

Sumavision

Enhanced Multimedia Router

Product Catalogue



2011 V3.0


Sumavision
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The background of the page is a close-up photograph of network cables and connectors. On the left, a blue Ethernet cable is plugged into a clear plastic RJ45 port. In the foreground, another clear plastic RJ45 port is visible, with a white Ethernet cable plugged into it. The background is slightly blurred, showing more cables and ports. The text 'Index' is overlaid on the left side, and the table of contents is on the right side.

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Enhanced Multimedia Router -- EMR



Sumavision's Enhanced Multimedia Router (EMR) is a standard platform on which users can realize all Digital TV head end functions. EMR is one rack-unit (1-RU) signal processing platform with flexible card-insertion structure (6 slots). EMR can support "Any input" (DVB-S/S2/ASI/IP/DS3/E3, and etc.), "Any processing" (encoding/decoding/multiplexing/scrambling, and etc.) and "Any output" (DVB-S/S2/ASI/IP/DS3/E3 etc)". EMR is available for any applications beyond your imagination besides encoding, decoding, multiplexing, transcoding, transmodulating, etc.

HIGHLIGHT

- Support flexible combination of any different type of cards
- Massive internal multiplexing: maximum 12G data processing
- Maximum 24 IRDs for DVB-S/S2 FTA streams
- Maximum 6 IRDs for DVB-S/S2 encrypted streams
- Multi-encoding support: SD/HD MPEG-2/MPEG-4/H.264
- Maximum 12 programs MPEG-2/H.264 encoding/decoding
- Maximum 48 QAM outputs
- Maximum 30 ASI inputs or 24 ASI outputs
- Maximum 12 GbE IP inputs/outputs
- Maximum 40 streams/2560 programs scrambling over IP
- Support IPTV and conversion of MPTS from any type of inputs to SPTS
- Support dual-power supply and hot-swap
- Maximum 180 programs statistic multiplexing
- Maximum 512 SPTS IP output embedded on backboard

Optional Modules Overview

Modules	Product Name	Description
Analog MPEG2 SD Encoding Modules	C101A	MPEG-2 Analog SD Encoding Card
	C101AE	Single Channel MPEG-2 Analog Encoding Card
	C103A	Analog Audio Encoding Card
Digital MPEG2 SD Encoding Modules	C101D	MPEG-2 Digital Encoding Card
	C101DE	Single Channel MPEG-2 Digital Encoding Card
	C103D	Digital Audio Encoding Card
Dolby AC-3 Encoding & Transcoding Module	C103DB	Dolby AC-3 Encoding Card
	C113DT	Dolby Transcoding Card
HD Encoding Modules	C101H	MPEG-2 HD encoding card
	C109H	H.264 HD Encoding Card
	C110	H.264 HD Encoding and Transcoding Card
	C130	H.264/MPEG-2 HD Encoding Card
Decoding Modules	C201AS	Analog Decoding Card
	C201DH	Digital HD Decoding Card
	C204	MPEG-2 HD Decoding Card
Main Control and Interface Modules	C300C	Main Control Card
	C322C	2 ASI Input/2 ASI Output & Main Control Card
	C340C	4 ASI Input & Main Control Card
	C451C	GbE IP Card & Main Control Card

ASI Interface Modules	C304	4 ASI Output Card
	C304	4 ASI Output & Scrambling Card
	C350	5 ASI Input Card
	CA07	ASI Splitter Card
Adapting Modules	C416	DS3/E3 Card
	C451	GbE IP Card
Scrambling & De-scrambling Modules	C471S	IP Scrambling Card
	C510CI	De-scrambling Card
Modulating & Demodulating Modules	C508	QAM Output Card
	C513CI	QAM-CI Input Card
	C505	QPSK Input Card
	C545	4-frequency DVB-S2 demodulation receiving card
	C515CI	DVB-S/S2 De-scrambling Receiver Card
Statistic Multiplexing Modules	C704	6-Channel Statistic Multiplexing Card
	C705	20-Channel Statistic Multiplexing Card
	C302MH	ATSC M/H Statistic Multiplexing Card
	C707	30-Channel Statistic Multiplexing Card
Switch Modules	CA05	RF Switch Card
	CA01	ASI Switch Card

Modules Introduction

Analog MPEG2 SD Encoding Modules

Product	Description	Specification
C101A MPEG-2 Analog Encoding Card	2 channels MPEG-2 4:2:0 MP@ML analog video coding, and 2 channels analog stereo audio encoding ----- Input: Video: 2 x CVBS, BNC Audio: 2 x Analog Stereo, Balanced	• Video format: MPEG-2 4:2:0 MP@ML • Image format: PAL, NTSC, PAL-M, PAL-N, SECAM • Video encoding bit rate: CBR/VBR ,1.5~15Mb/s • Frame rate:PAL@25fps,NTSC@30fps,Secam@25fps • Aspect ratio:4:3 or 16:9 ----- • Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbps • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)
C101AE Single Channel MPEG-2 Analog Encoding Card	1 channels MPEG-2 4:2:0 MP@ML analog video coding, and 2 channels analog stereo audio encoding ----- Input: Video: 1 x CVBS(BNC) Audio: 2 x Analog Stereo, Balanced	• Video format: MPEG-2 4:2:0 MP@ML • Image format: PAL, NTSC, PAL-M, PAL-N, SECAM • Video encoding bit rate: CBR/VBR ,1.5~15Mb/s • Frame rate:PAL@25fps,NTSC@30fps,Secam@25fps • Aspect ratio:4:3 or 16:9 ----- • Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbps • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)
C103A Analog Audio Encoding Card	Provides 2 analog stereo audio encoding ----- Input: Audio: 2 x Analog Stereo, Balanced	• Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbps • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)

Digital MPEG2 SD Encoding Modules

Product	Description	Specification
C101D MPEG-2 Digital Encoding Card 	2 channels MPEG-2 4:2:0 MP@ML digital video encoding, and 2 channels digital audio encoding ----- Input: Video: 2 x SDI (Audio Embedded),BNC Audio: 2 x AES/EBU, BNC	• Video format: MPEG-2 4:2:0 MP@ML • Image format: PAL, NTSC, PAL-M, PAL-N, SECAM • Video encoding bit rate: CBR/VBR ,1.5~15Mb/s • Frame rate:PAL@25fps,NTSC@30fps,Secam@25fps • Aspect ratio:4:3 or 16:9 ----- • Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbp • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)
C101DE Single Channel MPEG-2 Digital Encoding Card 	1 channel MPEG-2 4:2:0 MP@ML signal video encoding and 2 channels digital audio encoding ----- Input: Video: 1 x SDI (Audio Embedded),BNC Audio: 2 x AES/EBU, BNC	• Video format: MPEG-2 4:2:0 MP@ML • Image format: PAL, NTSC, PAL-M, PAL-N, SECAM • Video encoding bit rate: CBR/VBR ,1.5~15Mb/s • Frame rate:PAL@25fps,NTSC@30fps,Secam@25fps • Aspect ratio:4:3 or 16:9 ----- • Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbp • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)
C103D Digital Audio Encoding Card 	2 channel digital audio encoding ----- Input: Audio: 2 x Digital Stereo, BNC	• Audio Formats: MPEG-1 Audio Layer I, MPEG-1 Audio Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbps • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option)

Dolby AC-3 Encoding Module

Product	Description	Specification
C103DB Dolby AC-3 Encoding Card 	2 channels 2.0 stereo professional audio encoding, and 5.1 AC-3 professional audio encoding on HD encoding card ----- Dolby AC-3 Encoding Card is attached on other encoding cards instead of occupying slot	• Audio Formats: AC-3 2.0, AC-3 5.1 • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 56kbps-640kbps • Dynamic Range: ≤ -90dBFS@48KHz, ≤ -84dBFS@44.1kHz, 32kHz • Support audio/video Synchronization, audio/video asynchronous time +5/-15ms

HD Encoding Modules

Product	Description	Specification
C101H MPEG-2 HD encoding card 	1 channel MPEG-2 HD video encoding ----- Input: Video: 1 x YPbPr/CVBS, BNC x 3; 1 x HD-SDI, (audio embedded), BNC Audio: 3 x AES/EBU, BNC; 3 x Analog Stereo, Balanced	• Video format: MPEG-2 MP@ML, MPEG-2 4:2:2P@ML, MPEG-2 MP@HL, MPEG-2 MP@H14L 分辨率: 1080i、720p • Resolution: - SD: 480p 720x480@59.94Hz, 576p 720x576@50Hz, 480i 720x480@29.97Hz, 576i 720x576@25Hz - HD: 1080i 1920x1080@29.97/25Hz, 1080i 1440x1080@29.97/25Hz, 720p 1280x720@59.94/50/29.97/25/23.97Hz • Aspect ratio: 16:9, 4:3 • GOP: I/IP/IBP/IBBP ----- • Audio Formats: MPEG-1 Layer II • 2 stereo channels Dolby Digital® (AC-3) 2.0 encoding (Option) • Dolby Digital® (AC-3) 5.1 channel encoding (Option) • Sampling frequency: 48 KHz • Encoding Bit-Rate: 64 ~ 384Kbps(MPEG-1 Layer2) • Volume adjustment: -24dB~6dB

C109H

H.264 HD Encoding Card



1 channel H.264 HD video encoding (supports YPbPr input)

Input:

Video: 1 x YPbPr, BNC;
1 x CVBS,
(Same port with Y);
1x HD-SDI,
(audio embedded)
BNC;

Audio: 1 x Analog stereo
(balanced);
1 x AES/EBU
(balanced)

- Video format: H.264/AVC 4:2:0 MP@Level 3.0 for D1, H.264/AVC 4:2:0 HP@Level 4.0 for HD
- Encoding Bit-Rate: 2-10Mb/s for D1
4-20Mb/s for 1280x720x60p/59.94p/50p
5-20Mb/s for 1440x1080x60i/59.94i/50i,
6-20Mb/s for 1920x1080x60i/59.94i/50i
- Aspect ratio: 4:3, 16:9
- Entropy encoding: CABAC
- GOP structure: IBBP, IBP(1080i)
- Audio Formats: MPEG-1 Layer II
- Sampling frequency: 48K/44.1K/32K
- Encoding Bit-Rate: 32Kb/s ~384Kb/s

C110

H.264 HD Encoding and Transcoding Card



2 channel H.264 HD video encoding or MPEG-2 to H.264 transcoding

Input:

Video: 2 x HD-SDI, BNC

Audio: 2 x HD-SDI,
(audio embedded)
☐ 2 x AES/EBU ,
Phoenix socket
(balanced)

- Video format: HD H.264 High Profile@Level 4.0
SD H.264 Main Profile@Level 3.0
- Output resolution and frame rate:
1920 × 1080 × 50i/59.94i/60i
1440 × 1080 × 50i/59.94i/60i
1280 × 720 × 50p/59.94p/60p
720 × 576 × 50i
720 × 480 × 59.94i
- Conversion of HD program to SD program
- Transcoding of 23.98 frame/s up to 60 field/s
- Aspect Ratio: 4:3/16:9
- Encoding code rate: 1Mb/s - 20Mb/s
Advised HD code rate : 6 Mb/s - 20Mb/s
Advised SD code rate: 1.5 Mb/s - 5Mb/s
- Rate control: CBR/VBR
- GOP structure: IBBP/IBP
- Entropy code: CABAC
- Pre-processing: de-interlacing, de noise, sharpening
- MPEG-1 Audio Layer II
- Sampling frequency: 48kHz/44.1kHz/32kHz
- Sampling accuracy: 24-bit
- Encoding rate: 32 - 384kb/s

C130

H.264/MPEG-2 HD Encoding Card



1 channel H.264/MPEG-2 HD/SD video encoding

Input:

Video: 1 x HD-SDI, BNC
1 x YPbPr, BNC
1 x CVBS , BNC

Audio: 2 x HD-SDI,
(audio embedded)
☐ 1 x AES/EBU ,
Phoenix socket
(balanced)
1 x analog
stereo audio
(phoenix interface)

- Video format: H.264: Baseline, Main ,and High
MPEG-2: Simple, Main ,and High
- Encoding level:
H.264:
1.0 ~1.3
2.0~2.2
3.0~3.2
4.0~4.2
5.0~5.1
- MPEG-2:
High, Main
- **Encoding resolution ratio:**
1920/1440/1280×1080
1280/960×720
720/704/640/544/528/352×576
352×288
352×240
320×240

320×180
160×120
160×90

- Aspect ratio: 4:3/16:9/2.35:1/1:1
- Encoding bit-rate: 0.1Mb/s - 25Mb/s
H.264 HD suggested bit-rate: 6 Mb/s - 12Mb/s
H.264 SD suggested bit-rate: 1.5Mb/s - 3Mb/s
- Bit-rate control: CBR/VBR/Capped-VBR
- Preprocessing: DE-INTERLACING, noise reduction, sharpen
- **Output resolution and frame rate:**
HD:
1920×1080 60i/59.94i/50i/30p/29.97p/25p/24p/23.97p
1280×720 60p/59.94p/50p
SD:
720×576 50i, 720×480 60i/59.94i

-
- MP2,AAC-LC,HE-AAC v1,HE-AAC v2,DolbyDigital Professional
 - Sampling frequency: 48kHz/44.1kHz/32kHz
 - Sample size: 24-bit
 - Encoding bit-rate: 32kb/s

Decoding Modules

Product	Description	Specification
C201AS Analog Decoding Card 	2 channels multi-format (MPEG-2 / H.264) SD analog video decoding, and HD video decoding to SD video ----- Output: Video: 2 x CVBS, BNC Audio: 2 x Analog Stereo, Balanced	• Video format: MPEG-2 HD/SD MP@HL; H.264/AVC High Level 4.1 high profile • Image resolution: 1080i、720p, downward-compatible • Aspect ratio: 4:3 • Frame rate: PAL@25fps, NTSC@30fps ----- • Audio Formats: MPEG-1 Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 32 ~ 384Kbps • Output volume adjustment: -30dB~0dB
C201DH Digital HD Decoding Card 	2 channels multi-format (MPEG-2、H.264) signal SD video decoding ----- Output: Video: 2 x (HDS DI+HDMI), BNC ----- Audio: HD-SDI or HDMI (Audio Embedded)	• Video format: MPEG-2 HD/SD MP@ML; H.264/AVC High Level 4.1 high profile • Image format: PAL, NTSC • Aspect ratio: 16:9, 4:3 • Image resolution: 1080i、720p, downward-compatible ----- • Audio Formats: MPEG-1 Layer II • Sampling frequency: 32 KHz, 44.1 KHz, 48 KHz • Encoding Bit-Rate: 32 ~ 384Kbps • Output volume adjustment: -30dB~0dB

C204

H.264/MPEG-2 HD 4:2:2 DECODING CARD



2 channel SDI with
embedded audio (supports
YPbPr/ CVBS output)

Output:

Video: 1 x YPbPr, BNC;
1 x CVBS,
(Same port with Y);
1x HD-SDI,
(audio embedded)
BNC;

Audio: 1 x Analog stereo
(balanced);
1 x AES/EBU
(balanced)

Video Decoding

- SDI/YPbPr: 1080i(25/29.97/30fps), 720p(50/59.94/60fps), 576i(25fps), 480i(29.97fps), Self-adaptation of video format
- CVBS(SD): PAL, NTSC, PAL-N, PAL-M, Self-adaptation for PAL/NTSC, Manual selection for other option
- Decoding mode: H.264: High 422(8bit)Profile@422(4.0)Level
MPEG-2: 422Profile@High Level
- Aspect ratio: 16:9, 4:3 Self-adaptation
- DVB VBI: support Closed Caption(EIA-608, EIA-708) Self-adaptation of 188/204 bytes

Audio Decoding

- Decoding Mode:
Standard: MPEG-1 layer II, MPEG-2
Optional: Dolby Digital (AC-3), HE-ACC, AAC-LC
 - Sampling Precision: 16bit
 - Sampling rate: 48k/44.1k/32kHz
 - Decoding Bit-rate: 32kbps-384kbps
 - Sound Volume: -30dB~0dB
-

Main Control and Interface Modules

Product	Description	Specification
C300C Main Control Card 	main control function ----- 10/100 Base-T Ethernet for configuration and monitoring	
C322C 2 ASI Input/2 ASI Output & Main Control Card 	2 channels ASI inputs and outputs with main control function ----- Input: 2 x ASI Output: 2 x ASI Control via front panel or 10/100Base-T Ethernet interface	• Maximum bit rate of each ASI up to 200Mbps and bit rate adjustable • Output bit rate accuracy: 0.001kbps • Maximum output PID up to 256 • Support PCR correction and remapping • Support PSI/SI table extraction and edition • Support data broadcasting/EPG/private data inserting • Support SMPTE 310
C340C 4 ASI Input & Main Control Card 	4 channels ASI inputs with main control function ----- Input: 4 x ASI Control via front panel or 10/100Base-T Ethernet interface	• Maximum input bit rate of every ASI is up to 200Mbps • Maximum input Voltage $\geq 880\text{mV}$ • Minimum accepting sensitivity $\leq 200\text{mV}$ • Adaptively support TS packet input of 188 or 204 byte • Return Loss(5MHz~270MHz)$\leq -20\text{dB}$ • Support port backup, card backup and program backup

C451C

GbE IP Card & Main Control Card



1 channel gigabit IP input and output with UDP encapsulation

Input & Output:
either 1× GBE (SFP) or 1× GBE (100/1000 Base-T)

Scrambling (option)

- 1×10/100BASE-T Ethernet port for scrambling, RJ-45
- 1×10/100BASE-T Ethernet control port, RJ-45

Signal Processing over IP

- Total processing capability: 960Mbps
- Support 16 different TS streams input and 12 different TS streams output
- Packet length: 188 or 204 byte
- Support bit rate setting for each output
- UDP protocol, support SPTS and MPTS, unicast/multicast

Support IP address and port number setting for each output

ASI Interface Modules

Product	Description	Specification
C304 4 ASI Output Card 	4 channels ASI outputs ----- Output: 4 x ASI	• Maximum number of PID each port can support: 256 • Maximum system bit rate and effective bit rate: 200Mbps • Rise time (20% ~ 80%) ≤ 1200ps • Fall time (20% ~ 80%) ≤ 1200ps • Deterministic Jitter ≤ 10% • Adaptively support TS package input of 188 or 204 byte • Output range: 800±80
C304 4 ASI Output & Scrambling Card 	4 channels ASI outputs with scrambling modules ----- Output: 4 x ASI	• Maximum number of PID each port can support: 256 • Maximum system bit rate and effective bit rate: 200Mbps • Adaptively support TS package input of 188 or 204 byte • 8×scrambling modules, each module can independently scramble • Rise time (20% ~ 80%) ≤ 1200ps • Fall time (20% ~ 80%) ≤ 1200ps • Deterministic Jitter ≤ 10% • Output range: 800±80

C350

5 ASI Input Card



5 channels ASI inputs

Input: 5 x ASI

- Maximum bit rate (each ASI):200Mbps
- Minimum accepting sensitivity $\leq 200\text{mV}$
- Maximum input Voltage $\geq 880\text{mV}$
- Return Loss(5MHz~270MHz) $\leq -20\text{dB}$
- Support port backup, card backup and program backup

CA07

ASI Splitter Card



1 channels ASI inputs and 4
channels outputs

Input: 1 x ASI
Output: 4 x ASI

- Adaptively support TS packet input of 188 or 204 byte
- Maximum input bit rate of every ASI is up to 270Mbps

Adapting Modules

Product	Description	Specification
C416 DS3/E3 Card 	2 channels DS3/E3 with 1 channel ASI outputs and 1 channel DS3/E3 with 1 channel ASI Input ----- 1×DS3/E3 input 1×ASI input, 1×ASI output 2×DS3/E3 outputs	- Maximum input bit rate of DS3 up to 44.736Mbps - Maximum input bit rate of E3 up to 34.368Mbps - Support SPTS/MPTS - Support ASI↔DS3/E3 bi-directional adapting - Protocol compatible for DIVICOM、TANDBERG、BARCO PHILIPS、THOMSON、SCOPUS、Harmonic、Huawei、ZTE - Support PCR correction
C451 GbE IP Card 	1 channel gigabit IP input and output with UDP encapsulation ----- Input & Output: either 1×GBE (SFP) or 1 ×GBE (100/1000 Base-T)	Scrambling (option) 1×10/100BASE-T Ethernet port for scrambling, RJ-45 Signal Processing over IP - Total processing capability: 960Mbps - Support 16 different TS streams input and 12 different TS streams output - Packet length: 188 or 204 byte - Support bit rate setting for each output - UDP protocol, support SPTS and MPTS, unicast/multicast - Support IP address and port number setting for each output

Scrambling & De-scrambling Modules

Product	Description	Specification
C471S IP Scrambling Card 	Scrambling Card attached on GbE IP card	• Maximum 40 AC for each TS stream, maximum 768 bytes for each AC • Scrambling for 10 TS streams simultaneously • Support scrambling up to 64 programs for each TS stream, up to 15 PID for each program • Support DVB and OpenCAS for EIS • Support the same EMM for different TS streams, maximum 12 EMMs ,maximum bandwidth 2Mbps for each EMM • Support 4 CAS Simulcrypt for each TS stream
C510CI De-scrambling Card	2 x CAM slot, PCMCIA standard	• Input/output multiplex from backboard • Video: MPEG-1, MPEG-2, H.264 • Audio: MPEG-1, MPEG-2 • Supports simulcrypt • Supports 2 CAM cards (Common Interface CI) • Supports de-scramble for maximum 64 programs (up to the capacities of the CAM cards) • Supports de-scramble for BISS

Modulating & Demodulating Modules

Product	Description	Specification
C508 QAM Output Card 	2 -6 RF outputs ----- Each port provides 2/4/6 adjacent QAM channels	• ITU-T J.83 Annex A, B and C • 64, 128, 256 QAM constellations • Frequency range 52-1000MHz • Symbol rate: 5M-7M(1K step) • Output level: 95 ~ 120 dBuV • MER(balanced off): $\geq 38 \text{ dB@64QAM}$, $\geq 37 \text{ dB@256QAM}$ • MER(balanced on): $\geq 44 \text{ dB}$ • CNR: $\geq 55\text{dB}$ • PCR jitter: $<100\text{ns}$ • Phase noise: $\leq -65 \text{ dBc/Hz @1kHz}$, $\leq -95 \text{ dBc/Hz @10kHz}$, $\leq -110 \text{ dBc/Hz @100kHz}$
C513CI QAM-CI Input Card 	1 RF input with one testing output ----- Input: 1 x RF Loop output: 1 x RF	• Each input supports one QAM receiving and de-scrambling • 16, 32, 64, 128, 256 QAM constellations • Frequency range 51-858MHz • Symbol rate: 0.87M-6.9M • Input level: 65 ~ 120 dB • Each CAM supports 16 programs descrambling • Support TR101290

C505

QPSK Input Card



2 RF Inputs and 2 RF loop outputs

Inputs: 2 x RF
Loop Output: 2 x RF

- Frequency range: 950MHz~2150MHz
- Received signal level: -80dBm
- Symbol range: 2Msps ~ 45Msps
- FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- Support SCPC/MCPC
- Polarization: Vertical, Horizontal
- Roll-off factor : 35%
- Support C/Ku band

C545

4-frequency DVB-S2 demodulation receiving card



4 channels satellite signal Input

Input: 4xRF inputs

- Receive frequency: 950MHz~2150MHz
- Effective receiving level: -65dB~-25dB
- symbol rate: 1Msps ~ 45Msps
- Maximum TS bitrate: 120Mbps (DVB-S2)
- Modulation mode:
DVB-S2: QPSK、8PSK、16APSK、32APSK
DVB-S: QPSK
- Roll-off coefficient:
DVB-S: 0.35
DVB-S2: 0.35, 0.25, 0.2
- Convolution code rate:
DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8.
DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
- 22KHz on/off
- LNB power: 13V、18V、option closed
- C/Ku band compatibility: support
- TS interruption recovery function: support
- De-scrambling function: Support BISS de-scrambling, each channel can support 8 programs de-scrambling, then 4 channels on 1 card can support 32 programs simultaneously

C515CI

DVB-S/S2 De-scrambling Receiver Card



1 RF Input and 1 RF loop output

Input: 1 x RF
Loop output: 1 x RF

- Frequency range: 950MHz~2150MHz
- Received signal level: -65dB~-25dB
- Symbol range: 1Msps ~ 45Msps
- FEC: DVB-S 1/2, 2/3, 3/4, 5/6, 7/8, DVB-S2 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
- Support SCPC/MCPC
- Polarization: Vertical, Horizontal
- Roll-off factor : 20%, 25%, 35%
- Support C/Ku band
- Support QPSK/8PSK
- Maximum 16 programs de-scrambling

Statistic Multiplexing Modules

Product	Description	Specification
C704 6-Channel Statistic Multiplexing Card 	3 channels ASI inputs and 1 channel ASI output ----- Input: 3 x ASI Output: 1 x ASI	• Input bit rate range: 2~8Mbps • Support setting program priority • Statistic multiplexing output: 1×TS(MPTS) with MPEG-2 standard • Support CBR/VBR • Support D1, 3/4D1 and HD1 resolution • support minimum/maximum bit rate setting
C705 20-Channel Statistic Multiplexing Card 	4 channels ASI outputs ----- Output: 4 x ASI	• Input bit rate range: 2~8Mbps • Support setting program priority • Statistic multiplexing output: 4×TS(MPTS) with MPEG-2 standard • Support CBR/VBR • Support D1, 3/4D1 and HD1 resolution • Support minimum/maximum bit rate setting
C302MH ATSC M/H Statistic Multiplexing Card	2 outputs for ASI or SMPTE310 protocol and Gbe Input&output by two independent connector ----- Output : 2 x ASI/ SMPTE310 Control via front panel or 10/100Base-T Ethernet interface	

C707

30-Channel Statistic Multiplexing Card



4 channels ASI outputs

Output: 4 x ASI
Connect type: RJ45
Format: 10/100 BaseT

- Input bit rate range: 2~8Mbps (SD), 12~20Mbps (HD)
- Output bit rate range: 1~8Mbps(SD), 6~20Mbps(HD)
- Maximum Compressing Rate:50%(Recommend 40%)
- Audio Transparent Transmission
- Support maximum 30 SD programs / 6 HD programs
- Support setting program priority
- Statistic multiplexing output: 4×TS(MPTS) with MPEG-2 standard
- Support CBR/VBR
- Support ASI, IP, DS3 etc rear panel input
- Support D1, 3/4D1 and HD1 resolution
- Support minimum/maximum bit rate setting

Switch Modules

Product

Description

Specification

CA05

RF Switch Card

2 RF Inputs and 1 RF Output with 1 ASI output

Input: 2 x RF
Output: 1 x ASI, 1 x RF

- Switch from 2×RF to 1×RF and 1×ASI (same)
- Support program priority setting
- Automatic/manual
- Switch time: 125ms



CA01B

ASI Switch Card

3 channels ASI inputs and 2 channels ASI outputs

Input: 3 x ASI
Output: 2 x ASI

- Switch from 3×ASI to 2×ASI
- Automatic/manual
- Switch time: 125ms

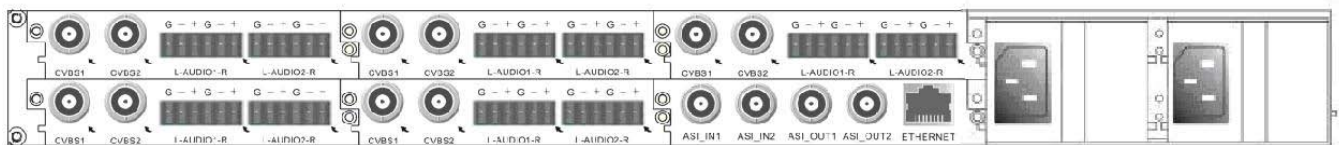


Product	Description	Specification
C113DT	Dolby digital to Dolby digital+ transcoding	- Input and output Rate: - mono (1.0): 32~640kbps 2 ch (2.0): 64~640kbps 3 ch (3.1 2.2):160~640kbps 4 ch (3.2): 192~640kbps
Dolby Transcoding Card		

Typical Applications

MPEG-2 Analog SD Encoders

Case 1:



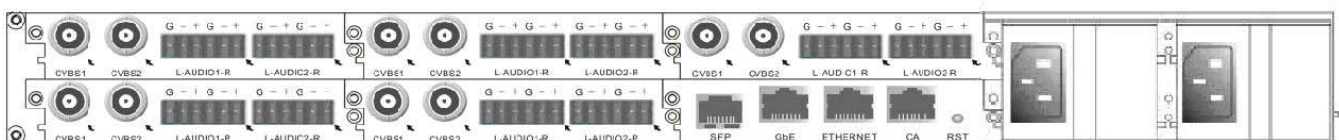
Details: This application can encode 10×CVBS signals to MPEG-2 streams and output 2×ASI after re-multiplexing.

Input: 10×CVBS, 10×balanced stereo, 2×ASI

Output: 2×ASI

Card Combination: 5 × MPEG-2 Analog Encoding Card + 1× 2 ASI Input/2 ASI Output & Main Control Card

Case 2:



Details: This application can encode 10×CVBS signals to MPEG-2 streams and output 1×GbE IP after remultiplexing.

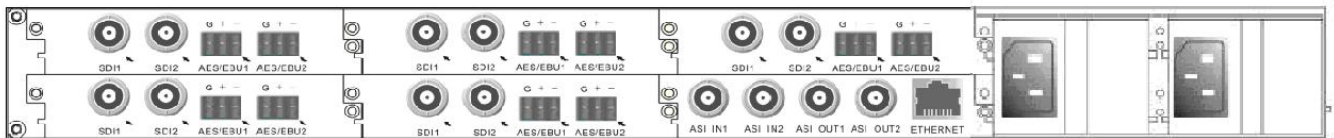
Input: 10×CVBS, 10×balanced stereo, 1×GbE IP

Output: 1×GbE IP

Card Combination: 5 × MPEG-2 Analog Encoding Card + 1× Gigabit IP & Main Control Card

MPEG-2 Digital SD Encoders

Case 1:



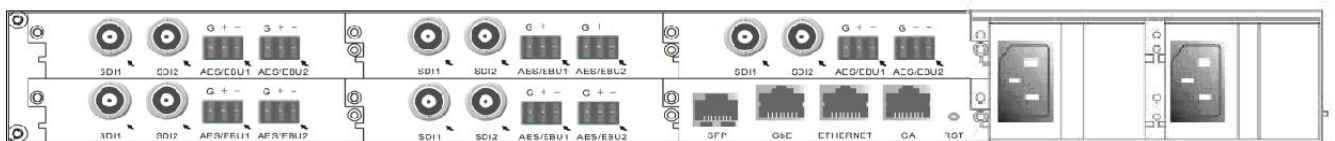
Details: This application can encode 10×SDI signals to MPEG-2 streams and output 2×ASI after remultiplexing.

Input: 10×SDI, 10×AES/EBU, 2×ASI

Output: 2×ASI

Card Combination: 5× MPEG-2 Digital Encoding Card + 1× 2 ASI Input/2 ASI Output & Main Control Card

Case 2:



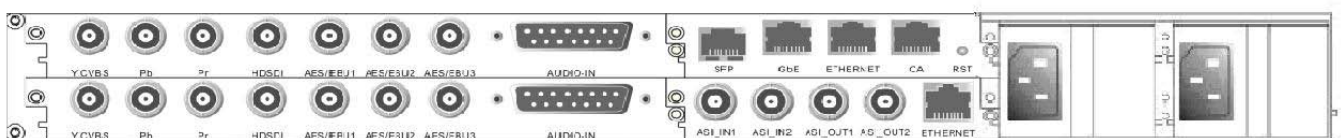
Details: This application can encode 10×SDI signals to MPEG-2 streams and output 1×GbE IP after re-multiplexing.

Input: 10×SDI, 10×AES/EBU, 1×GbE IP

Output: 1×GbE IP

Card Combination: 5 × MPEG-2 Digital Encoding Card + 1× Gigabit IP & Main Control Card

MPEG-2 HD Encoders



Details: This application can encode 2×YPrPb/CVBS/HD-SDI signals to MPEG-2 HD streams and output 1×GbE IP and 2×ASI after re-multiplexing.

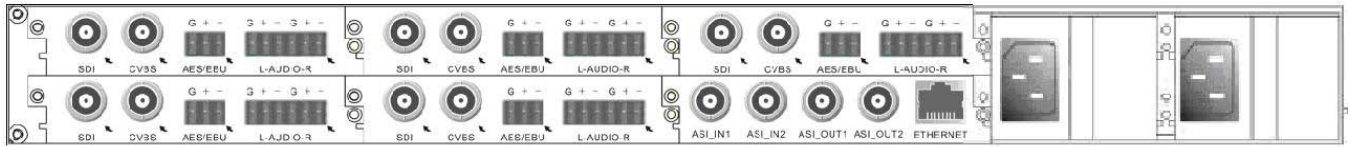
Input: 2× YPrPb/CVBS, 2×HD-SDI, 6×AES/EBU, 6×analog stereo (DB25), 1×GbE IP, 2×ASI

Output: 1×GbE IP, 2×ASI

Card Combination: 2 × MPEG-2 HD Encoding Card + 1× 2 ASI Input/2 ASI Output & Main Control Card + 1× GbE IP Card

H.264 SD Encoders

Case 1:



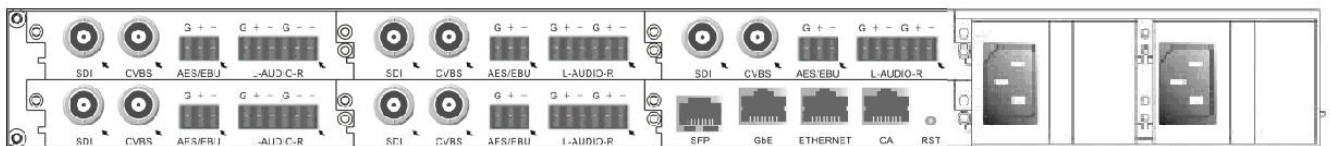
Details: This application can encode 5×SDI signals or 5×CVBS to H.264 streams and output 2×ASI after re-multiplexing.

Input: 5×SDI, 5×CVBS, 5×AES/EBU, 5×balanced stereo, 2×ASI

Output: 2×ASI

Card Combination: 5 × H.264 SD Encoding Card + 1 × 2 ASI Input/2 ASI Output & Main Control Card

Case 2:



Details: This application can encode 5×SDI signals or 5×CVBS signals to H.264 streams and output 1×GbE IP with SPTS or MPTS.

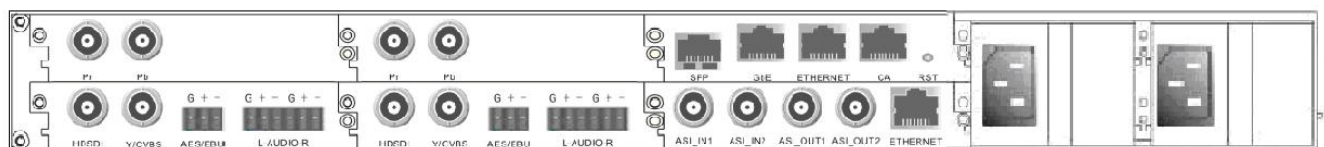
Input: 5×SDI, 5×CVBS, 5×AES/EBU, 5×balanced stereo, 1×GbE IP

Output: 1×GbE IP

Card Combination: 5 × H.264 SD Encoding Card + 1 × Gigabit IP & Main Control Card

H.264 HD Encoders

Case 1:



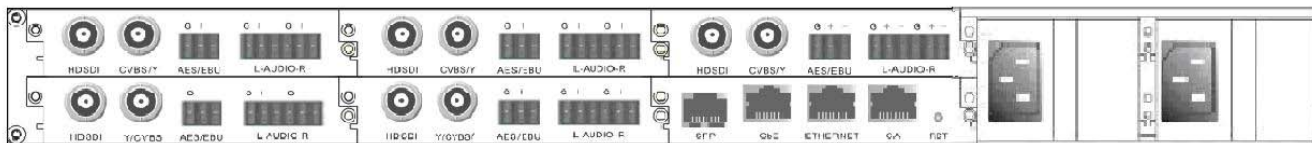
Details: This application can encode 2×YPrPb/CVBS/HD-SDI signals to H.264 HD streams and output 2×ASI as well as 1×GbE IP after re-multiplexing.

Input: 2×YPrPb/CVBS, 2×HD-SDI, 2×AES/EBU, 2× balanced stereo, 2×ASI, 1×GbE IP

Output: 2×ASI, 1×GbE IP

Card Combination: 2 × H.264 HD Encoding Card + 1 × GbE IP Card + 1 × 2 ASI Input/2 ASI Output & Main Control Card

Case 2:



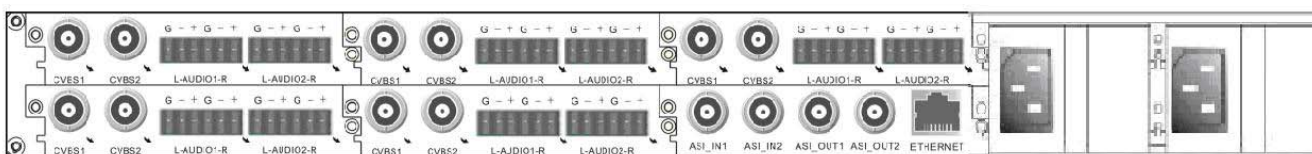
Details: This application can encode 5×CVBS/HD-SDI signals to H.264 HD streams and output 1×GbE IP after re-multiplexing.

Input: 5× CVBS, 5×HD-SDI, 5×AES/EBU, 5×stereo, 1×GbE IP

Output: 1×GbE IP

Card Combination: 5 × H.264 HD Encoding Card +1 × GbE IP & Main Control Card

ASI Input Analog Decoders



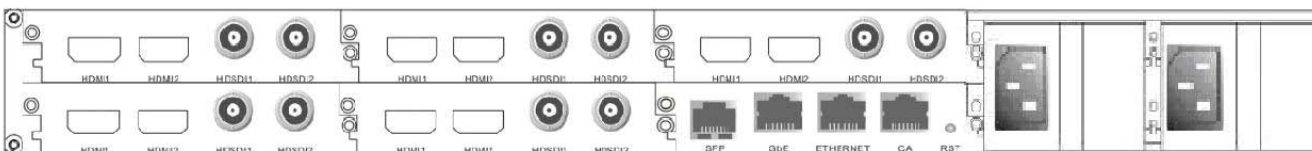
Details: This application can decode MPEG-2/H.264 SD/HD streams from 2×ASI to 10× CVBS.

Input: 2×ASI

Output: 10× CVBS, 10× balanced stereo, 2×ASI

Card Combination: 5 × Analog Decoding Card +1 × 2 ASI Input/2 ASI Output & Main Control Card

IP Input Digital Decoders



Details: This application can decode MPEG-2/H.264 SD/HD streams from 1×GbE IP to 10× (SDI + HDMI).

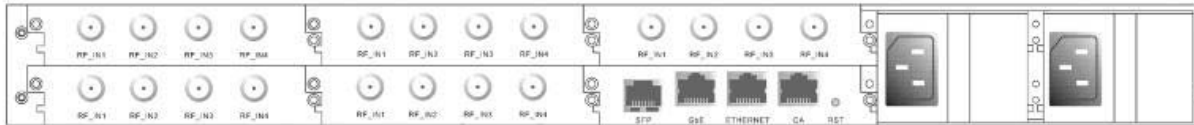
Input: 1×GbE IP

Output: 10× (SDI + HDMI) (Audio Embedded) , 1×GbE IP

Card Combination: 5 × Digital HD Decoding Card + 1× GbE IP & Main Control Card

IRDs based on EMR

5x4 CH QPSK Input Card +1xGbE IP & Main Control Card



Details: This application can receive 20 QPSK FTA streams (DVB-S/S2) or 5 QPSK encrypted streams (DVB-S/S2) from satellites as well as 1xGbE IP, and output in one GbE IP after remultiplexing.

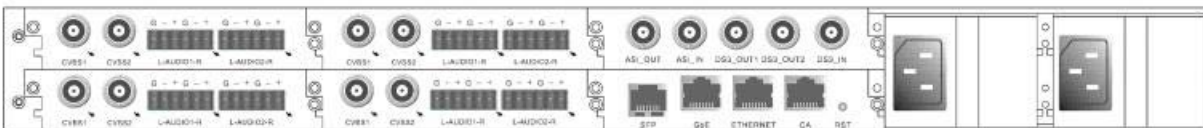
Input: 20xQPSK (DVB-S/S2) or 5x QPSK (DVB-S/S2), 1xGbE IP

Output: 1xGbE I

Decoders based on EMR

DS3/E3 Input SD Decoders

4xAnalog SD Decoding Card + 1xDS3/E3 Card + 1xGbE IP & Main Control Card



Details: This application can decode MPEG-2/H.264 streams from 1xDS3/E3/ASI/IP to 8xCVBS .

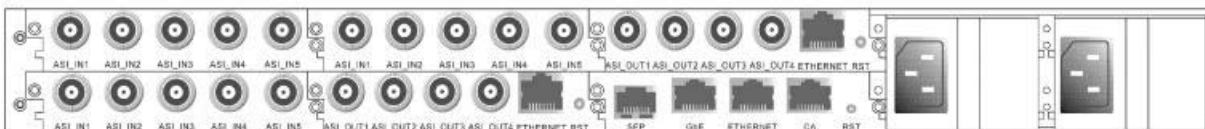
Input: 1xDS3/E3, 1xASI, 1xGbE IP

Output: 8xCVBS, 8xbalanced stereo, 1xASI, 1xDS3/E3, 1xGbE IP

Gateway based on EMR

ASI<-->IP gateway

3x5 ASI Input Card + 2x4 ASI Output Cards + 1xGbE IP & Main Control Card



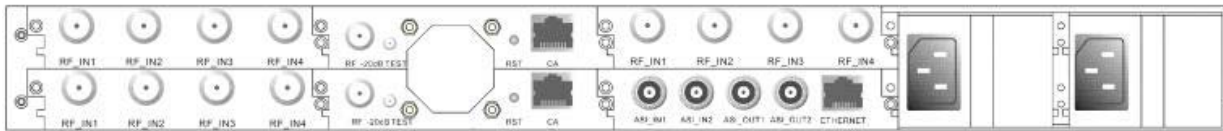
Details: This application can realize 15 ASI to IP and IP to 8 ASI gateways.

Input: 1xIP, 15xASI

Output: 8xASI, 1xIP

Transmodulators based on EMR

3×4-frequency DVB-S2 Demodulation Receiving Card + 2×8-adjacent-channel QAM Modulating Card + 1×2 ASI Input/2 ASI Output & Main Control Card



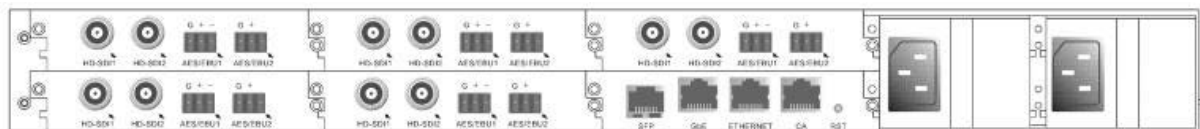
Details: This application can transmodulate streams from 12×DVB-S/S2 satellite stream to 16×QAM after remultiplexing.

Input: 12×DVB-S/S2 satellite stream, 2×ASI

Output: 16×QAM, 2×ASI

Transcoder based on EMR

5×H.264 HD Encoding and Transcoding Card + 1×GbE IP & Main Control Card



Details: This application can encode 10×HD-SDI or transcode from 10×MPEG-2 to H.264 (HD).

Input: 1×IP, 10×HD-SDI

Output: 1×IP

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