



Soluciones y Plataformas sobre Core ARM

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Helping
Innovation

❓ **Introducción:**

ARM vs x86 - Set de instrucciones
Ventajas plataformas ARM vs plataformas x86
Desventajas plataformas ARM vs plataformas x86

❓ **VIA Embedded ARM Solutions:**

System on Module basado en core Qualcomm® APQ8096SG
System on Module basado en core Via Embedded Wondermedia A9
Factor Q7 basados en cores NXP i.MX6 & i.MX8M
SBC* Pico ITX basado en core NXP i.MX6
SBC* 3,5" basado en core Via Embedded Wondermedia A9
SBC* 3,5" basado en core MediaTek i500 octa-core
*SBC = Single Board Computers

❓ **Axiomtek ARM Solutions:**

Factor Q7 basado en core NXP i.MX6
Factor Q7 basado en core NXP i.MX287
Factor SMARC basado en core NXP i.MX6

❑ **Preguntas**

Principal diferencia entre ARM y x86

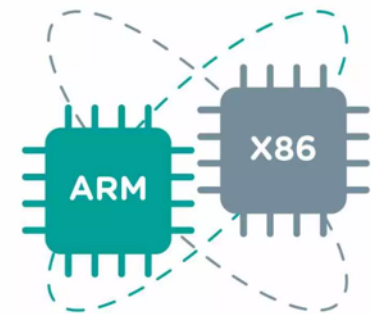
- ARM es RISC (Reduced Instruction Set Computing) → Set de instrucción de datos simple en comparación con x86 < Consumo para decodificar las instrucciones.
- x86 es CISC (Complex Instruction Set Computing) → Set de instrucciones complejo en comparación con RISC > Consumo para decodificar las instrucciones.

¿Cuándo usar uno u otro?

- Depende de la aplicación, su complejidad y el consumo que nos podemos permitir.

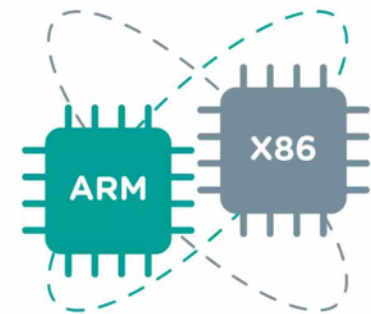
Ventajas ARM sobre x86

- Menor Consumo.
- Flash & RAM normalmente integradas en el SOM / SBC.
- Plataformas más económicas que x86 que permiten customización.
- ¿Sistemas más seguros ante ciberataques? → Linux & Android vs Windows.
- Componentes soldados en placa (mejora ante vibraciones).
- Rangos de Temperatura mayores.



Desventajas ARM sobre x86

- Límite de potencia de procesamiento.
- Límite de recursos de memoria RAM | FLASH | HDD.
- Límite de Sistemas Operativos → No Windows.
- Límite de aplicaciones standard.
- Mayor complejidad para la instalación sistemas operativos, programas, etc. Curva de aprendizaje técnica.
- Requiere conocimientos avanzados de Linux y Android a la hora de compilar programas y módulos.



Nuestros Core ARM



VIA Cortex A9 SoC



APQ8096SG Embedded Processor



i.MX6 Cortex – A9
i.MX 8M Cortex – A53 + Cortex – M4



MediaTek i500 octa-core Processor

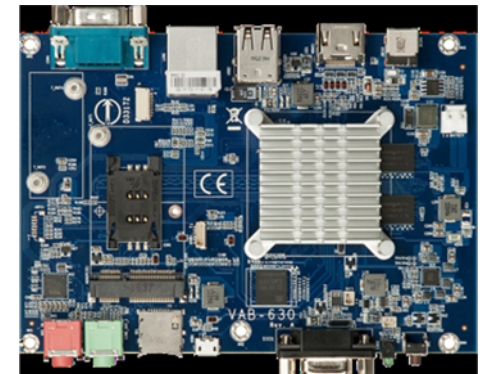
• **System on Module (SoM):**

- Son módulos que integran Procesador, Gráficos, RAM & EMMC.
- Dependen de tarjeta adicional y diseño (Carrier Board para tener funcionalidad).
- Time to Market más lento, pero alta customización y ahorro de costes.



• **Single Board Computer (SBC):**

- Son plataformas que integran todo, Procesador, Graficos, RAM, EMMC & Conexiones (USB, HDMI, MicroSD, LAN, Audio, COM etc...)
- No requieren de diseño electrónico.
- Time to Market rápido, pero sin posibilidad de customización.



• Trabajando con ARM

• Arquitectura de los Sistemas Operativos Linux ARM & Android:

- Boot loader → El arranque inicial. Diseñado por el fabricante de la plataforma.
- Kernel → Kernel Linux & Android. Adaptado por el fabricante de la plataforma.
- RFS (Root File System) → Standard pero compilado para arquitecturas ARM.

• Compilación Cruzada:

- Conocido como Cross Compiler.
- Es un compilador gcc que nos permite crear ejecutables para ARM sobre una máquina x86.
- ¿Podemos compilar sobre la plataforma directamente? → Sí, a excepción del boot loader y el Kernel.
- ¿Es recomendable? -> No, mejor todo mediante compilación cruzada.
- ¿Por qué? → Es más rápido.

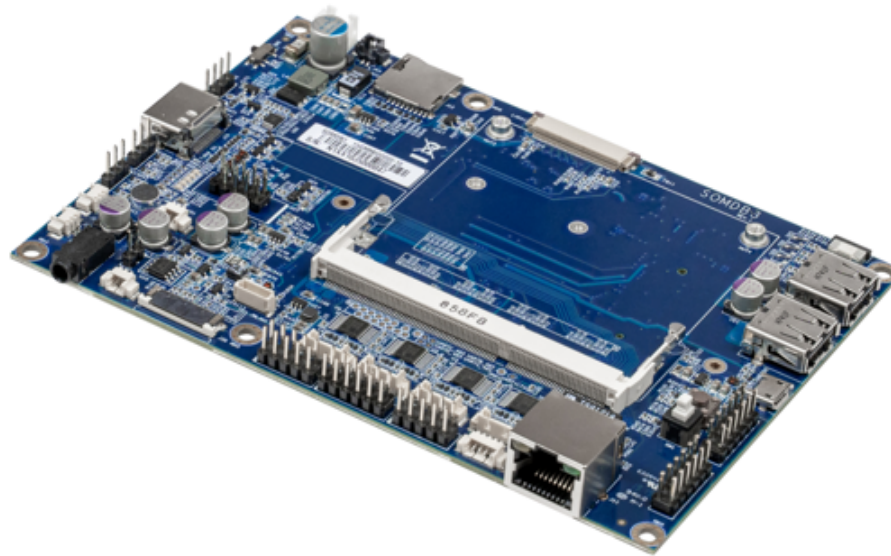


Ubuntu



Debian





VIA Embedded ARM Solutions



VIA Technologies, Inc., con sede en Taiwán, es un líder mundial en la conexión de empresas con tecnología avanzada de Inteligencia Artificial, IoT y Visión Artificial a través de soluciones inteligentes innovadoras para aplicaciones de transporte, industria, ciudades inteligentes y centros de datos.

VIA proporciona el hardware, el software y los componentes básicos para crear sistemas y dispositivos integrados innovadores.

VIA

QSM-8Q60

Qseven™ ARM module with
NXP i.MX 6QuadPlus or i.MX
6DualLite Cortex-A9 SoC
for industrial automation
applications

eMMC

NXP i.MX6QP/i.MX6DL SoC



Micro SD Card Slot

DDR3 SDRAM

Specifications

Model Name	QSM-8Q60-QP	QSM-8Q60
Processor	1.0GHz NXP i.MX 6QuadPlus Cortex-A9 quad-core SoC	1.0GHz NXP i.MX 6DualLite Cortex-A9 dual-core SoC
System Memory	2GB DDR3 SDRAM	
Storage	4GB eMMC Flash memory	
Boot Loader	4MB SPI Flash ROM	
Graphics	Vivante GC2000+ GPU 3 integrated, independent 3D/2D and video graphics processing units Supports OpenGL® ES 2.0, OpenCL and OpenVG™ 1.1 hardware acceleration Supports MPEG-2, VC1 and H.264 video decoding up to 1080p Supports SD encoding	Vivante GC880 GPU 2 Independent, integrated 3D/2D and graphics processing units Supports OpenGL® ES 2.0, OpenVG 1.1 hardware acceleration Supports MPEG-2, VC1 video decoding up to 1080p
LAN	Micrel KSZ9031RX Gigabit Ethernet Transceiver with RGMII support	
Audio	I2S Audio Interface	
HDMI	Integrated HDMI 1.4 Transmitter	
USB	SMSC USB2514 USB 2.0 High Speed 4-port hub controller	

Supported Expansion I/O	1 PCIe x1
Supported I/O	1 HDMI port 1 Dual-channel 18/24-bit LVDS panel connector 4 USB 2.0 ports 1 USB OTG client 3 COM (TX/RX) ports 2 CAN bus 1 Gigabit Ethernet port 3 I²C 1 I2S 1 SPI 1 SDIO 1 PWM
Onboard I/O	1 Micro SD card slot
Operating System	Linux Kernel 4.1.15
Operating Temperature	-20°C ~ 70°C
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	7.0cm x 7.0cm (2.76" x 2.76")
Compliance	Qseven™ Rev. 2.0 module

VIA

QSM-8Q60

Qseven™ ARM module with
NXP i.MX 6QuadPlus or i.MX
6DualLite Cortex-A9 SoC
for industrial automation
applications

Carrier Board (QSMDB2)



EMIO-2531 miniPCIe Wi-Fi + BT Module
802.11b/g/n standards
Bluetooth 2.1 + EDR specification

Carrier Board Front Panel I/O



Specifications

Model Name	QSMDB2
Audio	NXP SGTL5000 low power stereo codec
Onboard I/O	1 Dual-channel 18/24-bit LVDS panel connector 1 LVDS inverter connector 1 Touch panel connector 4 COM port pin headers (RS-232/422/485) 1 GPIO (16 GPI +16 GPO) pin header 1 CAN bus connector (supports 2 CAN bus) 1 I²C and Serial port pin header (supports 2 RS-232 TX/RX) 1 Audio pin header for Line-in, Line-out, Mic-in 1 SIM card slot 1 miniPCIe slot 1 DC-in connector
Front Panel I/O	1 HDMI port 2 USB 2.0 ports 1 COM port (TX/RX for debug) 1 Gigabit Ethernet port 1 10/100Mbps Ethernet port 2 LEDs for power & Wi-Fi status 1 Reset Button
Power Supply	15~24V DC-in
Operating Temperature	-20°C ~ 70°C
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	3.5" Form Factor 14.6cm x 10.2cm (5.75" x 4.01")

VIA

QSM-8Q80-MM

Qseven™ ARM module for
fleet management and
in-vehicle infotainment
applications



Specifications

Model Name	QSM-8Q80-MM
Processor	1.6GHz NXP i.MX 8M Mini Quad/Dual Cortex-A53 and 400MHz Cortex-M4 SoC
System Memory	2GB LPDDR4 SDRAM
Storage	16GB eMMC 5.1 Flash memory
Graphics	GCNanoUltra + GC320 GPU 2 integrated, independent 3D/2D and video graphics processing units Graphics engine supporting OpenGL® ES 2.0 hardware acceleration Supports H.265/H.264/VP8 video decoding up to 1080p @60fps Supports H.264/VP8 video encoding
LAN	AR8031-AL1A-R Gigabit Ethernet Transceiver with RGMII support
Audio	I2S Audio Interface
PMIC	ROHM BD71847MWV Power Management Integrated Circuit
USB	SMSC USB2514i USB 2.0 High-speed 4-port hub controller
External RTC	Epson RX8010J

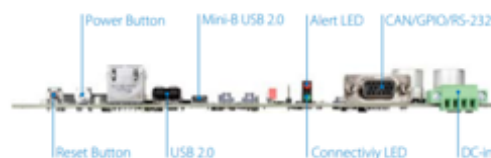
Supported I/O	1 MIPI DSI (4-Lanes) 4 USB 2.0 1 USB 2.0 OTG client 1 Gigabit Ethernet port 3 SDIO 3.0 3 I²C 1 PCIe 2.0 (1-Lane) 1 SPI 2 UART (TX/RX) 2 I2S 1 PWM 1 JTAG 8 GPIO
Onboard I/O	1 Micro SD card slot 1 MIPI CSI connector (4-Lanes) 1 Boot selection jumper
Operating System	Yocto 2.5
Operating Temperature	0°C ~ 60°C
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)
Form Factor	7.0cm x 7.0cm (2.76" x 2.76")
Compliance	Qseven™ Rev. 2.1 module

VIA

QSM-8Q80-MM

Qseven™ ARM module for
fleet management and
in-vehicle infotainment
applications

Carrier Board Front Panel I/O



Carrier Board Right Panel I/O



Carrier Board (QSMDB3)



Specifications

Model Name	QSMDB3
MCU	STMicroelectronics STM32F103RCT6 ARM Cortex-M3 with 256KB Flash
Audio	Wolfson WM8960 Stereo Codec Analog Devices SSM2306 Class-D Amplifier
GPS	Locosys ST-1612i-DGO GNSS and Dead Reckoning (DR) Module
Wi-Fi/Bluetooth	AMPAAK AP6256 Wi-Fi 802.11ac + Bluetooth V4.2 Module
Sensor	InvenSense ICM-20948 Low Power 9-Axis MEMS MotionTracking Device
Display	Supports BOE COG-PVLSZT026-01 10.1" FHD, 16:9, Landscape, Transmissive, Normally black, ADS type, with mutual Capacitive touch panel
Onboard I/O	1 MXM connector 1 LVDS panel connector (supports dual-channel and touch) 1 Light Sensor connector 1 Mic-in connector 2 Speaker connectors 1 Gigabit Ethernet port 1 miniPCIe slot (supports USB host) 2 IPEX connectors for Wi-Fi/BT/GPS

Front Panel I/O	1 Power button with LED 1 Reset button 1 USB 2.0 port 1 Mini-B USB 2.0 port (supports OTG) 2 LEDs for alert and connectivity status 1 CAN/GPIO/RS-232 (D-Sub) port 1 4-pole Phoenix DC jack (for ACC/IGN/BAT(DCIN)/GND)
Right Panel I/O	1 Nano SIM card slot
Power Supply	9V ~36V DC-in
Operating Temperature	-20°C ~ 70°C
Storage Temperature	-30°C ~ 85°C
Form Factor	22cm x 15cm (8.66" x 5.90")
Compliance	CE, FCC Class A

VIA SOM-6X50

Compact cost-effective solution for HMI applications with rapid time-to-market



Specifications

Model Name	SOM-6X50
Processor	800MHz VIA Cortex-A9 SoC
System Memory	512MB DDR3 SDRAM
Storage	8GB eMMC Flash Memory
Boot Loader	512KB SPI Flash ROM
Graphics	Mali-400 SP GPU 2 integrated, independent 3D/2D graphics processing units Graphics engine supporting OpenGL® ES 2.0 hardware acceleration Supports MPEG-2 and H.264 video decoding up to 1080p
LAN	Realtek RTL8201 10/100 base-TX PHY chip
Audio	Wolfson WM8960 I2S Audio Codec
HDMI	Integrated HDMI 1.4 Transmitter
USB to UART	CP2108-B02-GM USB to UART 4-port controller

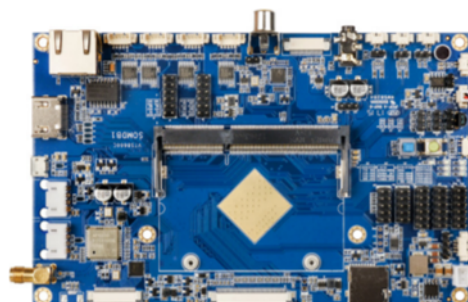
Supported I/O	1 HDMI or 1 Single-Channel LVDS 1 DVO 1 CSI 3 USB 2.0 ports 6 UART (5 TX/RX, RTS/CTS, 1 Debug TX/RX) 9 GPIO 1 10/100Mbps Ethernet port 3 I ² C 1 SDIO 1 SD Card slot 2 SPI 4 PWM 1 Line-in, Line-out, Mic-in 1 Headphone-out
Operating System	Linux Kernel 3.4.5
Operating Temperature	0°C ~ 60°C
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	6.76cm x 4.8cm (2.66" x 1.89")

VIA

SOM-6X50

Compact cost-effective
solution for HMI applications
with rapid time-to-market

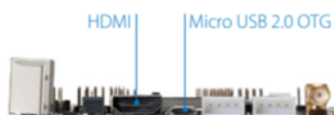
Carrier Board (SOMDB1)



Carrier Board Front Panel I/O



Carrier Board Right Panel I/O



Specifications

Model Name	SOMDB1
Onboard I/O	1 LCD panel connector 1 Touch connector 2 USB 2.0 connectors 4 COM connectors (RS-232) 2 UART pin headers 1 Debug connector & pin header 1 Camera connector 1 GPIO pin header (9 GPIO) 1 I ² C pin header (3 I ² C) 1 SPI pin header (2 SPI) 1 IR Receiver sensor & pin header 1 RCA pin header 2 Line-in pin headers 3 Line-out connectors & pin headers (for Mono, Right & Left channel speakers) 1 Mic-in connector 1 Audio mono out signal pin header 1 Headphone pin header 1 System recovery button 1 Watchdog timer switch 1 Power button 1 RTC battery connector 1 DC-in connector
Front Panel I/O	1 Composite RCA jack 1 10/100Mbps Ethernet port 1 Headphone jack
Back Panel I/O	1 Micro SD card slot
Right Panel I/O	1 HDMI port 1 Micro USB 2.0 OTG port
Power Supply	5V~19V DC-in
Operating Temperature	0°C ~ 60°C
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	16cm x 10cm (6.3" x 3.94")

VIA

SOM-6X80

Ultra-compact low-power solution for HMI applications with rapid time-to-market

DDR3 SDRAM

VIA Cortex-A9 dual-core SoC



Specifications

Model Name	SOM-6X80
Processor	1.0GHz VIA Cortex-A9 dual-core SoC
System Memory	2GB DDR3 SDRAM
Storage	8GB eMMC Flash Memory
Boot Loader	512KB SPI Flash ROM
Graphics	Mali-400 SP GPU 2 integrated, independent 3D/2D graphics processing units Graphics engine supporting OpenGL® ES 2.0 hardware acceleration Supports MPEG-2 and H.264 video decoding up to 1080p
LAN	ASIX AX88772CLF USB to LAN
Audio	Wolfson WM8960 I2S Audio Codec
HDMI	Integrated HDMI 1.4 Transmitter
USB	Genesys GL852GT USB hub 4-port controller
USB to UART	CP2108-B03-GM USB to UART 4-port controller

Supported I/O

1 HDMI
1 Single-channel LVDS
3 USB 2.0 ports
6 UART (4 TX/RX, RTS/CTS, 1 RS-485, 1 Debug TX/RX)
9 GPIO
1 10/100Mbps Ethernet port
3 I²C
1 Micro SD card slot
2 SPI
1 Line-in, Line-out, Mic-in
1 Headphone-out

Onboard I/O

Debug connector

Operating System

Yocto 2.1 (Linux Kernel 4.4.26)

Operating Temperature

0°C ~ 60°C

Operating Humidity

0% ~ 90% (non-condensing)

Form Factor

6.76cm x 6.3cm (2.66" x 2.48")

VIA

SOM-6X80

Ultra-compact low-power
solution for HMI applications
with rapid time-to-market

Carrier Board (SOMDB3)



Specifications

Model Name	SOMDB3
Onboard I/O	1 LCD panel connector 1 Touch connector 4 COM connectors (RS-232) 1 COM pin header (RS-485) 1 Debug connector 1 Camera connector 1 GPIO pin header (9 GPIO) 1 I ² C pin header (3 I ² C) 1 SPI pin header 2 Line-in pin headers 3 Line-out connectors (for Mono, Right & Left channel speakers) 1 Mic-in connector 1 Microphone 1 Audio mono out signal pin header 1 USB WLAN connector 1 System wake up button 1 Watchdog timer switch 1 Power button 1 RTC battery connector 1 DC-in connector 1 miniPCIe slot (with USB 2.0 signal only) 1 SIM card slot
Front Panel I/O	1 10/100Mbps Ethernet port 1 Headphone jack
Back Panel I/O	1 Micro SD card slot
Right Panel I/O	2 USB 2.0 ports 1 Micro USB 2.0 OTG port
Left Panel I/O	1 HDMI port
Power Supply	12V~24V DC-in
Operating Temperature	0°C ~ 60°C
Operating Humidity	0% ~ 90% (non-condensing)
Form Factor	3.5" carrier board (14.6cm x 10.2cm) (5.74" x 4.01")

Carrier Board Front Panel I/O



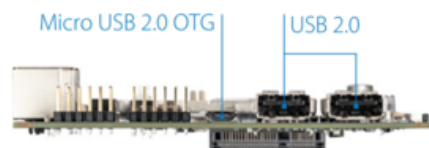
Carrier Board Back Panel I/O



Carrier Board Left Panel I/O



Carrier Board Right Panel I/O



VIA SOM-9X20

Ultra-compact solution for graphics-intensive edge computing applications

GPS/GNSS receiver

Wi-Fi + BT 4.1 module



Qualcomm APQ8096SG
Embedded Processor +
4GB POP LPDDR4 RAM

Specifications

Model Name	SOM-9X20
Processor	Qualcomm® APQ8096SG Embedded Processor - Two high-performance Kryo cores up to 2.342GHz - Two low power Kryo cores up to 1.593GHz
System Memory	4GB POP LPDDR4 RAM
Storage	64GB UFS 2.1 Flash Memory
Graphics	Qualcomm® Adreno™ 530 GPU 3D graphics accelerator with 64-bit addressing 624MHz Graphics engine supporting OpenGL ES 3.1/GEP, GL4.4, DX11.3/4, OpenCL 2.0, Renderscript-Next Supports H.264, VP8, HEVC 8/10-bit, VP9 video decoding up to: 4K@60fps, 1080p@240fps, 8 x 1080p@30fps
Trusted Platform Module	TPM1.2 : ST33TPM12I2C
Wireless Connectivity	NFA324A-12H32 QCA6174A-1 Wi-Fi 802.11a/b/g/n/ac + BT 4.1 combo LGA module with 2 antenna connectors Qualcomm WGR7640 GPS/GNSS RF receiver with antenna connector
HDMI	Integrated HDMI 2.0 Transmitter

Supported I/O through MXM 3.0 connector

1 HDMI port
2 MIPI DSI 4-Lane connectors
3 MIPI CSI 4-Lane connectors
1 USB 3.0 OTG
1 USB 2.0 host
1 SDIO
2 PCM/MI2S
Multi-function pins for UART, I²C, SPI, GPIO
1 JTAG
2 PCIe 2.0 (1-Lane)

Operating System Android 8.0, Linux kernel 3.18.44

Operating Temperature -20°C ~ 70°C

Operating Humidity 0% ~ 95% (non-condensing)

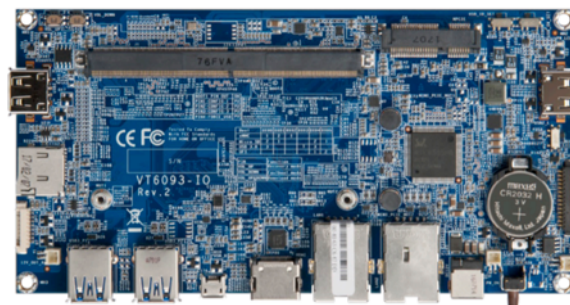
Form Factor 8.2cm x 4.5cm (3.23" x 1.77")

VIA

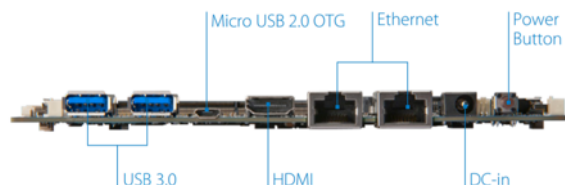
SOM-9X20

Ultra-compact solution for graphics-intensive edge computing applications

Carrier Board (SOMDB2)



Carrier Board Back Panel I/O



Specifications

Model Name	SOMDB2
Audio	Qualcomm WCD9335 Audio Codec
LAN	RealTek RTL8111G Ethernet Controller RealTek RTL8365MB LAN Hub
Onboard I/O	1 MIPI DSI LCD panel connector 1 MIPI CSI Interface for camera module 1 P-Cap Touch connector 2 USB 2.0 ports 1 USB 2.0 OTG switch (for Host mode/Device mode) 1 COM connector (TX/RX only for debugging) 1 GPIO connector (8 GPIO) 2 I²C connectors (for light & proximity sensor and NFC module) 1 Front panel connector 1 JTAG connector 1 Mic-in connector 2 2W speaker connectors 2 Audio module connectors (for VT6093 audio module) 2 Volume buttons 1 Boot switch 1 RTC battery connector 1 Micro SD card slot 1 miniPCle slot 1 MXM 3.0 slot
Back Panel I/O	1 HDMI port 2 USB 3.0 ports 1 Micro USB 2.0 OTG port (for debugging) 2 Gigabit Ethernet ports 1 Power button 1 12V DC-in jack
Operating Temperature	-20°C ~ 70°C
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	17cm x 8.6cm (6.69" x 3.89")
Compliance	RoHS

VIA

VTS-8589

Low power quad-core digital signage starter kit for OPS (Open Pluggable Specification) systems



Specifications

Model Name	VTS-8589-QP	VTS-8589
Processor	1.0GHz NXP i.MX 6QuadPlus Cortex-A9 quad-core SoC	1.0GHz NXP i.MX 6Quad Cortex-A9 quad-core SoC
System Memory	2GB DDR3 SDRAM	
Storage	8GB eMMC Flash memory	
Boot Loader	4MB SPI Flash ROM	
Graphics	Vivante GC2000+ GPU 3 integrated, independent 3D/2D and video graphics processing units Supports OpenGL® ES 3.0, OpenCL and OpenVG™ 1.1 hardware acceleration Supports VC1 and H.264 video decoding up to 1080p	
LAN	Micrel KSZ9031RNX Gigabit Ethernet transceiver with RGMII support	
Audio	NXP SGT5000 low power stereo codec	
HDMI	Integrated HDMI 1.4 Transmitter	
USB	SMSC USB2514 USB 2.0 high speed 4-port hub controller	
Wi-Fi	Realtek RTL 8189ETV SDIO onboard Wi-Fi module	

Onboard I/O	1 Boot Flash select pin header 1 JTAG pin header (for debugging) 1 RTC battery connector
Front Panel I/O	2 USB 2.0 ports 1 Gigabit Ethernet port 1 Micro SD Card slot 1 Reset button
Back Panel I/O	1 OPS Connector - includes signals for: 1 HDMI 2 USB 2.0 ports 1 UART (TTL 3V3) GPIO Audio Power (12~19V)
Power Supply	12~19V DC-in (included in OPS Connector)
Operating System	Linux Kernel 4.1.15 Linux Kernel 3.10.53
Operating Temperature	0°C ~ 45°C
Operating Humidity	0% ~ 90% (relative humidity; non-condensing)
Form Factor	12.1cm x 11.4cm (4.76" x 4.49")

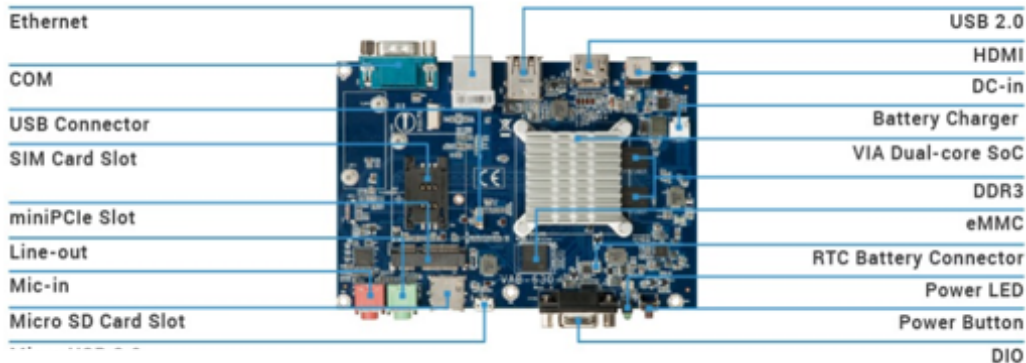
VIA

VAB-630

Cost effective single board computer with flexible I/O and rich connectivity

Specifications

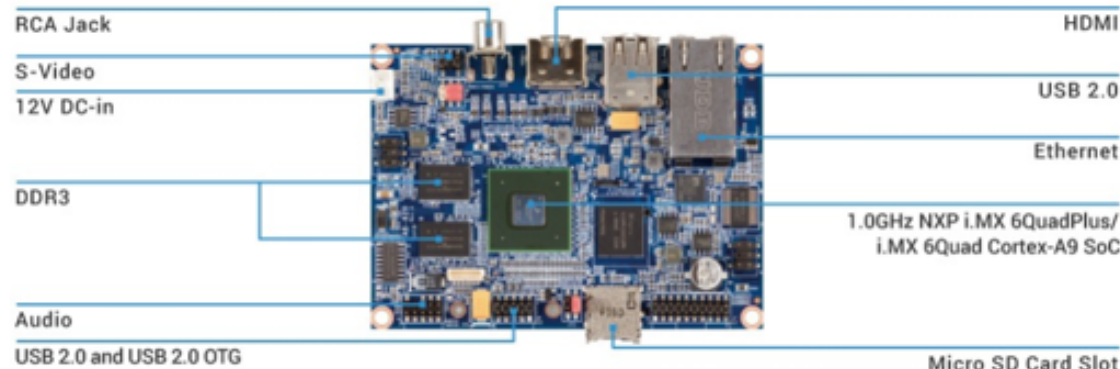
Model Name	VAB-630
Processor	1.0GHz VIA Cortex-A9 dual-core SoC
System Memory	1GB DDR3 SDRAM onboard
Storage	4GB eMMC flash memory
Boot Loader	512KB SPI Flash ROM
Graphics	Mali-400 SP GPU 2 integrated, independent 3D/2D graphics processing units Graphics engine supporting OpenGL* ES 2.0 hardware acceleration Supports MPEG-2 and H.264 video decoding up to 1080p
LAN	ASIC AX88772CLF
Audio	VIA VT1603A I2S Audio Codec
HDMI	Integrated HDMI 1.4 Transmitter
USB	ASIC USB2514B-AEZC USB 2.0 hi speed 4-port hub controller
Expansion I/O	1 miniPCIe slot
Onboard I/O	1 Single-channel LVDS connector 1 miscellaneous pin header for I ² C touch screen interface 1 USB connector 1 UART (console port connector) 1 RTC battery connector 1 Battery charger connector 1 Reset connector 1 SIM card slot (supports 3G module without built-in SIM card slot) 1 miniPCIe slot



Front Panel I/O	1 Micro USB 2.0 OTG port 1 DIO port supporting 10 GPIO with 3.3V power 1 Micro SD card slot 2 Audio jacks : Line-out and Mic-in 1 Power LED 1 Power Button
Back Panel I/O	1 HDMI port 2 USB 2.0 ports 1 COM port for RS-232 (TX/RX) 1 10/100Mbps Ethernet port 1 DC-in jack
Power Supply	12V DC-in (5V DC-in optional)
Operating System	Android 5.0, Linux Kernel 3.4.5
VIA Smart ETK	Watchdog timer, GPIO, UART
Operating Temperature	0°C ~ 60°C
Operating Humidity	0 ~ 90% @ 40°C (non-condensing)
Form Factor	14.6cm x 10.2cm (5.75" x 4.02")
Compliance	CE, FCC

VIA VAB-820

Ultra-reliable low-power edge computing platform with flexible I/O and wireless connectivity options.



Specifications

Model Name	VAB-820-QP	VAB-820
Processor	1.0GHz NXP i.MX 6QuadPlus Cortex-A9 quad-core SoC	1.0GHz NXP i.MX 6Quad Cortex-A9 quad-core SoC
System Memory	1GB DDR3 SDRAM onboard	
Storage	4GB eMMC Flash memory	
Boot Loader	4MB SPI Flash ROM	
Graphics	Vivante GC2000+ GPU 3 integrated, independent 3D/2D and video graphics processing units Supports OpenGL® ES 3.0, OpenCL and OpenVG™ 1.1 hardware acceleration Supports MPEG-2, VC-1 and H.264 video decoding up to 1080p Supports SD encoding	Vivante GC2000 GPU
LAN	Microrel KSZ9031RNX Gigabit Ethernet transceiver with RGMII support	
Audio	NXP SGT5000 low power stereo codec	
HDMI	Integrated HDMI 1.4 transmitter	
USB	SMSC USB2514 USB 2.0 high speed 4-port hub controller	
Expansion I/O	1 miniPCIe slot	

Onboard I/O	1 Dual-channel 18/24-bit LVDS panel connector 1 S-video input pin header 1 USB 2.0 host port, and 1 USB2.0 OTG port pin header 1 COM port connector with power supply (supports 8-wire DTE mode) 1 COM/CAN port connector with power supply (supports 1 RS-232 (TX/RX) and 2 FlexCAN TX/RX ports) 1 Miscellaneous pin header for 1 I²C pair, 1 Digital I/O (4 GPI + 4 GPO), system reset button and LEDs for power/WPAN/Wi-Fi/WWAN 1 MIPI CSI-2 connector (supports 2 data lanes) 1 SPI master pin header (supports 2 SPI slave devices) 1 Front audio pin header for Line-in, Line-out, Mic-in 1 Boot Flash select pin header (for SPI or Micro SD) 2 Power pin headers (support optional PD power board) 1 RTC battery connector 1 DC-in connector 1 miniPCIe slot (supports multiple connections and buses including JTAG)
Front Panel I/O	1 Micro SD card slot
Back Panel I/O	1 HDMI port 1 Composite RCA jack 2 USB 2.0 ports 1 Gigabit Ethernet port (supports optional IEEE 802.3at type 2)
Power Supply	12V DC-in
Operating System	Android 6.0, Linux kernel 4.1.15
VIA Smart ETK	Watchdog timer, CAN Bus, GPIO, UART
Operating Temperature	-20°C ~ 70°C (3G & Wi-Fi not included)
Operating Humidity	0% ~ 95% (non-condensing)
Form Factor	Pico-ITX (10cm x 7.2cm, 3.9" x 2.8")
Compliance	CE, FCC

VIA VAB-950

Fanless low-power platform
for AIoT applications with
octa-core MediaTek i500
processor



Specifications

Model Name	VAB-950-V2	VAB-950-V4
SOM-9X50 Module		
Processor	MediaTek i500 octa-core Processor - Four Cortex-A73 @ 2.0GHz - Four Cortex-A53 @ 2.0GHz	
System Memory	2GB LPDDR4 SDRAM	4GB LPDDR4 SDRAM
Storage	16GB eMMC Flash memory	
Graphics	ARM Mali-G72 high-performance GPU 3D graphics accelerator capable of processing 2400M pixel/sec @ 800MHz Graphics engine supporting OpenGL® ES 3.0, OpenCL ES 1.1, and Vulkan 1.0 hardware acceleration Supports H.265 and H.264 video decoding up to 1080p@30fps Supports Cadence Tensilica Vision P6 x2 DSP	
Supported I/O through IO connector	1 HDMI port 1 MIPI DSI connector 1 MIPI CSI-2 connector 1 Multi-function pins for I ² C, SPI, GPIO 1 JTAG	
Form Factor	7cm x 5.5cm (2.75" x 2.2")	
Wireless Connectivity	MediaTek MT7668 - 2x2 Dual-band Wi-Fi 802.11ac with MU-MIMO - Bluetooth 5.0	

Audio	MediaTek MT6358
HDMI	ITE IT66121FN Digital Parallel Interface to HDMI 1.3a transmitter
USB	TI TS3USB21 High-speed USB 2.0 (480Mbps) 1:2 Multiplexer/Demultiplexer Switch With Single Enable Microchip LAN9514 USB 2.0 to USB hub and 10/100Mbps Ethernet controller
LAN	ASIX AX88772 USB 2.0 to Fast Ethernet controller
Onboard I/O	1 COM port (supports RS-232 TX/RX) 1 Debug port (supports RS-232 TX/RX) 1 JTAG connector 1 MIPI DSI connector 1 MIPI CSI-2 connector 1 Touch screen connector (includes I ² C for capacitive touch) 1 SIM card slot 1 MiniPCIe slot (supports USB 2.0 connectivity for optional 4G module) 4 Keypad buttons 1 Mono speaker-out connector 1 Miscellaneous pin header (for 1 I ² C pair, 1 SPI and 12 GPIOs) 1 Battery charger connector (supports I ² C and Gas gauge) 3 IPEX connectors (for RF antennas for Wi-Fi and Bluetooth) 2 USB host/device jumpers 1 12V DC-in connector
Front Panel I/O	1 Power button with LED 1 Reset button

Documentación y Descargas

VAB-630 Documentation

DOCUMENT	VERSION	DATE
User Manual	v1.03	2017-12-31
Android		
Android Development Guide for BSP v1.0.3	v1.00	2017-08-11
Android Quick Guide for EVK v1.0.3	v1.00	2017-08-11
Smart ETK Programming Guide	v1.00	2017-08-14
Linux		
Linux Development Guide for BSP v1.0.1	v1.00	2017-09-18
Linux Quick Start Guide for BSP v1.0.1	v1.00	2017-09-18

VAB-630 Software Downloads

SOFTWARE	VERSION	DATE
Android		
Android 5.0 Board Support Package (BSP) (6GB)	v1.0.3	2017-08-14
Android 5.0 Evaluation Kit (EVK) (302.9MB)	v1.0.3	2017-08-14
Linux		
Linux Board Support Package (BSP) (775.1MB)	v1.0.1	2017-09-18
Linux Evaluation Kit (EVK) (552.8MB)	v1.0.1	2017-09-18

Documentación y Descargas

This Development Guide explains how to setup the necessary build environment in order for users to customize the Linux kernel and create their own system image for VAB-630.

The VAB-630 Linux BSP v1.0.1 is developed based on the debian-8.6.0-lxde-player (Debian 8.6) and it enables hardware features that are defined on the VAB-630 board.

1.1. BSP Package Contents

There are four folders in the package as listed below.

Source code folder	Description
VAB-630_Linux_source_code.zip	Kernel source code and U-Boot source code
Firmware folder	Description
VAB-630_Linux_EVK_v1.0.1.zip	Debian EVK system image and installation script files
Document folder	Description
VAB-630_Linux_BSP_v1.0.1_Development_Guide_v1.00_20170918.pdf	Development guide
VAB-630_Linux_EVK_v1.0.1_Quick_Start_Guide_v1.00_20170918.pdf	Quick start guide
Tools folder	Description
arm_201103_gcc4.5.2.tgz	Toolchain

3.3. Building the Linux Kernel

This section describes how to build the kernel binary from the source code.

To begin, extract the kernel source code.

```
$ tar -xvzf Kernel_3.4.5.tar.gz
```

To use the default configuration and compile the kernel type the following command:

```
$ cd /Kernel_3.4.5
$ make vab630_linux_defconfig
$ make clean
$ make -j8 ubin
```

When the compilation process is completed, the **uzImage.bin** file will be stored in the Kernel_3.4.5 directory.



Axiomtek ARM Solutions



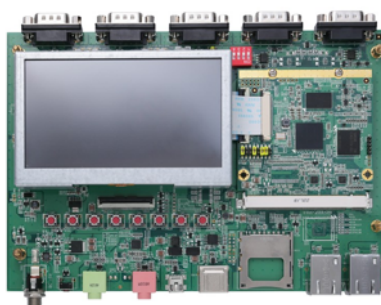
Fundada en 1990, Axiomtek es una empresa líder en diseño y fabricación de ordenadores industriales y sistemas embebidos. Desde sus inicios, Axiomtek ha conseguido reconocimiento mundial por sus diseños innovadores y una excelente satisfacción del cliente.

Como fabricante líder industrial, Axiomtek se dedica a la producción de soluciones de última generación que apoyan a los usuarios en el logro de sus objetivos.

Sus líneas de producto incluyen la placas embebidas, sistemas en módulos, ordenadores en placas, sistemas embebidos, gateways, paneles PCs táctiles, soluciones médicas, industriales y para señalización digital.

Q7M100

Qseven v1.2 SoM with i.MX287 454
MHz (Industrial) SoC, 128MB Memory,
4GB eMMC, Gigabit Ethernet, Audio
and CAN System



I/O

CPU	Freescall iMX-28 Series SoC with 287 ARM926EJ-S CPU running @ 454MHz
System Memory	Onboard DDR2-667, up to 128MB
OS	Linux kernel 2.6.35 compliant
SSD	eMMC flash 4GB SDHC interface
RTC	Battery on the Carrier is required
Power Requirement	+5V ± 5% @ 800mA
Size	70 x 70 mm
Board Thickness	1.2 mm ± 0.1mm
Operating Temperature	-40°C ~ 85°C
Operation Humidity	10% ~ 95%, non-condensing

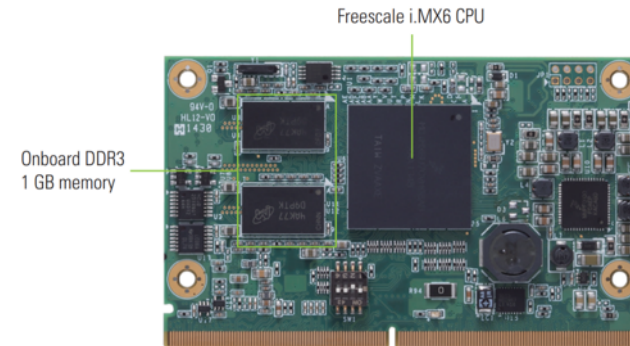
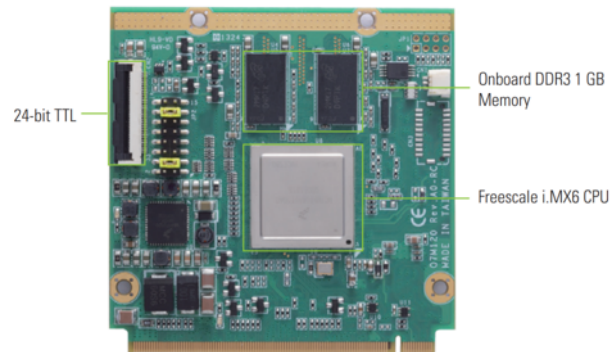
Graphics	LCD supported, up to 24-bit TTL RGB modes and 24-bit system mode
Ethernet	2 x 10/100 Mbps Ethernet
Audio	Mic-in/Line-out on carrier board
COM	4 x COM ports 3 x TX/RX/RTS/CTS (2 RS232 and 1 RS-422/485), 1 x TX/RX 3.3V TTL
USB	1 x OTG client 1 x host
I ² C	2 x I ² C Interface
GPIO	8 interfaces, up to 400 kbps
SPI	Yes
CAN	2 ports

Q7M120/SCM120

Qseven v2.0/SMARC v1.0 SoM with
iMX6 Quad/DualLite 800 MHz
(Industrial) SoC, 1GB RAM,
4GB eMMC, ChF I AN Audio and CAN

Core System

Processor	Freescall i.MX6 Series SoC with Quad/DualLite/Solo ARM Cortex™-A9 CPU 800 MHz/1 GHz (only Solo)
System Memory	Onboard DDR3-1600, up to 1GB
OS	Linux kernel 3.0.35, Android 4.3
Storage	eMMC flash 4GB, SDIO interface SATA interface (Quad cores CPU)
RTC	Battery on the Baseboard is required
Power Requirement	+5V, 1A
Dimensions	70 x 70 mm
Board Thickness	1.2 mm ± 0.1mm
Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Operation Humidity	10% - 95%, non-condensing



I/O

Graphics	1 x 24-bit TTL signal 2 x Signal channel 24-bit LVDS 1 x HDMI 1080P
Ethernet	1 x 10/100/1000 Mbps Ethernet
Audio	Mic-in/Headphone
COM	4 x COM with TX/RX/RTS/CTS (one with 3.3V TTL level) 1 x Console port
USB	1 x USB 2.0 1 x OTG client
I²C	3 x I²C Interface
SPI	1 x SPI
CAN	2 ports as 2.0B protocol-compatible Controller Area Network (CAN) interfaces
GPIO	8 button-detect
PCIe	1 x PCIe x1



Muchas gracias