The ViBE® CP6000 contribution platform enables users to transport up to eight acquisition-quality SD or HD services. The latest MPEG-4 AVC 4:2:2 10-bit video compression technology provides optimal video quality.

The ViBE CP6000 is a third-generation contribution platform from Harmonic based on the widely deployed ViBE modular video processing solution. The ViBE CP6000 features superior video compression and is designed for maximum operational performance. Possessing encode and decode capabilities, the platform is suitable for a variety of applications, including:

- Contribution (backhaul) circuits from occasional venues, such as sports arenas
- Links between regional studios and a central playout facility
- Links from playout centers to regions and affiliates
- Primary distribution to broadcast or over-the-top headends

The ViBE CP6000 contribution platform is built on a modular, future-proof 1-RU chassis, and offers four hot-swappable slots for MPEG processing boards or a DTH modulator. Its compact design addresses contribution and primary distribution applications in which space and power consumption are critical factors. By delivering pristine video quality, the ViBE CP6000 also improves the end-user viewing experience.

**Density**

With four slots and dual channels per MPEG processing board, the ViBE CP6000 offers up to eight SD or HD channels per unit — a key advantage for contribution applications where space is paramount. The unit’s high density offers significant reduction on per-channel costs and power consumption.

**Scalability & Agility**

The MPEG board used in the ViBE CP6000 supports a range of formats. Fully upgradable via software license, the ViBE CP6000 platform enables easy and cost-effective migration from legacy MPEG-2 SD to the latest MPEG-4 AVC HD 4:2:2 10-bit video formats. Each of the four slots on the MPEG board can host a hot-swappable card that can function as an encoder or decoder, depending on the selected software license. This unique feature allows re-utilization of a unit in multiple encoding and decoding schemas. It also minimizes investment and simplifies operation and management.

**DTH Efficiency**

To address satellite contribution applications, a hot-swappable DVB-DSNG/S/S2/S2X modulator board is available. All constellation modes are supported, and an extended symbol-rate range and low roll-off factor optimize transmission efficiency.

**Future-Proof Platform**

The modular architecture of the ViBE CP6000 and high-throughput connections between slots enables the platform to support next-generation technologies such as 1080p50/59.94, AVC-Intra, 3D and Ultra HD.

The ViBE CP6000 offers a unique combination of key features that allow the efficient handling of any contribution application. High density and video quality, combined with low latency, permit mobile contribution without compromise. Superior video quality for premium contribution applications is fully supported in MPEG-4 AVC 4:2:2 10-bit mode, while automatic redundancy and automatic configuration perfectly address headend feed applications.
World-Class Service and Support
Harmonic stands behind the ViBE CP6000 platform with comprehensive service and support programs, including system design, service deployment, technical support and network maintenance. World-class service plans and a global network of flexible and responsive support professionals help ensure your ability to deliver outstanding “anytime, anywhere, any-device” customer experiences.

SPECIFICATIONS

CHASSIS

Architecture

Four slots, hot-swappable, able to receive one MPEG board or modulator

ENCODER/DECODER COMMON FEATURES

Video Formats

MPEG-2

MPEG-2 SD 4:2:0
MPEG-2 SD 4:2:2
MPEG-2 HD 4:2:0
MPEG-2 HD 4:2:2
MPEG-4 AVC SD 4:2:0
MPEG-4 AVC SD 4:2:2
MPEG-4 AVC HD 4:2:0
MPEG-4 AVC HD 4:2:2 8-bit
MPEG-4 AVC HD 4:2:2 10-bit
MPEG-4 AVC 1080p

MPEG-4 AVC

Video Resolutions

480i (NTSC/29.97)
576i (PAL/25)
720p (50/59.94)
1080i (25/29.97)
1080p (50/59.94)

Audio Formats

MPEG-1 Layer II

1.0, 2.0 and passthrough
2.0, 5.1 and passthrough
2.0, 5.1 and passthrough

AC-3

Passsthrough

PCM (SMpte-302M)

Passsthrough

Dolby Digital

Default

Two MPEG-1 Layer II or AAC/HE-AAC stereo channels per video

Ancillary & VBI Processing

Ancillary

HD teletext OP-47, CCT08, ATC, DPI
Transparent SMPTE 2038 and RDD-11
WSS, WSS-AFD, WST teletext, C608, VITC, Monochrome

VBI

IP Interfaces

Dual GbE per card and dual GbE per chassis
Unicast, multicast
UDP, UDP/RTP
SMPTE 2022 FEC
VLANs, route table
Special FEC and ARQ for contribution over the Internet

CARDS

MPG-AUD

Single-channel MPEG encoder and decoder with AES or analog audio

MPG

Dual-channel MPEG encoder and decoder

MOD-IF

DVB-S2/S2X modulator board, IF-band out

MOD-RF

DVB-S2/S2X modulator board, L-band out

ENCODER APPLICATION

Input Interfaces

SDI

Up to two SD/HD/3G-SDI per encoder with redundancy and monitoring

ASI

Up to one ASI input for external component injection

Audio

Two stereo analog audio or four AES audio with MPG-AUD card

Encoding

Configuration

Automatic or manual

Latency

Ultra-low delay, low delay

GOP Structure

Automatic or manual
I-only, P-only, IP, IBP, IBBP..

Multiplexer

Services

SPTS or MPTS up to eight services!

Scrambling

BISS 1/E1

Mode

CBR/VBR (no null packets)

Output Rate

Up to 400 Mbps over IP

Output Interfaces

ASI

Up to three ASI with MPG card, up to two ASI with MPG-AUD card

IP

See common features above

DECODER APPLICATION

Input Interfaces

ASI

Up to three ASI with MPG card, up to two ASI with MPG-AUD card

IP

See common features above

Audio

Two stereo analog audio or four AES audio with MPG-AUD card

Decoding

Redundancy

Automatic service redundancy

Conversion

Up/down-conversion

Output Interfaces

SDI

Two SD/HD/3G-SDI per decoder

Audio

Two stereo analog audio or four AES audio with MPG-AUD card
**SPECIFICATIONS**

**DVB-S/S2/DSNG MODULATOR**

### Input Interfaces
- **TS**
- **Clock**
  - 10-MHz reference

### Modulation
- **DVB-S**
  - QPSK, QPSK, 16APSK, 32APSK
  - 1/2, 2/3, 3/4, 5/6, 7/8
- **DVB-S2**
  - QPSK, 8PSK, 16APSK, 32APSK, 64APSK
  - 1/4, 1/3, 2/5, 1/2, 3/5, 3/4, 3/4, 4/5, 5/6, 8/9, 9/10
- **DVB-S2X**
  - QPSK, 8PSK, 16APSK, 32APSK, 64APSK
  - 1/4, 1/3, 2/5, 1/2, 3/5, 3/4, 4/5, 5/6, 8/9, 9/10

### S2X MOD-COD
- 13/45, 9/20, 1/20, 5/9-L...

### Carrier ID
- Selectable 10 MHz

### Symbol Rate
- QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
- QPSK, 8PSK, 16APSK, 32APSK, 64APSK
- 1/4, 1/3, 2/5, 1/2, 3/5, 3/4, 4/5, 5/6, 8/9, 9/10

### Roll-Off
- 5% to 35% (1% step)

### Mode
- CCM

### Pilots
- ON or OFF

### FEC block
- 16 Kb or 64 Kb

### Selectable 10 MHz
- Internal or external

### Output Interfaces
- **Main RF**
  - SMA 50 Ω
  - 50-180 MHz (1 Hz step) with MOD-IF card
  - 950-2150 MHz (1 Hz step) with MOD-RF card
  - +5 to -30 dBm (0.1 dB step)

- **Monitoring RF**
  - SMA 50 Ω
  - Transmit frequency
  - Main output -20 dB

- **TS**
  - ASI output
  - 10-MHz reference

### SYSTEM MANAGEMENT
- **Interfaces**
  - GbE for C&C
  - Dual GbE for data streams and in-band C&C
  - Genlock input & output (black burst or tri-level sync)
  - General purpose inputs/outputs (GPIO)

- **Remote**
  - Web-based UI, SNMP

- **Local**
  - Graphical front panel

### POWER
- **Power Supply**
  - Single or dual AC3

- **Input Range**
  - 110-240 VAC

- **Consumption**
  - 50 W + 50 W per card

### PHYSICAL CHARACTERISTICS
- **Dimensions (H x W x D)**
  - 17.4 in x 17.3 in x 19.7 in (1 RU)
  - 44.4 cm x 44 cm x 49.2 cm

- **Weight**
  - 22 lbs/10 kg

### ENVIRONMENTAL
- **Operating Temperature**
  - 32° to 122° F
  - 0° to 50° C

- **Storage Temperature**
  - -13° to 158° F
  - -25° to 70° C

- **Maximum Humidity**
  - 85% non-condensing

- **Electromagnetic Compliance**
  - CE marked in accordance with the 93/68/EEC [22/07/93] directive
  - EN 55022
  - EN 55024
  - EN 61000-3-2

- **Safety**
  - iEC 60950 and EN 60950
  - UL 60950

**ORDERING INFORMATION**

**BASE SYSTEM**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP6000-TU-1AC</td>
<td>CP6000 chassis with four hot-swappable slots, single AC PSU, 1 RU</td>
</tr>
<tr>
<td>CP6000-TU-2AC</td>
<td>CP6000 chassis with four hot-swappable slots, dual AC PSU, 1 RU</td>
</tr>
<tr>
<td>DC PSU</td>
<td>-48 VDC power supply</td>
</tr>
</tbody>
</table>

**HARDWARE OPTIONS**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP6x00-OPT-MPG</td>
<td>Dual-channel MPEG encoder and decoder</td>
</tr>
<tr>
<td>CP6x00-OPT-MPG-AUD</td>
<td>Single-channel MPEG encoder and decoder with AES &amp; analog audio</td>
</tr>
<tr>
<td>CP6x00-OPT-MOD-IF</td>
<td>DVB-S2/S2X modulator board, IF-band out</td>
</tr>
<tr>
<td>CP6x00-OPT-MOD-RF</td>
<td>DVB-S2/S2X modulator board, L-band out</td>
</tr>
</tbody>
</table>

**ENCODING LICENSES**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP6x00-LIC-ENC-MP2SD-422</td>
<td>License for MPEG-2 SD 4:2:2 encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP2HD-422</td>
<td>License for MPEG-2 SD/HD 4:2:2 encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP4SD-420</td>
<td>License for MPEG-4 AVC SD 4:2:0 encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP4SD-422</td>
<td>License for MPEG-4 AVC SD 4:2:2 encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP4HD-420</td>
<td>License for MPEG-4 AVC SD/HD 4:2:0 encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP4HD-8b</td>
<td>License for MPEG-4 AVC SD/HD 4:2:2 8-bit encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP4HD-10b</td>
<td>License for MPEG-4 AVC SD/HD 4:2:2 10-bit encoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ENC-MP43G-10</td>
<td>License for MPEG-4 AVC SD/HD/1080p 4:2:2 10-bit encoding</td>
</tr>
</tbody>
</table>

**DECODING LICENSES**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP6x00-LIC-DEC-MP2SD-422</td>
<td>License for MPEG-2 SD 4:2:2 decoding</td>
</tr>
<tr>
<td>CP6x00-LIC-DEC-MP2HD-422</td>
<td>License for MPEG-2 SD/HD 4:2:2 decoding</td>
</tr>
<tr>
<td>CP6x00-LIC-DEC-MP4SD-420</td>
<td>License for MPEG-4 AVC SD 4:2:0 decoding</td>
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<td>License for MPEG-4 AVC SD/HD 4:2:0 decoding</td>
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<tr>
<td>CP6x00-LIC-DEC-MP43G-10</td>
<td>License for MPEG-4 AVC SD/HD/1080p 4:2:2 10-bit decoding</td>
</tr>
<tr>
<td>CP6x00-LIC-ZIXI-RX-PP</td>
<td>License for Zixi reception (zFEC&amp; zARQ)</td>
</tr>
</tbody>
</table>

**Notes:**
1. Licensed feature
2. Field-upgradable hardware option
3. Selective hardware