SOFTEL

NEW

- **Ultra Low Bit Rate:** Save 75% Bandwidth
- **Enhance Picture Quality:** Advanced Compressing Algorithm
- **Advanced Pretreatment** De-interlacing, Noise Reduction, Sharpening

News Channel/Movies
1Mbps Full HD

Sports Channel
2Mbps Full HD

HEVC H.265 - HIGH EFFICIENCY VIDEO CODING — B frame(IBBP) GOP Structure

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE — HDMI 1.4

FullHD 1920×1080P — Full HD 1080P

HDCP HIGH-BANDWIDTH DIGITAL CONTENT PROTECTION — HDCP 1.4

Decoder/STB

STB Available with Ensurity CAS
Decoding Chipset: Montage CS8051/CS8021
NationalChip GX3201H

4K ULTRA HD — Up to 2160P 30Hz (For HDMI-Version Ⅰ)

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Product Outline

SHP200 is SOFTEL's new generation of HEVC/H.265 & MPEG 4 AVC/H.264 encoder which is developed based on SHP200 platform. It supports up to 3 H.265/H.264 encoding modules with 4 HDMI interfaces on each module. With B frame (IBBP) GOP structure and advanced compressing algorithm, this device enhances picture quality and provides ultra low bitrate to save 75% bandwidth compared with H.264/AVC and it supports up to 2160P 30Hz resolution.

It also has 1 data port (1000M/100M) for IP output (1 MPTS and max 4 SPTS per module) over UDP/RTP/RTSP protocol and 1 Network Management port to manage the 3 modules individually through 3 different IP addresses.

In conclusion, its high performance and cost-effective design make this device widely used in CATV digital head-end, business application, IPTV/OTT system, etc.

Specifications

<table>
<tr><td>Input</td><td colspan="3">12×HDMI input (1.4), HDCP 1.4</td></tr>
<tr><td rowspan="5">Video Encoding</td><td colspan="2">Encoding Format</td><td>HEVC /H.265, MPEG 4 AVC/H.264</td></tr>
<tr><td rowspan="3">Resolution</td><td>HDMI-Version Ⅰ</td><td>3840×2160_30P, 3840×2160_29.97P
(Encoding 2 CHs per module for H.265, and encoding 1 CH for H.264)
1920×1080_60P,1920×1080_59.94P,1920×1080_50P,
(Encoding 4 CHs per module for H.265, and encoding 2 CHs for H.264)
1280×720_60P, 1280×720_59.94P, 1280×720_50P
(Encoding 4 CHs per module for H.264 and H.265)</td></tr>
<tr><td rowspan="2">HDMI-Version Ⅱ</td><td>1920×1080_60P,1920×1080_59.94P,1920×1080_50P,
(Encoding 4 CHs per module for H.265, and encoding 2 CHs for H.264)
1280×720_60P, 1280×720_59.94P, 1280×720_50P
(Encoding 4 CHs per module for H.264 and H.265)</td></tr>
<tr><td>Input:
1920×1080_60i,1920×1080_59.94i,1920×1080_50i
Output:
1920×1080_60P,1920×1080_59.94P,1920×1080_50P
(Encoding 4 CHs per module for H.265, and encoding 2 CHs for H.264)</td></tr>
<tr><td colspan="2">Chroma</td><td>4:2:0</td></tr>
<tr><td colspan="2">Bitrate</td><td>0.5Mbps~20Mbps (each channel)</td></tr>
</table>

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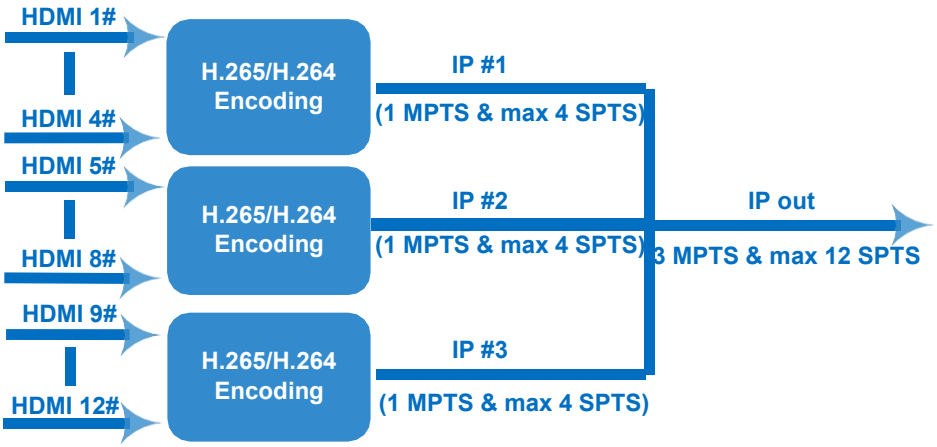
	Rate Control	CBR/VBR
	GOP Structure	IBBP, IPPP
	Advanced Pretreatment	De-interlacing, Noise Reduction, Sharpening
Audio Encoding	Encoding Format	MPEG-1 Layer 2, LC-AAC, HE-AAC, HE-AAC V2, AC3 Passthrough
	Sampling rate	48KHz
	Bit-rate (each channel)	48Kbps~384Kbps (MPEG-1 Layer 2 & LC-AAC) 24 Kbps~128 Kbps (HE-AAC) 18 Kbps~56 Kbps (HE-AAC V2)
	Audio Gain	0~255
Stream output	1 MPTS and maximum 4 SPTS (per module) output over UDP/RTP/RTSP, 1000M/100M Base-T Ethernet interface (unicast/ multicast); IPV4, IPV6 output IP null packet filter	
System	Web based management	
	Chinese-English control interface	
	Ethernet software upgrade	
Miscellaneous	Dimension (W× L× H)	482mm×328mm×44mm
	Approx weight	5kg
	Temperature	0~45℃(work), -20~80℃（Storage）
	Power	AC 100V-220V±10%, 50/60Hz

Principle Chart (the number of encoding channels depend on encoding format and resolution)



HEVC/H.265 encoder's advantages

1. Providing smooth TS for modulators

SOFTE HEVC/H.265 encoder adopts Fujitsu chip which offers stable bitrate with lower fluctuation compared with other encoding chips, so it provides smooth TS 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?

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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 rate. HEVC/H.265 encoder is not able to save bandwidth unless it is with B frame. In encoder parameters, B frame is often described in GOP (Group of Pictures) structure, like “IBBP”.