



Endless Applications

by **teknique.**

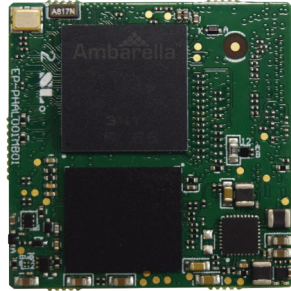
Oclea™ S5L μSoM Product Brief

Overview

The Oclea™ S5L μSystem on Module (μSoM) combines the Ambarella™ S5L SoC, DRAM, FLASH, and key peripherals together on a miniature form factor that's ready to design in to new products requiring the next generation of low power, best-in-class video quality, and AI-enabled camera technology.

The S5L μSoM is suitable for applications in surveillance, industrial automation, automotive, smart home/smart city, robotics and retail markets with its integrated CPU, ISP, and Advanced Video DSP.

Teknique's flexible SDK provides a Linux-based framework and an environment based on GStreamer and includes pre-defined demonstration applications that allow your software team to start immediate development. The Oclea™ software platform also includes integrations with leading CNN/DNN frameworks, 3rd party analytics, and cloud service providers, and provides a rich set of APIs that enable a range of product customization options.



Key Features

Great Power, Great Efficiency

4Kp30 + 720p30 + 4Kp1 JPG encoding performance provides high quality video with efficient H.264 and H.265 encoding.

Simplicity

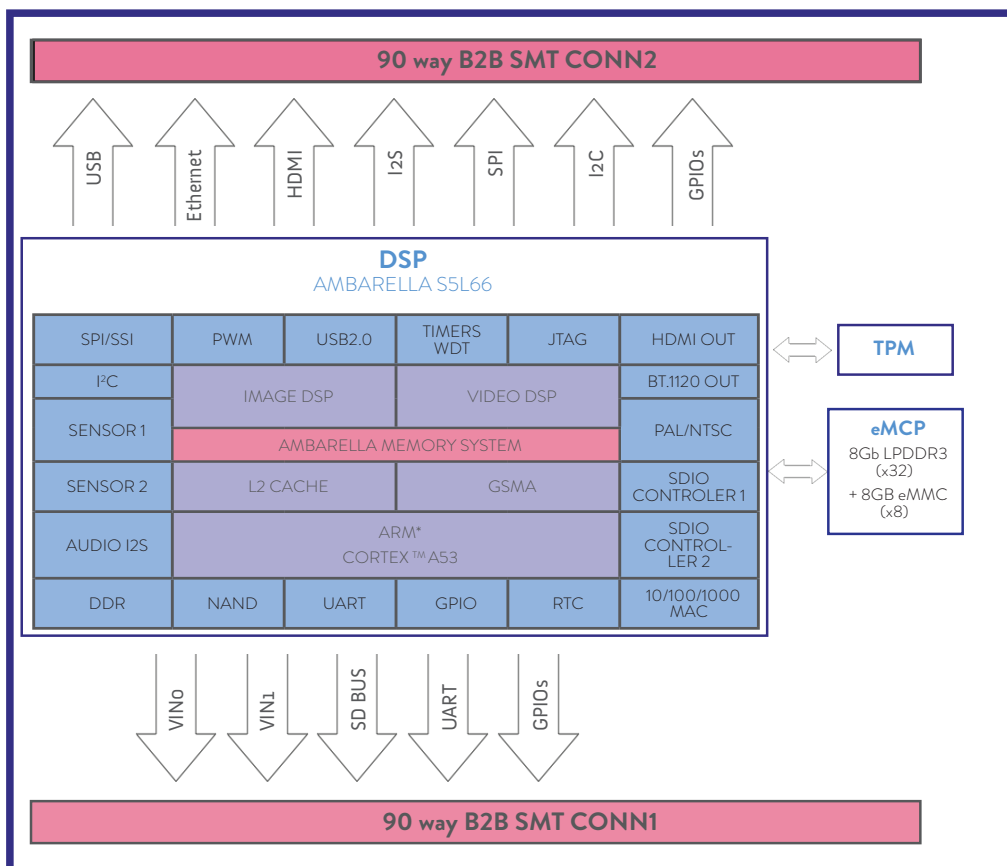
Teknique's SDK simplifies development of your vision product and runs on Linux, with popular integrations already done for you – so you can start your development immediately.

Advanced Image Processing

Electronic image stabilization, HDR, hardware de-warping engine support, and 2D/3D Noise correction for excellent low-light image quality.

Intelligent Video Analytics

Leverage analytics integrations out of the box with the Oclea™ SoM SDK platform: face and object detection, tracking, and recognition, license plate recognition, intrusion detection, and more are at your fingertips.





General Specifications

S5L Processor Cores

- 64-bit ARM® Quad Core Cortex™-A53 up to 1.0 GHz
- 32 KB / 32 KB I/D and 256 KB L2 Cache
- NEON™ and FPU acceleration
- AES / 3DES / SHA-1 / MD5 Cryptography Engine
- Ambarella Image and Video DSPs

Platform

- Linux kernel version 4.9+ (64-bit)
- Linux SDK for standards-based development

Sensor and Video I/O

- Single or dual sensor input (LVDS / MIPI) with Independent ISP configuration
- Single 8-lane sub-LVDS/SLVS/HiSPi™ or dual 4-lane MIPI
- 14-bit parallel and LVCMOS sensor support
- BT.601 / 656 / 1120 video in and BT.656 / 1120 out
- HDMI® 2.0 with PHY out
- PAL / NTSC composite SD video out

Front End Sensor Processing

- 480 MHz maximum pixel rate
- Multi-exposure HDR (line-interleaved sensors)

Image Processing

- 3D motion compensated noise reduction (MCTF)
- 3-Axis Electronic Image Stabilization (EIS)
- Adjustable AE / AWB / AF
- 180° fisheye lens distortion correction
- High quality polyphase scalers
- Digital PTZ and Virtual Cameras
- OSD engine for overlays and privacy masks
- Crop, Mirror, flip, 90° / 270° rotation
- DC-iris and P-iris
- Defect pixel correction
- Geometric and chroma lens distortion correction
- Gamma compensation and color enhancement
- Backlight compensation
- Lens shading correction
- WDR with local tone mapping

Video Encoding

- H.265 (HEVC) MP L5.1, H.264 BP / MP / HP L5.1 and MJPEG
- 4Kp30 + 720p30 + 4Kp1 JPG maximum encoding performance
- Up to 8 simultaneous stream encodes
- Flexible GOP configuration with I, P and B frames
- Temporal Scalable Video Codec with 4 Layers (SVCT)
- Dynamic region of interest (ROI) with 32 free-form regions
- Multiple CBR and VBR rate control modes

Memory Interfaces

- 1GB LPDDR3 DRAM and 8GB eMMC Flash storage
- High Speed SD bus for external interfacing with WI-FI or SD card storage

Peripheral Interfaces

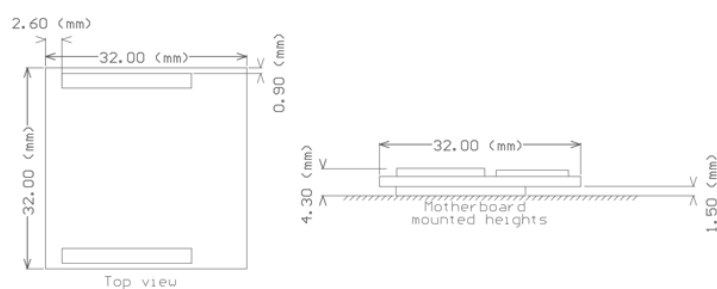
- Gigabit Ethernet with RMII / RGMII
- One USB 2.0 port for host/device
- Watchdog Timer, multiple general purpose timers
- HDMI® 2.0 with PHY out
- SDIO 4-pin interface (for SD card or WIFI module)
- 8x lane image sensor interface
- 4x PWM outputs
- 2x UART (max 115.2 Kb/s)
- 2x I2C (max 400 Kb/s)
- 2x SPI
- 1x I2S
- 1x ADC input (12-bit resolution)
- 28x GPIO with many more available depending on the special functions required

Input Power Specifications

- Single supply input voltage range - 4.5V to 5.5V
- Nominal power usage during 4K video streaming
- Recommended Power supply - 5V 1A DC

Physical

- 32mm x 32mm System on Module
- Operating temperature -20°C to +85°C
- 2x low profile 90-way connectors – Hirose DF40C-90DS-0.4V(51) (mating part #)



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