Central processing unit (CPU)

LSI CoreWare CW33300-based core

- MIPS R3000A-compatible 32-bit RISC CPU MIPS R3051 with 5 KB L1 cache, running at 33.8688 MHz.
- Features:
  - The initial feature size was 0.5 micron (500 nm).
  - 850k – 1M transistors
  - Operating performance: 30 MIPS
  - Bus bandwidth: 132 MB/s
  - 1 ALU
  - 1 Shifter
- CPU cache RAM:
  - 4 KB instruction cache
  - 1 KB non-associative SRAM data cache

Geometry Transformation Engine (GTE)

- Coprocessor that gives additional vector math instructions used for 3D graphics, lighting, geometry, polygon and coordinate transformations. It performs high-speed matrix multiplications.
- Operating performance: 66 MIPS
- Polygons per second (rendered in hardware):
  - 90,000 with texture mapping, lighting and Gouraud shading
  - 180,000 with texture mapping
  - 360,000 with flat shading

Motion Decoder (MDEC)

- Enables full screen, high quality FMV playback. It is responsible for decompressing images and video into VRAM.
- Operating performance: 80 MIPS
- Documented device mode is to read three RLE-encoded 16×16 macroblocks, run IDCT and assemble a single 16×16 RGB macroblock.
- Output data may be transferred directly to the GPU via DMA.
- It is possible to overwrite the IDCT matrix and some additional parameters, however MDEC internal instruction set was never documented.
- It is directly connected to a CPU bus.

System Control Coprocessor (Cop0)

- This unit is part of the CPU. Has 16 32-bit control registers.
- Modified from the original R3000A cop0 architecture, with the addition of a few registers and functions.
- Controls memory management through virtual memory technique, system interrupts, exception handling, and breakpoints.

Memory

- 2 MB main EDO DRAM
- Additional RAM is integrated with the GPU (including a 1 MB framebuffer) and SPU (512 KB), see below for details.
- Cache RAM for CPU core and CD-ROM. See the relevant sections for details.
- Flash RAM support through the use of memory cards, see below.
- BIOS stored on 512 KB ROM

Graphics processing unit (GPU)

32-bit Sony GPU (designed by Toshiba)

- Handles display of graphics, control of framebuffer, and drawing of polygons and textures.
- Handles 2D graphics processing, in a similar manner to the 3D engine.
- RAM:
    - 1 MB VRAM (later models contained SGRAM) for framebuffer
    - 2 KB texture cache (132 MB/s memory bus bandwidth, 32-bit wide)
    - 64 bytes FIFO buffer
- Features:
    - Adjustable framebuffer (1024×512)
    - Emulation of simultaneous backgrounds (to simulate parallax scrolling)
    - Mask bit
    - Texture window
    - Dithering
    - Clipping
    - Alpha blending (4 per-texel alpha blending modes)
    - Fog
    - Framebuffer effects
    - Transparency effects
    - Render to texture
    - Offscreen rendering
    - Multipass rendering
    - Flat or Gouraud shading and texture mapping
    - No line restriction
    - Colored light sourcing
- Resolutions:
    - Progressive: 256×224 to 640×240 pixels
    - Interlaced: 256×448 to 640×480 pixels
- Colors:
    - Maximum color depth of 16,777,216 colors (24-bit true color)
    - 57,344 (256×224) to 153,600 (640×240) colors on screen
    - Unlimited color lookup tables (CLUTs)
    - 32 levels of transparency
    - All calculations are performed to 24 bit accuracy
- Texture mapping color mode:
    - Mode 4: 4-bit CLUT (16 colors)
    - Mode 8: 8-bit CLUT (256 colors)
    - Mode 15: 15-bit direct (32,768 colors)
    - Mode 24: 24-bit (16,777,216 colors)
- Sprite engine
    - 1024×512 framebuffer, 8×8 and 16×16 sprite sizes, bitmap objects
    - Up to 4,000 sprites on screen (at 8×8 sprite size), scaling and rotation
    - 256×256 maximum sprite size
- Special sprite effects:
    - Rotation
    - Scaling up/down
    - Warping
    - Transparency
    - Fading
    - Priority
    - Vertical and horizontal line scroll

Sound processing unit (SPU)

16-bit Sony SPU

- Supports ADPCM sources with up to 24 channels
- Sampling rate of up to 44.1 kHz
- 512 KB RAM
- PCM audio source
- Supports MIDI sequencing
- Digital effects include:
    - Pitch modulation
    - Envelope
    - Looping
    - Digital reverb

I/O system and connectivity

CD-ROM Drive

- 660 MB maximum storage capacity, double speed CD-ROM drive
- 2×, with a maximum data throughput of 300 KB/s (double speed), 150 KB/s (normal)
- 128 KB data buffer
- XA Mode 2 compliant
- Audio CD play
- CD-DA (CD-Digital Audio)
- Rated for 70,000 seek operations

Two control pads via connectors

- Expandable with multitap connector

Backup flash RAM support

- Two removable cards
- Each card has 128 KB flash memory
- OS support for File Save, Retrieve and Remove

Video and audio connectivity

- AV Multi Out (Composite video, S-Video, RGBS)
- RCA Composite video and Stereo out (SCPH-100x to 5000 only)
- RFU (SCPH-112X) DC out (SCPH-100x to 5000 only)
- S-Video out (SCPH-1000 only)

Serial and parallel ports

- Serial I/O (used for PlayStation Link Cable SCPH-100x to 900x only)
- Parallel I/O (N/A) SCPH-100x to 750x only)

Power input

- 100 V AC (NTSC-J); 120 V AC (NTSC-U/C); or 220–240 V AC (PAL)
- 7.5 V DC 2 A (PSone only)

Dimensions

- 270mm (width) x 60mm (height) x 188mm (depth)
- Weight: 1,2 Kg