsoft Office Professional Plus 2010	Microsoft Corpor
	Microsoft SQL Server 2012 Express LocalDB	Microsoft Corpor
	Microsoft SQL Server 2012 Native Client	Microsoft Corpor
	Microsoft SQL Server 2012 Transact-SQL ScriptDom	Microsoft Corpor
	Microsoft Visual C++ 2012 Redistributable (x86) - 11.0.60610	Microsoft Corpor
	Microsoft Visual C++ 2013 Redistributable (x86) - 12.0.21005	Microsoft Corpor
	Microsoft Visual Studio 2010 Tools for Office Runtime (x86)	Microsoft Corpor
	Microsoft Visual Studio Professional 2013	Microsoft Corpor
	Milatek Camera Test Kit	Milatek
	MPC-HC 1.7.5	MPC-HC Team
	National Instruments Coffware	

Select the correct com port for the USB UART cable. Click on "Open/Close" button to connect HV-320.

IT9919 UART GUI					100
ComPort Com 4	MediaConfig	TransmissionConfig	TS Info	EIT Info	Register
Status : Com 1 Com 2	MediaConfig	guration			
Open / Close	Video Inpu	ıt Port			Ŧ
Auto Detect	Widea Inpu	it Mode		Ŧ	
Get All Config	Video Enc	oding Type			
	Video Enc	oding Resolution			-
	Video Enc	oding Width			
Reset to Default	Video Enc	oding Height			
	Data Rate (Control Type			Ŧ
Set All Config	Max Bit R	ate (kbps)			
	Avg Bit Ra	ate (kbps)			
Save Config to file	Video Enc	oding Frame Rate(fps)			

In the "MediaConfig" page, please click on "GetMediaConfig" button first. You can configure the "Max Bit Rate" for video compression.

When configuration is done, click on "SetMediaConfig" button to set HV-320.



omPort Com 4	MediaConfig TransmissionConfig	TS Info EI	IT Info RegisterCont	rol System Info	Raw Data	Network Config
tatus : Connected	MediaConfiguration					
Open / Close	Video Input Port	AUTO	- V:	ideo Encoding GOI	P Length	60
Auto Detect	Video Input Mode	AUTO	Ψ.	ideo Encoding B Fi	rame Num	0
Get All Config	Video Encoding Type	H264	- A	udio Input Mode		Stereo
	Video Encoding Resolution	AUTO	- A	udio Input Gain(db)	0
	Video Encoding Width	1920	A	udio Encoding Typ	e	MPEG2
Reset to Default	Video Encoding Height	1080	A	udio Encoding Bit	Rate(Kbps)	96
	Data Rate Control Type	CBR	-			
Set All Config 🛛 🌔	Max Bit Rate (kbps)	8000		>		
	Avg Bit Rate (Kbps)	10000				
Save Config to file	Video Encoding Frame Rate(fps)	30				
Get Config from file	Video aspect ratio	16:9	-	Set MediaConfi	g 🚺	Get MediaConfig

In the "TransmissionConfig" page, please click on "GetTransConfig" button first.

You can configure the Channel number or the transmission parameters.

When configuration is done, click on "SetTransConfig" button to set HV-320.

919 UART GUI			the second	-11 848 .1
omPort Com 4	MediaConf z TransmissionConfi	g 🔥 Info 🛛 EIT Info 🔤	RegisterControl System Info F	Raw Data Network Config
Open / Close	TransmissionConfiguration) 21 🗸	Standard	INDE-T 💿 INDE-T
Auto Detect	BW Strapping(MHz)	7+8	Segmentation Mode	Full segment 🚽
Get All Config	Bandwidth(MHz)	7+8 👻	One-Seg Constellation	QPSK 👻
	Frequency(KHz)	474000	One-Seg Code Rate	1/2 👻
	Conste ¹¹	64QAM	12-Seg Data Rate(Mbps)	
Reset to Default	FFT	8К 🗸	One-Seg Data Rate(Mbps)	
	Code Rate	1/2 👻	TV Sundard Option	VB-T 🕅 ISDB-T
Set All Config	Guard Interval	1/16 👻	СЬДІД	9517
	RF Astropation/Gain(db)	0	PCR Restamp Mode	Disable
Save Config to file	Modulation Data Rate (Mbps)	17.56		
Get Config from file	TPS Cell ID(hex)	0 x 0	Set TransConfig	Get TransConfig

If you want to input frequency and bandwidth manually, please select Channel# 0. The bandwidth and frequency fields will be un-grayed then.



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ComPort (COM1) 🐧 🖵	MediaConfig TransmissionConfi	g TS Info EIT Info	RegisterControl System Info Ra
Status : Connected	TransmissionConfiguration		
Open / Close	Channel#(0:for manual config) 🛛 👻	V Standard
Auto Detect	Channel Table	7+8M 🗸	Segmentation Mode
Get All Config	Bandwidth(MHz)	8 🗸	One-Seg Constellation
	Frequency(KHz)	177500	One-Seg Code Rate
	Constellation	16QAM 🗸	12-Seg Data Rate(Mbps)
	FFT	2К 🗸	One-Seg Data Rate(Mbps)
Reset to Default	Code Rate	2/3 🗸	TV Standard Option
	Guard Interval	1/4 🗸	ChipID
Set All Config	RF Attenuation/Gain(db)	0	PCR Restamp Mode
Save Config to file	Modulation Data Rate(Mbps)	13.27	
Get Config from file	TPS Cell ID(hex)	0x 0	Set TransConfig

Note:

1. The minimum modulation data rate must be >=2.07Mbps.

When BW=2 MHz, if the data rate is <2.07, then the parameters will be adjusted to CR 3/4, GI 1/8.

When BW=3 MHz, if the data rate is <2.07, then the parameters will be adjusted to CR 1/2, GI 1/8.

2. it's recommended that the "Modulation Data Rate (Mbps)" should be larger than the "Max

Bit Rate(Mbps)" for video compression in the MediaConfig page by 20~30% at least. For example, if Max Bit Rate(Mbps)=2 Mbps, Modulation Data Rate (Mbps) should be better

>=2.4Mbps.

In the "TSInfo" page, please click on "GetTsInfoConfig" button first.

You can configure the service name and PID assignments.

When configuration is done, click on "SetTsInfoConfig" button to set HV-320.

II9919 UART GUI		1000	AL			
ComPort Com 4 🖵	MediaConfig TransmissionCor	f K IS Info IIT Info	RegisterControl System Info	Raw Data Network Config	Spec Version : 1.75	Version : 1.20
Status : Connected	TSInfoConfig					
Open / Close	ONID(hex)	209E	Video PID(hex)	0x 7D1	ISDB-T Region ID	0
Auto Detect	NID(hex)	3301	Andio PID(hex)	0x 7D2	SDB-T Broadcaster Region ID	0
Get All Config	TSID (hex)	80	PTS PCR Latency(ms)	100	ISDB-T Remote Control Key ID	0
	Network Name		SIPSI Table Duration(min)	0	ISDB-T Service ID Data Type 1 (hex)	0x 0000
	Service ID(hex)	0x 100	NIT Version(hex)	0x 0	ISDB-T Service ID Data Type 2(hex)	0x 0000
Reset to Default	LCN enable	Disable	Country ID	Australia 👻	ISDB-T Service ID Partial reception(hex)	0x 0000
	Private Data Specifier(hex)	Disable	Language ID	English		
Set All Config	LCN	0	ONID/NID/TSID Assignmen	nt 💿 AUTO		
	Secure Name	AIR_CH_474_8M		 Manual Manual (Region ID) 		
Save Config to file	Provider	ITE		L		
Get Config from file	PMT PID(hex)	0x 1000	ノ		Set TSInfoConfig Get TSI	nfoConfig
FW Version Date	System Date	-	UART API Version	Video Frame ra	ate Resolu	ition



Backup and Restore DC Calibration Table

For each HV-320, a specific DC calibration table is kept in the NOR flash to optimize the DC LO leakage.

This paragraph describes how to back up and restore the DC calibration table.

Check DC table existence:

You may check the existence of DC table with AVSenderUARTGUI.exe.

EIT Info RegisterControl System Info Raw	Data N twork Cor	nfig TSRawData Web Authorization
▼ Open ▼ Set Raw Data	Other Setting Setting Data Type Access Option	Check Table 2 DC table 3 Eccess from EEPROM 4 Submit 5
✓ Get Raw Data		

In the "Raw Data" page, "Other Setting" group, select "Check Table"-> "DC table"-> "Access from EEPROM", then click on the button "Submit". A pop-up window will display if the table exists or nor. **Backup DC table:**

w Data					
Set					Other
Data Type		•			Settin;
Data File Path :			Open		Data 1
Access Option		-	Set Ra	w Data	Acces
					5
Get	2011	•	2		
Data Type	DC table	· · ·			
Data Type Access Option	DC table	ROM -	3 Get Ra	aw Data	4

In the "Raw Data" page, "Get" group, select "DC table"-> "Access from EEPROM", then click on the button "Get Raw Data". A dialog window will pop up to input the saved file name for the DC table.





							-	1.0	12 84
MediaConfig Raw Data	Transmissi	onConfig	TS Info	EIT Info	Regist	erControl	System Inf	Raw Data	l etwork Conf
Set Data Ty	лое	DC table	9		• •			Oti	her Setting
Data Fi	le Path :	E:\Docu	ments and	Settings\ite	0	Oper	<u>1</u> 3	Da	∞ ta Type
Access	Option	Write to	EEPROM		• 4	Set	t Raw Data	Ac	cess Option
							5	J	
Get					_				
Data Ty	уре	DC table	•		•				
Access	Option	Access f	rom EEPR	ом -	•	Get	t Raw Data		

In the "Raw Data" page, "Set" group, select "DC table"-> "Open" a DC table file->"Access from EEPROM", then click on the button "Set Raw Data".

Firmware Update

Before firmware update, it's recommend to backup a copy of the DC calibration table in the NOR flash. The firmware update process may corrupt the DC calibration table in the NOR flash.

- 1. Copy the firmware image file "jedi.img" to the root directory of a micro SD card.
- 2. Power the HV-320 box down.
- 3. Plug in the micro SD card

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4. Power on the transmitter box and wait for about 30 seconds.

If the SD card is detected properly and JEDI.IMG is found, the update progress will be started. The 7-SEG LED shows "88" when updating, and show 21 when update is done.

If you can connect to the UART debug port (refer to next chapter), you will see the debug messages, "sd upgrade start" and "sd upgrade finish"

5. Remove the micro SD card, power off, then power on the transmitter box. Note:

1. Jedi.img will be rename to jedi_tmp.img when update is done.

After firmware update, please check if the DC table still exists. If not, it's recommend to restore the DC calibration table.



UART-1 Tx Debug Messages

The UART-1 is used for debug port, located in J9.

You may dump debug messages from this J9 pin2 UART-1 Tx. J9:

Pin 1: UART-1 Rx (Data mux input, described below)

Pin 2 :UART-1 Tx (for Debug message output, GPIO28)

Pin 3: Ground

The communication parameters for UART-1 are 115200,n,8,1.





UART-1 Rx Data mux input

the UART-1 Rx (IT9919 pin 66, GPIO27) is also used for data (GPS aviation or any digital information) mux input, while UART-1 Tx for debug message output. The communication parameters for UART-1 are 115200,n,8,1.

Besides, to enable UART-1 data mux, you should set properly in AVSenderUARTGUI.exe.

Click on the tab "SerialPortConfig", and set the configurations as,

Port number :1

Type: RS232

Communication parameters:

Baudrate/Data bit/Parity/Stop/Flow control:115200/8/none/1/none

Default::115200/8/none/1/none,

But you may set them to any other values preferred.

Trans mode: Transparent

Then, click on "Set SerialPortConfig" button.

11	0:38400b	aud - Tera Terr	n VT	_		-	-		X	rminal	Q	
T	T9919	LAN M							- 1		2.4	
	ComPort Status :	(COM1) ⅔ → Connected	MediaConfig 1	ransmissionConfig	TS Info	EIT Info	RegisterControl	System Info	Raw Data	Network Config	SerialPortConfig	Web Aut
	Ope	en / Close	SerialPortConf Port Number	ig 1							1	
	Au	uto Detect	Туре	R\$232	•							
	Get.	All Config	BaudRate	115200		2						
			Data Bits	8		_						
			Parity	None	•							
	_		Stop Bits	1 bit	•							
	Rese	t to Default	FlowControl	None	•		_					
			Trans Mode	Transparent	-		3					
	Set.	All Config		Get SerialPortConfi	g [Set SerialPo	ortConfig					
	Save C	Config to file										
												

Note: If you have changed the communication parameters (Baudrate/Data bit/Parity/Stop/Flow control),

- 1. You should reboot HV-320 for the new setting to take effect after clicking the "Set SerialPortConfig" Button
- 2. The debug message port UART-1 Tx's communication parameters are also changed because it's the same UART-1.



Configure with Android Tablet or Smartphone

An Android App (AVSender Tool Kit.APK) is provided for users to configure HV-320 parameters with an Android Table PC or smart phone.

Note:

- The android platform and USB cable should support USB-OTG feature. (Hint: If the Android platform supports USB-OTG, you should be able to access USB disk via the USB port)
- 2. For Nexus 7 or Nexus 10 tablets. Please install OTG Disk Explorer on http://goo.gl/7zBgYx



Please click AVSender Tool Kit.APK on your Android platform to install it. The APK can also be found on,

https://drive.google.com/folderview?id=0B8b3vTd96xbsNlJWOVROSXZxSGc&usp=sharing After installation, the tool will pop up when HV-320 is connected to your Android platform.



Or, you may click on the icon AVSender Tool Kit to launch the tool.



On the system page, the "Reset" icon

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AVSender Tool Kit	
SYSTEM SOURCE MEDIA	TRANSMISSION
FW V 🖉 🔍	茾
Software Version	
Device Type HDMI/Composite	
System Config No config	
System State No video Input	
System Date	
System Time ^{0:0:0}	
Model Name	
UART API Version	
Extension Functions	
SET LET CESET	
	1

Although, there are many options listed in the tool, only some options are configurable.

Many options are read-only or not allowed to be changed.

Configurable options are listed below,

"System":

No option, all are read-only

A "Reset" button is available for users to reset the box to factory defaults.

"Source": No option, all are read-only

"Media": Configurable options listed below,

Max Bit Rate: 8000K bps (default for HD)

Video Encoding GOP Length: 60 (default)

Audio Encoding Type: MPEG2 (default)

Audio Encoding Bit Rate: 192Kbps (default)

"Transmission": Configurable options listed below,

Channel # and Frequency/Bandwidth (configurable when Channel #=0)

Constellation/GI/CR/FFT/Attenuation

"TS": Configurable options listed below,

ONID/NID.TSID/SID

PMT/Video/Audio PID

LCN/Service Name/Provider Name

PTS PCR Latency: 330 ms (default)

"EIT"/"NETWORK"/"WEB PAGE"/"HW Register": Not supported yet.



Default Video Input/Output Mapping Table

Input Outpu	ıt Frame Size			
		Input Frame Rate	Encoding Data Rate (Kbps)	Output Frame Rate
640	480	60P	2600	60P
720	480	59I	3000	30P
720	480	59P	4000	60P
720	576	50I	3000	25P
720	576	50P	4000	50P
1280	720	50P	16000	50P
1280	720	60P	16000	60P
1920	1080	24P	18000	24P
1920	1080	50I	18000	25P
1920	1080	50P	18000	25P
1920	1080	60I	18000	30P
1920	1080	60P	18000	30P
800	600	60P	5000	60P
1024	768	60P	16000	60P
1280	768	60P	18000	60P
1280	800	60P	18000	60P
1280	960	60P	16000	30P
1280	1024	60P	16000	30P
1360	768	60P	18000	60P
1440	900	60P	16000	30P
1400	1050	60P	16000	30P
1440	1050	60P	16000	30P
1600	900	60P	16000	30P
1600	1200	60P	16000	30P
1680	1050	60P	16000	30P

Tricks for latency shortening

A.MediaConfig page:

- 1. Decrease the Video Encoding GOP length (1 is the shortest, but poor video quality)
- 2. SD <720P <1080P
- 3. Decrease video encoder (compression) "Max bit rate(kbps)"

4. Enable "Fast Playback Mode", say set it to "+4%" WWW.HIDES.COM.TW



IT9919	and the second second	-		-		- A.		
ComPort Com 1 👻	MediaConfig TransmissionConfig	TS Info EIT Info	RegisterC	ontrol System Info	Raw Data	Network Config	TSRawData	Web Authorization
Status : Connected	MediaConfiguration							
Open / Close	Video Input Port	AUTO	Ŧ	Video aspect ratio		16:9	-	
Auto Detect	Video Input Mode	AUTO	•	Video Encoding GOF	Length	60		
Get All Config	Video Encoding Type	H264	-	Video Encoding B Fr	ame Num	0		
	Video Encoding Resolution	AUTO	Ŧ	Line-in Mode		Stereo	Ŧ	
	Video Encoding Width	1920		Line-in Gain(db)		0		
	Video Encoding Height	1080		Audio Encoding Typ	e	MPEG2	•	
Reset to Default	Data Rate Control Type	CBR	T	Audio Encoding Bit I	Rate(Kbps)	192	•	
	Max Bit Rate (kbps)	8000	\supset	SDI Audio Source		Embedded Audio	×	
Set All Config	Avg Bit Rate (kbps)	8000		Fast Playback		+4 %	•	
Save Config to file	Video Frame Rate Drop	AUTO	•					•
Get Config from file	Video Encoding Frame Rate(fps)	30		Set MediaConfi	g 🗌	Get MediaConfig		

B.TransmissionConfig page:

Larger modulation data rate (Mbps) <(shorter than) Smaller modulation data rate

For example, the best case is "BW=8M, CR=7/8, CR=1/32, Const=64QAM" but the transmission distance could also

be shortened.

IT9919				and the second se
ComPort Com 1 -	MediaConfig TransmissionConfi	g S Info EIT Info	RegisterControl System Info	Raw Data Network Config TSRawData Web Authorization
Open / Close	Channel#(0:for manual config	21	• TV Standard	INDE-T O INDE-T
Auto Detect	Channel Table	7+8M	Segmentation Mode	Full segment
Get All Config	Bandwidth(MHz)	8	One-Seg Constellation	QPSK
	Frequency(KHz)	474000	One-Seg Code Rate	1/2 -
	Constellation	16QAM	- 12-Seg Data Rate(Mbps)	
Buitte Difuit	FFI	2K -	• One-Seg Data Rate (Mbps)	
Reset to Default	Code Rate	2/3	• TV Standard Option	V DVB-T ISDB-T
	Guard Interval	1/4	ChipID	9517
Set All Config	RF Attenuation/Gain(db)	0	PCR Restamp Mode	Disable
Save Config to file	Modulation Data Rate (Mbps)	13.27	J	
Get Config from file	TPS Cell ID(hex)	0x 0	Set TransConfi	g Get TransConfig

C.In TSInfo Page:

Decrease "PTS PCR Latency (ms)", 0 is the shortest, but some receivers may fail to decode.





Shorten receiver latency with HV-110 HD box

If you are testing HV-320 Tx latency with HV-110 Rx, you may get a special firmware from Hides for HV-110 Rx.

The special firmware for HV-110 Rx can decrease the receiver latency very much.

However, with the new firmware, HV-110 can only decode HD video from HV-320, and cannot decode video from other Tx sources, like HV-100/HV-102 or live TV stations.

Please consult Hides (<u>support@hides.com.tw</u>) for the special low-latency firmware for HV-110. In the soon future, we will provide a single low-latency HV-110 firmware which supports HD video from any Tx source.

Encrypt the RF Signal

RF encryption feature is supported.

Please run AVSenderUARTGUI.exe.

- 1. Select "Encrypt" tab
- 2. Enable TPS Encryption Mode
- 3. Input the RF key, it's a 8-digit HEX number.
- 4. Set the new settings to HV-320

1	MediaConfig	TransmissionConfig	TS Info	FIT Info	Register Control	System Info	Raw Data	Network Config	SerialPortConfig	Web Authorization	Encrypt
í		Thereader to be a set of the set o	10 1110	211 1120	11020010011101	<i>b)00111110</i>	1000 2000	notwork cosing	bolinal officiality	1100 110000000	
	Encryption(Config									1
	TPS Encry	ption Mode	Disable		- 2						1
	TPS Encry	vption Type	SDES en	ryption	•						
]	TPS Encry	vption Key Ox	0000000)	3						
	Data Encr	yption Mode	Enable		•						
	Data Encr	yption Type	AES-128	encryption	•						
	PartialEnc	ryption Skip Length	4								
	Data Encr	yption Key Ox	0000000	00000	00000000	00000002	Сору	Paste			
1			Ge	t Encryptio	n Set I	Incryption] 4				
)											



Encrypt the Stream Data

TS data encryption feature is supported.

Please run AVSenderUARTGUI.exe.

- 1. Select "Encrypt" tab
- 2. Enable Data Encryption Mode
- 3. Input the key, it's a 32-digit HEX number.
- 4. Set the new settings to HV-320

							-			
MediaConfig	TransmissionConfig	TS Info	EIT Info	RegisterControl	System Info	Raw Data	Network Config	SerialPortConfig	Web Authorization	Encrypt
EncryptionC	Config									1
TPS Encry	ption Mode	Disable		-						1.1
TPS Encry	ption Type	SDES end	ryption	•						
TPS Encry	ption Key Ox	00000000)							
Data Encry	vption Mode	Enable		■ 2						
Data Encry	ption Type	SDES end	ryption	•						
PartialEncr	cyption Skip Length	4			3					
Data Encry	/ption Key Ox	00000001	L 00000	000 0000000	00000002	Сору	Paste)		
		Ge	t Encryptic	on Set H	Incryption	4				

Tricks for smoothing the video motion

If there are large motions in the video input, the encoded stream may have glitches and stutter on the TV. You may change the configuration to get the optimized video smoothness.

A.MediaConfig page:

Check video encoder (compression) "Max bit rate(kbps)" which is better to be less than modulation data rate by 50%. For example, if it's 8000Kbps, modulation data rate is recommended to be 12000Kbps.



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IT9919								
ComPort Com 1 🚽	MediaConfig TransmissionConfig	TS Info EIT Info	RegisterC	ontrol System Info	Raw Data	Network Config	TSRawData	Web Authorization
Status : Connected	MediaConfiguration							
Open / Close	Video Input Port	AUTO	Ŧ	Video aspect ratio		16:9	-	
Auto Detect	Video Input Mode	AUTO	-	Video Encoding GOI	P Length	60		
Get All Config	Video Encoding Type	H264	Ŧ	Video Encoding B F	rame Num	0		
	Video Encoding Resolution	AUTO	Ŧ	Line-in Mode		Stereo	-	
	Video Encoding Width	1920		Line-in Gain(db)		0		
	Video Encoding Height	1080		Audio Encoding Typ	e	MPEG2	•	
Reset to Default	Data Rate Control Type	CBR	-	Audio Encoding Bit	Rate (Kbps)	192	-	
	Max Bit Rate (kbps)	8000		SDI Audio Source		Embedded Audio	T	
Set All Config	Avg Bit Rate (kbps)	8000		Fast Playback		+ 4 %	•	
Save Config to file	Video Frame Rate Drop	AUTO	•					
Get Config from file	Video Encoding Frame Rate(fps)	30		Set MediaConfi	ig 🗌	Get MediaConfig		

B.TransmissionConfig page:

Modulation data rate should be larger than video encoder (compression) "Max bit rate(kbps)" by 50%. For example, if video encoder (compression) "Max bit rate(kbps)" is 8000Kbps, modulation data rate is recommended to be 12000Kbps. Change the transmission parameters properly to fit this requirement.

IT9919	and the second se			
ComPort Com 1 -	MediaConfig TransmissionConfig	S Info EIT Info	RegisterControl System Info	Raw Data Network Config ISRawData Web Authorization
Status : Connected	TransmissionConfiguration			
Open / Close	Channel#(0 for manual config)	21	• TV Standard	ISDB-T 🔿 ISDB-T
Auto Detect	Channel Table	7+8M	Segmentation Mode	Full segment
Get All Config	Bandwidth(MHz)	8	One-Seg Constellation	QPSK
	Frequency(KHz)	474000	One-Seg Code Rate	1/2 -
	Constellation	16QAM	12-Seg Data Rate(Mbps)	
	FFT	2К	• One-Seg Data Rate(Mbps)	
Reset to Default	Code Rate	2/3	• TV Standard Option	VDVB-T ISDB-T
	Guard Interval	1/4	• ChipID	9517
Set All Config	RF Attenuation/Gain(db)	0	PCR Restamp Mode	Disable
Save Config to file	Modulation Data Rate(Mbps)	13.27	J	
Get Config from file	TPS Cell ID (hex)	0x 0	Set TransConfi	g Get TransConfig

C.In TSInfo Page:

Increase "PTS PCR Latency (ms)" to a larger value, say 1000ms or larger.





Customize the Encoded Frame Rate

From v2.4.68 on, users may specify the encoded frame rate manually.

In AVSenderGUI, set "Video Frame Rate Drop" to "Disable", default "Auto".

Specify the expected frame rate in the field below.

Valid frame rates are 23, 24, 25, 29.97, 30, 59.94 and 60 FPS.

Note: For 1080P video, the maximum FPS allowed is 30FPS.

ComPort	(COM1) ǯ ▼	MediaConfig TransmissionConfig		TS Info	EIT Info	Register	Control System In
Status :	Connected	-MediaConfig	guration				
Ope	n / Close	Video Inpu	at Port	AUTO		•	Video aspect rati
Aut	to Detect	Video Inpu	at Mode	AUTO		Y	Video Encoding
Get A	All Config	Video Enc	oding Type	H264		•	Video Encoding
		Video Enc	oding Resolution	AUTO		T	Line-in Mode
		Video Enc	oding Width	1280			Line-in Gain(db)
		Video Ence	oding Height	720			Audio Encoding
Reset	to Default	Data Rate (Control Type	CBR		T	Audio Encoding
		Max Bit Ra	ate (kbps)	8000			Audio Source
Set A	ll Config	A∨g Bit Ra	ate (kbps)	8000			Fast Playback
Save C	onfig to file	Video Fran	ne Rate Drop	Disable		•	
Get Con	fig from file	Video Enc	oding Frame Rate(fps)	60			Set MediaC

Some TV's cannot take 1080p30 well (video glitch or lip-sync failure) , please force the frame rate to 29.97.

ComPort (COM1) 3 -	MediaConfig	TransmissionConfig	TS Info	EIT Info	Registe	rControl	System Info	Raw Data	Network Config	SerialPortCo
status : Connected	MediaConfi	guration								
Open / Close	Video Inp	ut Port	AUTO		•	Video	aspect ratio		16:9	-
Auto Detect	Video Inp	Video Input Mode			-	Video	Encoding GO	P Length	60	
Get All Config	Video Encoding Type		H264		•	Video	Encoding B F	rame Num	0	
	Video Enc	oding Resolution	AUTO		-	Line-i	n Mode		Stereo	-
	Video Enc	oding Width	1920			Line-i	n Gain(db)		0	
	Video Enc	oding Height	1080			Audio	Encoding Typ	ie	MPEG2	•
Reset to Default	Data Rate	Control Type	CBR		Ŧ	Audio	Encoding Bit	Rate (Kbps)	192	-
	Max Bit R	ate (kbps)	8000			Audio	Source		Embedded Audio	-
Set All Config	Ave Bit R	ate (khns)	8000			Fast P	layback		Disable	-
Save Config to file	Video Fran	ne Rate Drop	Disable		•					
Get Config from file	Video Enc	oding Frame Rate(fps)	29.97			5	et MediaConf:	e l	Get MediaConfig	

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