# Amlogic S922X Quad Core Android 9.0 PCBA Support GPIO PCIE GPS LVDS RS232 Touch screen EDP



| Specifications | |
|---|---|
| Model No. | Amlogic S922X |
| CPU | Amlogic S922X 64-bit quad core ARM® Cortex™ A73 CPU and dual core ARM® Cortex™ A53 CPU |
| GPU | ARM MaliTM-G52 MP4 GPU processor |
| ROM | 2GB/4GB LPDDR4 |
| Internal Storage | 16GB/64GB eMMC |
| OS | Android 9.0 |
| **Video&Audio CODEC** | |
| Video/Picture CODEC | Amlogic Video Engine (AVE) with dedicated hardware decoders and encoders<br>HW UHD 4K H.265 75fps 10-bit video decoder & low latency 1080p H.265/H.264 60fps encoder<br>Support multi-video decoder up to 4Kx2K@60fps+1x1080P@60fps<br>Supports multiple "secured" video decoding sessions and simultaneous decoding and encoding<br>Video/Picture Decoding<br>VP9 Profile-2 up to 4Kx2K@60fps<br>H.265 HEVC MP-10@L5.1 up to 4Kx2K@60fps<br>AVS2-P2 Profile up to 4Kx2K@60fps<br>H.264 AVC HP@L5.1 up to 4Kx2K@30fps<br>H.264 MVC up to 1080P@60fps<br>MPEG-4 ASP@L5 up to 1080P@60fps (ISO-14496)<br>WMV/VC-1 SP/MP/AP up to 1080P@60fps<br>AVS-P16(AVS+) /AVS-P2 JiZhun Profile up to 1080P@60fps<br>MPEG-2 MP/HL up to 1080P@60fps (ISO-13818)<br>MPEG-1 MP/HL up to 1080P@60fps (ISO-11172)<br>RealVideo 8/9/10 up to 1080P@60fps<br>H.265/H.264 video encoding up to 1080P@60fps with low latency<br>Multiple language and multiple format sub-title video support<br>MJPEG and JPEG unlimited pixel resolution decoding (ISO/IEC-10918)<br>Supports JPEG thumbnail, scaling, rotation and transition effects<br>Supports *.mkv,*.wmv,*.mpg, *.mpeg, *.dat, *.avi, *.mov, *.iso, *.mp4, *.rm and *.jpg file formats<br>Supports Dolby VisionOptional, HDR10, HDR10+, HLG and PRIME HDR processing |
| Video/Picture Encoding | Independent JPEG and H.265/H.264 encoder with configurable performance/bit-rate<br>JPEG image encoding H.265/H.264 video encoding up to 1080P@60fps with low latency |
| Video Output | Built-in HDMI 2.1 transmitter including both controller and PHY with CEC, Dynamic HDR and HDCP 2.2,<br>4Kx2K@60 max resolution output CVBS 480i/576i standard definition output<br>Supports all standard SD/HD/FHD video output formats: 480i/p, 576i/p, 720p, 1080i/p and 4Kx2K 4-lane MIPI DSI interface, resolution up to 1920*1080 with rotation and panel calibration<br>Supports MP3, AAC, WMA, RM, FLAC, Ogg and programmable with 7.1/5.1 down-mixing<br>Built-in serial digital audio SPDIF/IEC958 input/output and PCM input/output 3 built-in TDM/PCM/I2S ports with TDM/PCM mode up to 84kHz x32bits x 8ch or 96kHz x 32bits x 32ch and I2S mode up to 384kHz x 32bitsx8ch<br>Digital microphone PDM voice input with programmable CIC, LPF & HPF, support up to 8 DMICs Built-in stereo audio DAC<br>Supports concurrent dual audio stereo channel output with combination of analog+PCM or I2S+PCM |
| Decoder Format | HD MPEG1/2/4, H.265/HEVC, HD AVC/VC-1, RM/RMVB, Xvid/DivX3/4/5/6, RealVideo8/9/10 |
| Media Format | Avi/Rm/Rmvb/Ts/Vob/Mkv/Mov/ISO/wmv/asf/flv/dat/mpg/mpeg |
| Music Format | MP3/WMA/AAC/WAV/OGG/DDP/TrueHD/HD/FLAC/APE |
| Photo Format | HD JPEG/BMP/GIF/PNG/TIFF |
| **Port** | |
| USB host | USB2.0, Max480Mbps/USB3.0, Max5.1Gbps |
| SIM | MICRO SIM |
| HDMI | HDMI 2.2/1ch Lvds/1ch EDP |

| LAN | RJ45 wire Ethernet connection 100/1000M Ethernet support |
|---|---|
| WiFi/ Bluetooth | AP6398S(Wi-Fi+BT) 2.4G+5.8G |
| 4G | PCIE Port |
| TF | microSD(Max 128G) |
| HDD | Support SATA Max2TB(Not included) |
| **Power** | |
| Power Supply | 12V DC/3AΦ5.5*Φ2.5mm |

This product is the network Android system motherboard, which is suitable for intelligent display terminal equipment, industrial automation terminal, computer vision/algorithm, 3D experience, game/entertainment equipment, high-performance Face Recognition calculation/storage, AI intelligence with high performance requirements. It can be widely used as the high-end demand intelligent mainboard of finance, advertising, security, transportation, public transportation and other industries.

This product adopts the latest generation of 12 nm ultra-low power AI chip s922x of Amlogic. It is an advanced application processor, integrating a powerful CPU, GPU subsystem, secure 4K video codec engine and first-class HDR image processing. The CPU of S922x main system adopts large and small architecture, which integrates four core arm cortex-a73 CPU cluster and dual core cortex-a53 cluster with unified secondary cache to improve system performance. Each CPU core includes a separate neon SIMD coprocessor to improve the software media processing capacity. Ave-10 can decode 4kx2k resolution video at a speed of 75 frames/second, and has a complete trusted video path (TVP) for security applications, supporting complete formats, including: MVC, MPEG-1/2/4, vc-1/WMV, AVS, AVS +, avs2 realvideo, MJPEG stream, H.264, h265-10, VP9 and JPEG pictures without size restrictions. The independent encoder can encode JPEG or h.265/h.264 format, up to 1080p, 75 frames per second. It supports 4kx2k @ 60fp (3840 * 2160) output of hdmi2.2 interface and 4K point screen of V by one interface. It supports HDCP 2.2, stereo audio DAC, CVBS output, 4-channel Mipi DSI interface, multi TDM, PCM, I2S and SPDIF digital audio I/O interface, 8-Channel far-field PDM digital microphone (dmic) input and DVP camera interface. The product comes with 2x2 WiFi (supporting 2.4G and 5.8G dual frequency) + 4.1 wireless network module, supporting Gigabit Ethernet interface and infrared remote control, keyboard and mouse operation.

Highlights

o    Amlogic 64-bit quad core ARM® Cortex™ A73 CPU and dual core ARM® Cortex™ A53 CPU

o    ARM Mali-G52 MP4 GPU processor

o    HW UHD 4KH.265 75fps 10-bit video decoder & low latency 1080p H.265/H.264 60fp sencoder

o    Dolby Visionand HDR10, HDR10+, HLG and PRIME HDR video processing

o    Build in Cortex-M4 core for always on processing

o    TrustZone based security for DRM video streaming

o    WIFI, BT,USB, SD, Ethernet, Analog Audio

o    Power management auxiliary processor

Amlogic S922X is an advanced application processor designed for Android hybrid OTT/IPTV Set Top Box(STB) and high-end media box applications. It integrates a powerful CPU, GPU subsystem, a secured 4K video CODEC engine and a best-in-class HDR image processing pipeline withall major peripherals to form the ultimate high-performance multimedia AP.

The main system CPU is based on Big. Little architecture which integrates a quad-core ARM Cortex-A73 CPU cluster and a dual-core Cortex-A53 cluster with united L2 cache to improve systemper formance. Each CPU core includes the separate NEON SIMD co- processor toimprove software media processing capability.
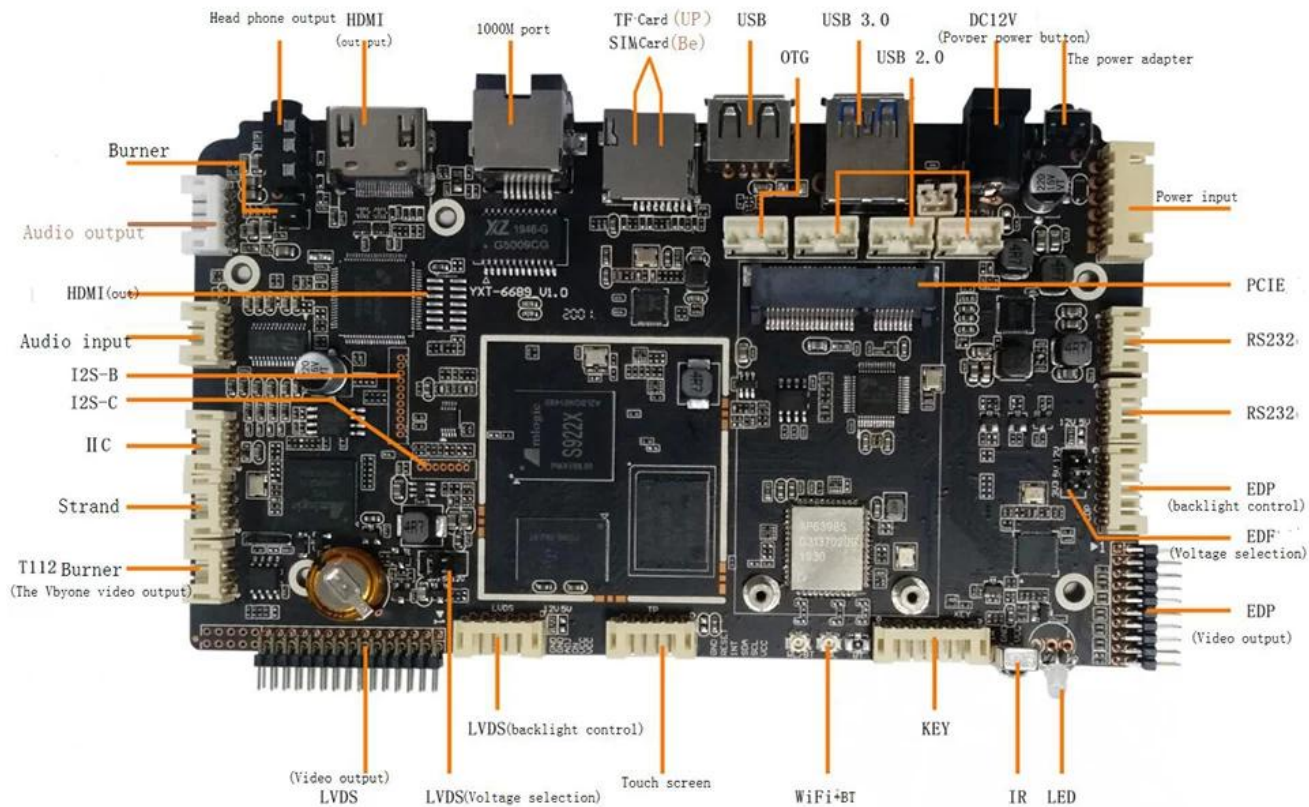
The graphic subsystem consists of twographic engines and a flexible video/graphic output pipeline. The ARM Mali-G52 MP4 GPU handles all OpenGL ES 3.2 Vulkan 1.0 and OpenCL 2.0 graphic programs, while the 2.5D graphics processor handles additional scaling, alpha, rotation and color space conversion operations. Together, the CPU and GPU handle all operating system, networking, user-interface and gaming relatedtasks. The video output pipeline includes Dolby Visionoptional HDR10, HDR10+,HLG and PRIME HDR processing, REC709/BT2020 processing, motion adaptive edgee nhancing de-interlacing, flexible programmable scalar, and manypicture enhancement filters before passing the enhanced image to the video outputports.
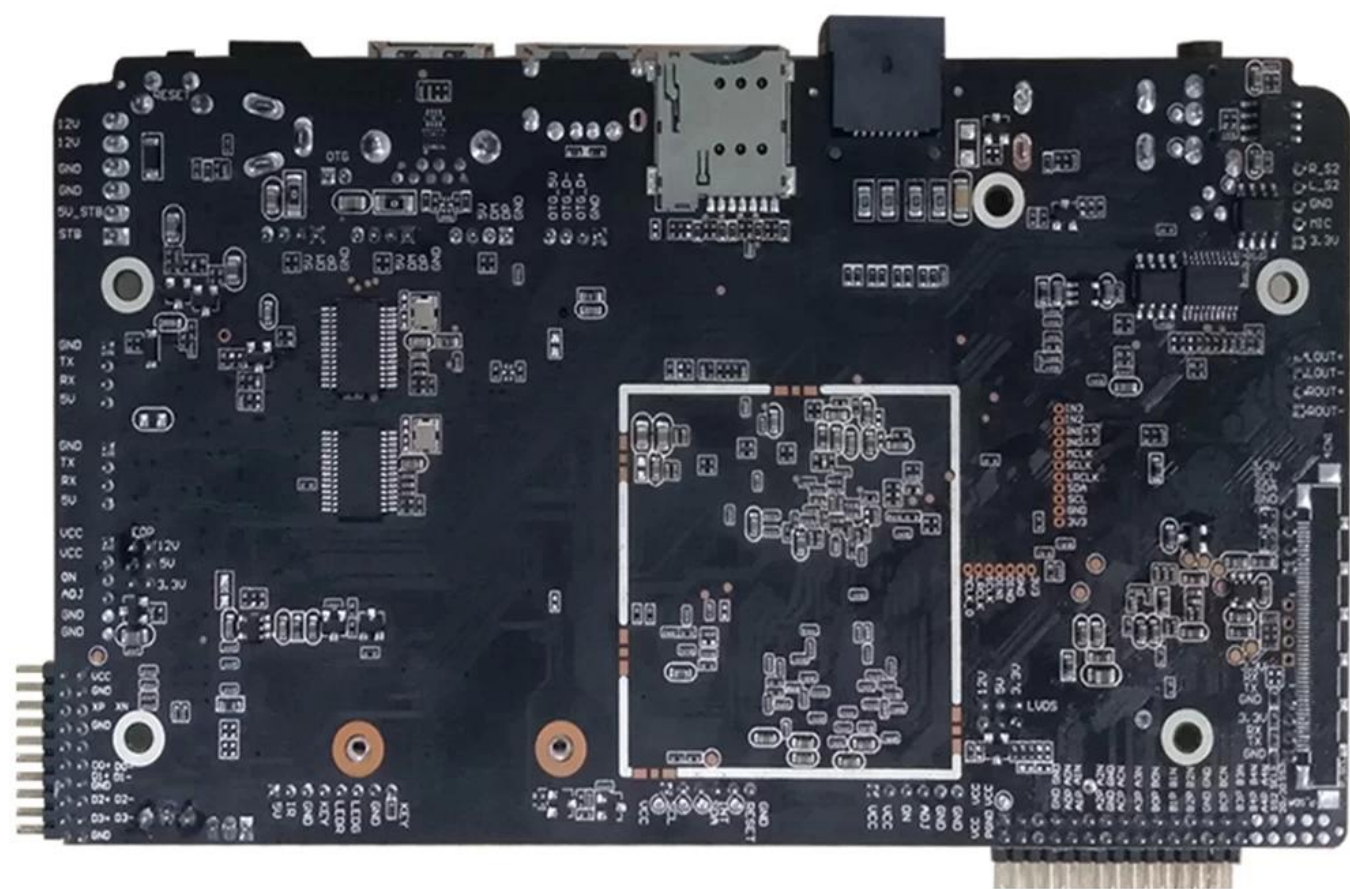
Amlogic Video Engine (AVE-10) offloads the Cortex-A53 CPUs from all video CODEC processing. It includes dedicated hardwarevideo decoder and encoder. AVE-10 is capable of decoding 4Kx2K resolution videoat 75fps with complete Trusted Video Path (TVP) for secure applications andsupports full formats including MVC, MPEG- 1/2/4, VC-1/WMV, AVS, AVS+, AVS2 RealVideo, MJPEG streams, H.264, H265-10, VP9 and also JPEG pictures with nosize limitation. The independent encoder is able to encode in JPEG orH.265/H.264 up to 1080p at 60fps.
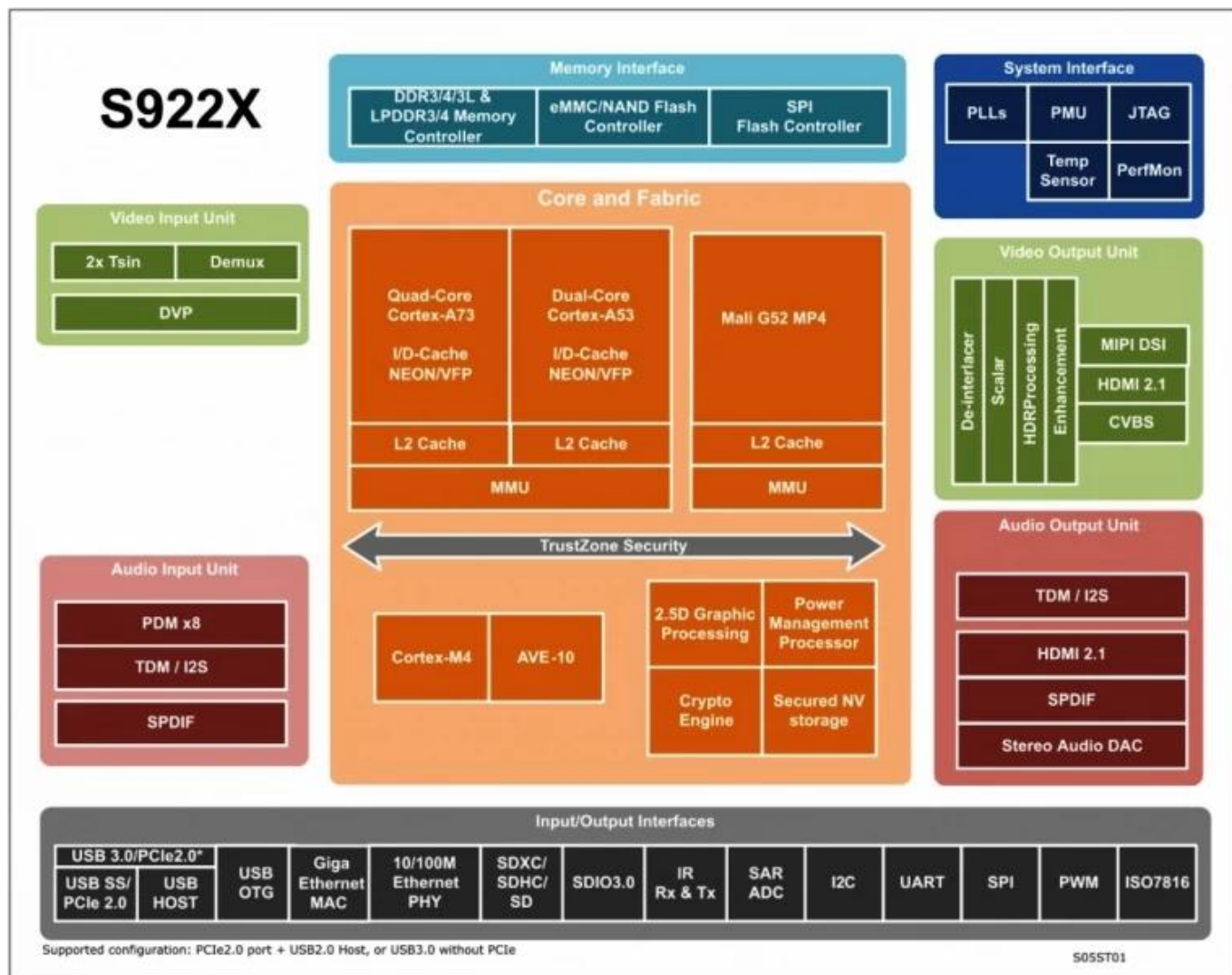
Amlogic S922X integrates all standard audio/video input/output interfaces including a HDMI2.1 transmitter with 3D, Dynamic HDR, CEC and HDCP 2.2 support, stereo audio DAC, a CVBS output, 4-lane MIPI DSI interface, multiple TDM, PCM, I2S and SPDIF digital audio input/outputinterfaces, 8 channel far-field PDM digital microphone (DMIC) inputs and a DVPcamera interface.

Amlogic S922X also integrates a set offunctional blocks for digital TV broadcasting streams. The built-in two demuxcan process the TV streams from the serial and parallel transport stream inputinterface, which can connect to external tuner/demodulator.

The processor has rich advanced network andperipheral interfaces, including a 10/100/1000M Ethernet MAC with RGMII,10/100M Ethernet PHY, one USB XHCI OTG 2.0 port, one USB3.0 and PCIe

Head phone output HDMI TF·Card (UP) USB USB 3.0 DC12V
(output) 1000M port SIMCard (Be) OTG USB 2.0 (Power power button) The power adapter

Burner

Audio output

Power input

HDMI(out)

PCIE

Audio input

RS232

I2S-B

I2S-C

RS232

IIC

EDP
(backlight control)

Strand

EDF
(Voltage selection)

T112 Burner
(The Vbyone video output)

EDP
(Video output)

LVDS(backlight control)

(Video output)
LVDS

KEY

LVDS(Voltage selection)

Touch screen

WiFi+BT

IR LED

12V
12V
GND
5V_STB
STB

GND
TX
RX
5V

GND
TX
RX
5V

VCC
VCC
ON
ADJ
GND
GND

RESET
OTG

R_S2
L_S2
GND
MIC
3.3V

LOUT+
LOUT-
ROUT-
ROUT+

Introducing our cutting-edge Amlogic S922X Quad Core Android 9.0 PCBA, meticulously designed to elevate your projects to new heights. Equipped with an array of advanced features, this PCBA sets the benchmark for performance and functionality in the industry.

At the heart of this PCBA lies the powerful Amlogic S922X Quad Core processor, delivering lightning-fast processing speeds and smooth multitasking capabilities. Whether you're running complex applications or handling intensive tasks, this PCBA ensures optimal performance and efficiency at every turn.

One of the standout features of our Amlogic S922X PCBA is its extensive connectivity options. With support for GPIO, PCIE, GPS, LVDS, RS232, and touch screen EDP interfaces, this board provides unparalleled flexibility for integrating various peripherals and components into your projects. Whether you need to connect sensors, displays, or communication modules, this PCBA has you covered.

The inclusion of GPIO (General Purpose Input/Output) ports allows for seamless integration with external devices, enabling advanced control and monitoring capabilities. Whether you're automating industrial processes or building smart home solutions, these GPIO ports offer endless possibilities for customization and expansion.

Furthermore, the PCIE (Peripheral Component Interconnect Express) interface opens up a world of

opportunities for high-speed data transfer and expansion. Whether you need to add Wi-Fi, Bluetooth, or additional storage options, the PCIE interface provides the bandwidth and flexibility to accommodate your needs.

For applications requiring precise location tracking, the built-in GPS module ensures accurate positioning and navigation capabilities. Whether you're developing fleet management systems or outdoor monitoring solutions, the GPS functionality of this PCBA delivers reliable performance in any environment.

The LVDS (Low Voltage Differential Signaling) interface enables seamless connectivity with high-resolution displays, ensuring crisp visuals and immersive user experiences. Whether you're building interactive kiosks or digital signage displays, the LVDS interface ensures stunning image quality and seamless integration.

In addition, the RS232 serial interface provides robust and reliable communication capabilities for connecting to a wide range of legacy devices and equipment. Whether you're interfacing with industrial machinery or legacy control systems, the RS232 interface offers compatibility and reliability.

Last but not least, the touch screen EDP (Embedded DisplayPort) interface enables seamless integration with touch screen displays, offering intuitive user interactions and enhanced usability. Whether you're developing interactive infotainment systems or touchscreen kiosks, the touch screen EDP interface delivers a seamless and responsive user experience.

In summary, our Amlogic S922X Quad Core Android 9.0 PCBA offers unparalleled performance, versatility, and connectivity for your projects. Whether you're developing smart home solutions, industrial automation systems, or digital signage displays, this PCBA provides the foundation for success. Experience the power and flexibility of our Amlogic S922X PCBA and unlock the full potential of your projects.