

Hitex Technology Spotlights

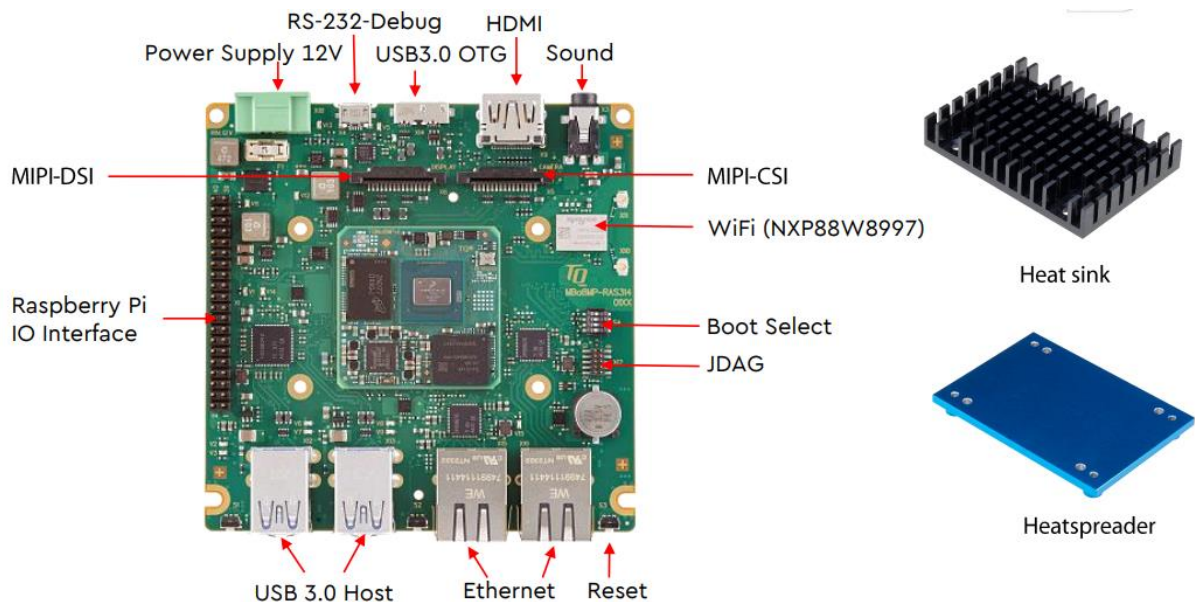
When a Raspberry Pi is not enough, Part II

When a Raspberry Pi is not enough Part 2

By Paul Roberts

Introduction

An update to the “When a Raspberry Pi is not enough” in Part 2 we answer some of the questions raised by Part 1 and delve a little deeper into the concept behind the MBa8MP-RAS314 Motherboard alternative to the Raspberry Pi.



Some of the questions to be raised by part 1 :-

Question : Is the GPIO Pinout compatible with the Raspberry Pi 4 header ?

Answer : Yes this is designed to accept the standard plug in shields that you might already have in your collection. In this way the transfer across should be painless. You will need to check if the shield functionality is support in the Armbian operating system however.

Question : You mention an extra ethernet as on of the advantages of this board over the raspberry Pi 4. What are the other advantages ?

Answer : I have highlighted the advantages in the table below :-

	MBa8MP-RAS314	Raspberry Pi 4B
Processor	i.MX 8M Plus, Quad Cortex A53 @1,7GHz, Cortex M7 @400MHz	BCM 2711, Quad Cortex A72 @1,5 GHz
RAM	Up to 8GB LPDDR4 SDRAM	Up to 8GB DDR4 SDRAM
FLASH	Up to 256GB eMMC, (16GB Default), Up to 256MB SPI NOR , µSD Card	µSD Card
GPU / NPU	GC7000UL, GC520L, NPU 2,3TOPS	Broadcom VideoCore VI @500 MHz
Ethernet	2x Gigabit Ethernet (1x TSN)	1x Gigabit Ethernet
USB	4x USB 3.0, 1x USB 3.0 Device (Serial Downloader)	2x USB 2.0, 2x USB 3.0
Expansion/GPIO	40-Pin Pi HAT Compatible	40-Pin Pi HAT Compatible
Display	1x HDMI Interface	2x HDMI Interface
LCD Panel	MIPI-DSI, LVDS + CMD (Backlight + USB 2.0)	MIPI-DSI
Camera	MIPI-CSI	MIPI-CSI
Wi-Fi	Wi-Fi 0802.11 b/g/n/ac	Wi-Fi 0802.11 b/g/n/ac
Bluetooth	BT 5.2	BT 5.0
Audio	3.5mm analogue audio jack (Micro, Headphone)	3.5mm analogue audio-video jack
Other	3 User Buttons, 3 User LEDs, Goldcap, JTAG, Bootmode switch	
Power Input	12V (MC1,5/2-GF-3,5-LR)	USB Type C 5V
Security	eFuse, Secure RAM/RTC, RNG, RDC, SJC, Arm® TrustZone®, HAB,	
Supported OS	Armbian, Debian, Yocto, on request Android 12, Win-IOT 10	Rasperry Pi OS
Size	100 mm x 100 mm x 17 mm	85 mm x 56 mm x 17 mm

Question : You mention Armbian Linux BSP but what if I want to use Yocto later on ?

Answer : TQ also offer a full Yocto BSP for this platform. The reason it is not mentioned in the article is because this product is designed to help customers already using a Raspberry Pi transfer as quickly as possible to the industrial module. I will cover this a bit more below. Yocto already support the Raspberry Pi so if you are already familiar with Yocto you could start straight away with it.

Question : Raspberry Pi has a lot of users and support out on the Web where would I get similar support for this product ?

Answer : We agree and this product can still use that same support , this is partly the reason the product was designed to be compatible. In addition you can rely on TQ support and additional information can be found here

[en:arm:tgma8mpxl:mba8mp-ras314 | TQ Support Wiki \(tq-group.com\)](https://wiki.tq-group.com/en:arm:tgma8mpxl:mba8mp-ras314)

Another question I often get asked is what is the cost. This will depend on the quantities and leads me onto the subject of the concept behind this motherboard design.

TQ and indeed Hitex have been suppliers of modules for a good number of years, way before the Raspberry Pi was introduced. The concept behind these modules is that you take one standard starter kit motherboard (a more expensive item because it supports all the interfaces on the module) and design your product motherboard to optimise it. In doing so know that you will have control of it and the long term availability of it and the module.

So the Raspberry Pi came from the opposite direction and was introduced as a SBC at a very low cost to allow the masses to access it. It was never really designed to be used in the industrial world. However, since then they have introduced the Raspberry Pi compute module. So the real world comparison should be between the TQMa8mpxl module and the Raspberry Pi compute module, there the cost differential is less, and the cost of your motherboard could well be less for the TQ design as you might not have to implement features already included on the module itself.

In Summary

Whilst you could purchase the MBa8MP-RAS314 and just use this directly in you product as a replacement or to implement extra features, the true benefits may be for designers that were moving from a Raspberry Pi 4 to the Raspberry Pi compute module to take a step back and think is there an alternative. After all they have already been sold the merits of this approach by the Raspberry Pi Foundation.

Read more about the MBa8MP-RAS314 Motherboard and download the full whitepaper here

<https://www.tq-group.com/en/products/tq-embedded/arm-architecture/mba8mp-ras314/>

For the TQMa8MPxLmodule visit here

<https://www.tq-group.com/en/products/tq-embedded/arm-architecture/tqma8mpxl/>

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