

# HiDES Easy HD Expressway!

## HV-310E/HV-310J FPV Full HD Video Transmitter

### HDMI/Composite(CVBS) to DVB-T/ISDB-T/ISDB-Tb Modulator



HV-310 is the most cost-effective solution to transmit long range HD video for FPV application with digital TV technology.

The video input source from either HDMI/DVI or composite (CVBS) is encoded in H.264 streams, modulated with the open industrial standard EN 300-744 DVB-T/ARIB STD-B31 ISDB-T/ABNT NBR 15601 ISDB-Tb, and then transmitted over cable or air.

All DVB-T/ISDB-T/ ISDB-Tb compliant receivers, including SetTopBox, Digital TV, PC/NB USB DTV dongle, or DTV capture card can receive, and watch the video from a HV-310 via the standard coaxial cable or antenna.

HV-310E supports EN 300-744 DVB-T modulation while HV-310J supports ARIB STD-B31 ISDB-T/ABNT NBR 15601 ISDB-Tb modulation.

(Note: HV-310J supports only H.264 encoding while old Japan ISDBT TV cannot support it.)

HV-310 supports 170MHz~1350MHz band transmission.

With embedded high power amplifier design, the RF output power can reach up to +15dBm for the frequency range 474~930MHz.

## Features

### Low Cost HD Video Distribution

Compliant to existing HD TV sets, no extra adapter required, and no restriction on the number of receivers. All the peripherals like splitter, amplifier, connector...etc are the same as those for regular TV.

In DVB-T mode, 1MHz~8MHz Bandwidth options are supported.

### Versatile video inputs

Support HDMI/DVI and composite (CVBS) video input.

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## Easy to Configure

Channel number can be configured with the IR RC easily.

More advanced configurations can be set from an external host like PC/NB thru serial port interface.

## Robust, Reliable and Long Distance

Easily transmit 1080p video over a single 3C2V/RG59 cable for at least 500 meters long without adding any repeater.

For wireless applications, the line of sight transmission distance may reach 50~100 meters at 0dBm RF radiation power and up to several kilo meters at 30 dBm with an external PA. The real distance depends on the antenna design and receiver quality.

Differential RF output is also available for RF signal distribution with twisted pairs (telephone or Ethernet RJ-45) instead of heavy coaxial cables.

## Daisy-chain Connection (Bus-Topology)

Multiple HV-310's with different channel configurations can share a single cable.

It can dramatically reduce the cable deployment cost and effort.

## Real time protocol and Low latency

No frame drop in QEF (Quasi-Error-Free) condition, and low transmission latency

## General Specifications:

Input	Video: CVBS, HDMI 1.3 Audio: Stereo line-in or HDMI PCM audio-in		
Compression	Video: H.264 Audio: AAC or MPEG		
Resolution	Input	CVBS	720x480x30I (NTSC, D1) 720x576x25I (PAL, D1)
		HDMI	720x480x30I (NTSC, D1) 720x576x25I(PAL, D1) 1280x720x50I/1280x720x50P 1280x720x60I/1280x720x60P 1920x1080x24P 1920x1080x50I/1920x1080x50P 1920x1080x60I/1920x1080x60P
Video Output	Compression:H.264 Frame size: 720x480x30P (NTSC, D1) 720x576x25P (PAL, D1) 1280x720x25P		

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	1280x720x30P 1920x1080x24P 1920x1080x25P 1920x1080x30P Note: the output frame size is the same as the input, no scale-up or scale-down feature supported
Power	DC 5V Power Consumption 800 MA (PCB AV Sender TX V02 can support either 5V or 9~16V DC)
Dimension WxDxH	W(105 mm) x D(75 mm) x H(35 mm) (Bare bone PCBA size: 100mmx70mm)
Weight	175g (Bare bone PCBA weight 55g)
Operating Temperature	-10°C ~ 60°C

## Digital TV RF Transmitter Specifications:

Parameter	Value						
TV Standard	HV-310E			DVB-T EN-300 744			
	HV-310J			ISDB-T ARIB STD-B31 ISDB-Tb ABNT NBR 15601			
RF connector	50-Ω SMA connector						
Bandwidth	HV-310E			1/2/3/4/5/6/7/8 MHz			
	HV-310J			6MHz			
FFT	HV-310E			2K, 8K			
	HV-310J			2K, 4K, 8K			
Code rate	1/2, 2/3, 3/4, 5/6, 7/8						
Guard interval	1/4, 1/8, 1/16 or 1/32						
Frequency range	170~1350MHz, step size 1KHz						
Segment & Layer	HV-310E			n/a			
	HV-310J			13 Seg or 1 Seg			
Time Interleaver	HV-310E			n/a			
	HV-310J			Not supported			
RF Output Level (dBm)	Frequency	177.5	474	666	858	915	1250
		MHz	MHz	MHz	MHz	MHz	MHz
	Max	5	15	16	15	14	0.5
	Hi-gain	0	10	11	10	9	-4.5
	Low-gain	-20	-10	-7	-8	-9	-21
Digital Gain/Attenuator for Fine Tuning	Range: +5dB~-10dB , Step size 1dB (Default: +0dB)						
MER	170~1350MHz, 25~33 dB						
Spectrum Shoulder	40dB						

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(Adjacent channel)	
Phase noise	<-92dBc @ 10kHz
Carrier Suppression	>42dB

Specifications are subject to change without prior notice.

\*\*\*: There could be MER loss in high gain/attenuation level.

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## HV-310 Application Scenario-FPV

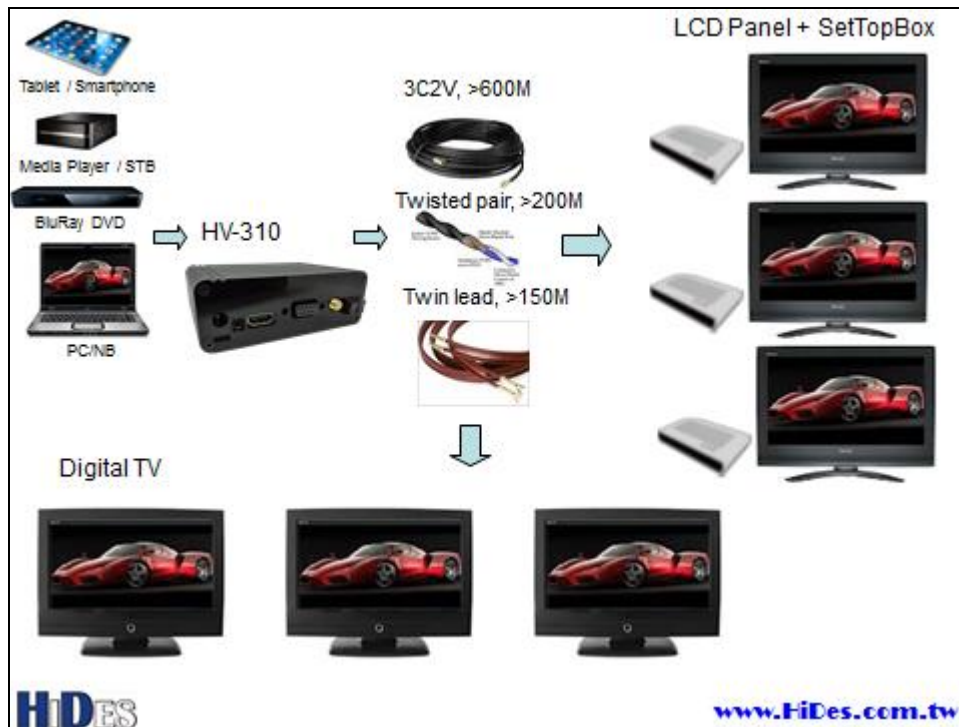


## HV-310 Application Scenario-Wireless

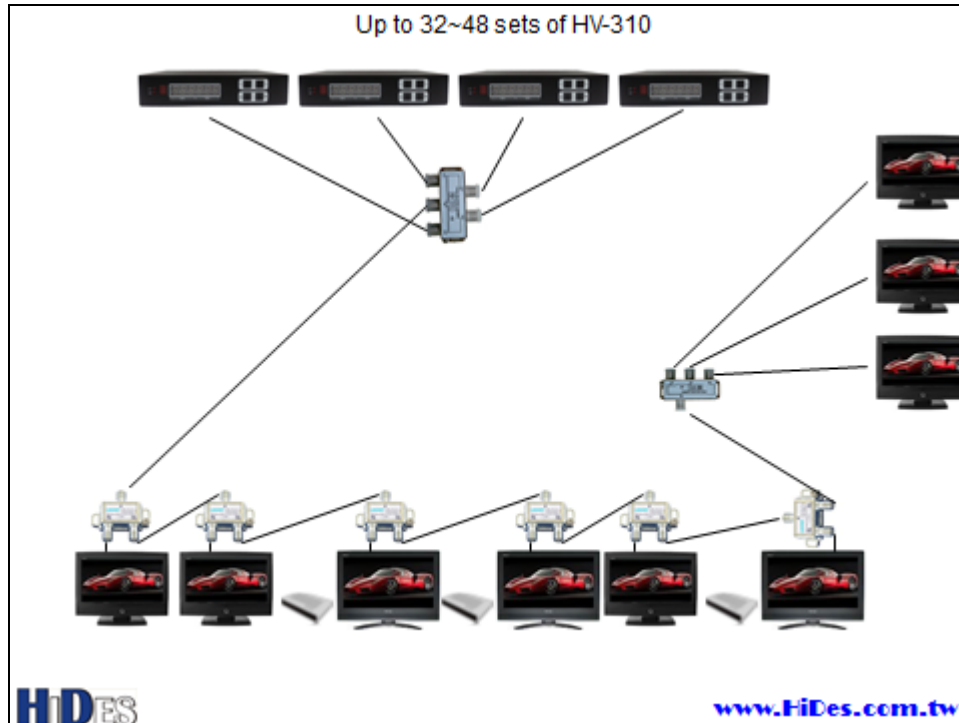


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## HV-310 Application Scenario-Wired



## System Deployment Example – Daisy-Chain Bus Topology



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## HV-310 Application – Live Video Broadcast



## HV-310 Application – Digital Signage



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HV-310 Application – Entertainment HD Video Distribution

The diagram illustrates the application of the HiDES HV-310 device for entertainment HD video distribution. At the center is the HV-310 device, a black rectangular unit with a lens and various ports. Four arrows point outwards from the device to eight different images representing various entertainment venues:

- Top-left: A yellow and blue double-decker bus.
- Top-center: A colorful house with a green roof and a red car parked in front.
- Top-right: A large, modern hotel building at night with purple lighting.
- Middle-left: A red and white train on tracks.
- Middle-right: A lounge area with a white sofa and a large screen.
- Bottom-left: A white boat on a body of water.
- Bottom-center: A sports bar with a sign that says "3 Things to Look for in a Sports Bar".
- Bottom-right: A large indoor mall or arena with many people.

At the bottom left of the diagram is the HiDES logo, and at the bottom right is the website address [www.HiDes.com.tw](http://www.HiDes.com.tw).