3G/HD/SD Frame Rate Converter

FRC-9000

Enhanced operation and expandability at affordable pricing

Capable of 4K support using optional software

- 3G/HD/SD multi-format support
- SD to 3G/HD up conversion
- Conversion with Motion Compensation Processing
- Interlace-to-Progressive conversion
- 4K (UHD, SQD/2SI) support (Optional)
- Up/down/cross frame rate conversions between 4K and HD (Optional)
- Simultaneous conversion of 2-channel video inputs (Optional: when using 3G/HD-SDI)

4K/HD multi-format supported.
Simultaneous conversion of 2-channel video inputs also available with option.

- 1-ch HD IN distributed to 4 HD OUT
- Simultaneous conversion of 2 HD channels (Optional)
- 4K SQD support (Optional)

<table>
<thead>
<tr>
<th>Input Signal</th>
<th>Output Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2160p/59.94,50</td>
<td>2160p/59.94,50</td>
</tr>
<tr>
<td>1080p/60, 59.94, 50</td>
<td>1080p/60, 59.94, 50</td>
</tr>
<tr>
<td>1080i/60, 59.94, 50</td>
<td>1080i/60, 59.94, 50</td>
</tr>
<tr>
<td>720p/60, 59.94, 50</td>
<td>720p/60, 59.94, 50</td>
</tr>
<tr>
<td>525/60, 625/50</td>
<td>525/60, 625/50</td>
</tr>
</tbody>
</table>

- *2160p/25 format can be converted to 2160p/59.94 or 2160p/50.

Other features

- Scene Cut Detection
- Genlock
- Front touch panel and web browser control
- 16-channel AES/EBU I/O (48kHz,24-bit : Optional)
- FRC-90DA (Optional): AES/EBU digital audio
- FRC-90DM* (Optional): Dolby E 2-channel encoder/decoder

*required FRC-90DA mounted
## Specifications

**Video format**
- 4K: 2160p/59.94p, 2160p/50p (quad link 3G-SDI, Level-A/B, SQD/2SI), 2160p/25p (quad link 3G-SDI, SQD, S3G/2SI)
- HD: 1080i/60, 1080i/59.94p, 1080i/50p (Level-A/B), 1080p/60, 1080p/59.94, 1080p/50, 720p/60, 720p/59.94, 720p/50p
- SD: 525/60, 625/50

**Frame rate conversion**
- [2160p/59.94, 50] → [1080p, 1080i, 720p/59.94, 50] ↔ [1080p, 1080i, 720p/59.94, 50, 50] ↔ [1080p, 1080i, 720p/59.94, 50, 50] ↔ [1080p, 1080i, 720p/59.94, 50, 50] (optional)
- 1080p, 1080i, 720p/60, 59.94, 50 ↔ 1080p, 1080i, 720p/60, 59.94, 50
- 525/60, 625/50 ↔ 1080p, 1080i, 720p/60, 59.94, 50

**Video Inputs**
- 3G/HD-SDI: 3 Gbps/1.5 Gbps/750 Mbps BNC x 4

**Video Output**
- 3G/HD-SDI: 3 Gbps/1.5 Gbps/750 Mbps BNC x 4
- Pass-through input to output is possible (relay circuit)

**Quantization**
- 3G/HD-SDI: 10-bit

**Genlock input**
- BB: NTSC: 0.429 Vp-p, PAL: 0.45 Vp-p or Tri-level sync: 0.6 Vp-p, 75Ω or loop-through, BNC x 2
- (Terminate with 75Ω terminator if unused.)

**I/O delay**
- +5 to +1000 ms (depending on input/output formats)
- (Ex: I/O delay when converting from 1080/59.94i to 1080/50i: Approx. 105 ms)

**Audio Input (FRC-90DA)**
- Embedded audio: 4 groups (16 channels) 48 kHz 16-bit to 24-bit, synchronous/asynchronous
- AES/EBU: 1.0 Vp-p unbalanced 16 stereo pairs, 32/44.1/48 kHz, 16-bit to 24-bit, 75Ω, BNC x 16
- Metadata input: 9-pin D-sub (female) x 2
- Reference input: BB: NTSC: 0.429 Vp-p/PAL: 0.45 Vp-p or Tri-level sync: 0.6 Vp-p, 75Ω, BNC x 2

**Audio Output (FRC-90DA)**
- Embedded audio: 4 groups (16 channels) 48 kHz, 16-/20-/24-bit, synchronous/asynchronous
- AES/EBU: 1.0 Vp-p unbalanced 16 stereo pairs, 48 kHz, 16-/20-/24-bit, 75Ω, BNC x 16
- Metadata output: 9-pin D-sub (female) x 2
- Audio delay adjustment: +5 to +1000 ms (in 1 ms step) for each channel
- Gain adjustment: -10 dB to +10 dB (0.1 dB step) for each channel
- Audio processing: SRC (Sample Rate Converter), Down mix, Channel re-mapping, Channel mute

**Audio Input**
- Embedded audio: 4 groups (16 channels) 48 kHz 16-bit to 24-bit, synchronous/asynchronous
- AES/EBU: 1.0 Vp-p unbalanced 16 stereo pairs, 32/44.1/48 kHz, 16-bit to 24-bit, 75Ω, BNC x 16
- Metadata input: 9-pin D-sub (female) x 2
- Reference input: BB: NTSC: 0.429 Vp-p/PAL: 0.45 Vp-p or Tri-level sync: 0.6 Vp-p, 75Ω, BNC x 2

**Ancillary data**
- Audio data, Audio metadata embedding/de-embedding

**Interface**
- LAN: 100Base-TX/1000Base-T RJ-45 1 port
- For web browser and Dolby Metadata Configure GUI connections

**Temperature/Humidity**
- 0°C to 40°C/30% to 85% (no condensation)

**Power**
- 100 V AC to 240 V AC, 50/60 Hz

**Power consumption**
- 504 VA at 100 V, 516 VA at 240 V

**Dimensions/Weight**
- 430 (W) x 132 (H) x 540 (D) mm
- FRC-9000: 20.5 kg, FRC-90DA: 2.4 kg

**Accessories**
- Rack mount brackets, AC cord, CD-ROM (operation manual)

**Consumables**
- Power unit: replace every 5 years (at room temperature), Cooling fan: replace every 4 years (at room temperature)

**Options**

* Dolby is a registered trademark of Dolby Laboratories.

---

**Rear Panel**

---

**External Dimensions**

---

**ISO 9001 and 14001 certified (Sakura R&D)**