

TRITON-320 miniature modular computer based on Marvell PXA270

TRITON-320 is a self-contained production-quality module, based on Marvell's new powerful, ultra-low-power PXA320 microcontroller. TRITON-320 is a complete solution, with full software support, and ready to be designed into an embedded system.

For development you simply plug the TRITON-320 into its StarterKit-4 development baseboard, and then in production the StarterKit is replaced by your own custom breakout base, which may be designed and manufactured by us on your behalf.

Because the TRITON system includes a production quality Board Support Package (BSP) and production quality module, project times are cut dramatically.

The system is supplied running either Linux 2.6, or Windows Embedded CE 6.0.

TRITON-320 includes an 806MHz Marvell PXA320 processor, 64MB



TRITON-320 Actual Size

ultra-low power 1.8v 260MHz DDR mobile SDRAM and 128MB NAND Flash.

The PXA320's integrated LCD controller permits direct connection of an LCD screen, and the MultiMedia Card interface permits simple integration and extension into a target system. Glueless connection to a DM9000 Ethernet controller is implemented in the StarterKit-4.

TRITON-320 also features a 3.3V, 16-bit multiplexed external memory interface, a high-efficiency programmable PMIC power supply which is integrated with the PXA320's Wireless SpeedStep power management, and the availability of the processor's I/O via a standard DIMM200 socket. The overall size of TRITON-320 is 67.6mm x 26mm x 4.2mm.

The module operates from a single 3.0 to 5.5v supply, and ships with Uboot firmware installed, and with full Linux 2.6, or Windows Embedded CE 6.0 BSP when supplied with the StarterKit-4

development system.

Why PXA320?

The Marvell PXA320 combines ultra-low-power operation with outstanding multimedia performance.

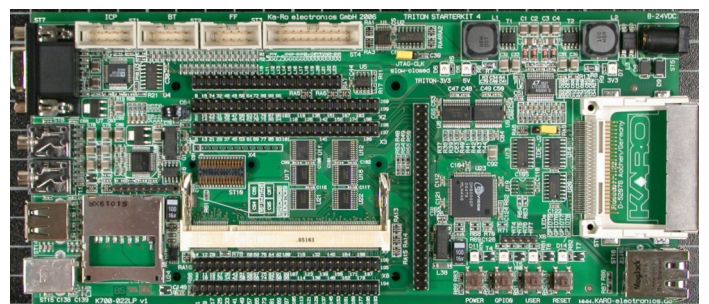
PXA320 provides an extended instruction set which includes Wireless MMX-2 instructions for enhanced image processing and graphics capability.

PXA320 is capable of being dynamically configured to run at reduced supply voltage and reduced clock rate, and the TRITON-320 and associated BSPs support this facility. Compared with the PXA270, enhancements include direct support of NAND Flash, an enhanced DDR SDRAM controller, additional low-power modes, improved LCD controller and graphics engine, higher resolution camera interface, and an additional Multimedia Card interface. PXA320 is an ideal target for use with Windows Embedded CE and embedded Linux for high performance applications.

StarterKit-4 Development System

For development purposes, the TRITON-320 plugs into the StarterKit-4 baseboard via its DIMM200 connector. This combination, with optional touch-screen display is supplied as a complete development kit running Linux or Windows CE 6.0. The Linux BSP ships with a complete GCC toolchain, allowing users to modify the BSP as required. Windows CE source code is also available.

The StarterKit-4 includes connectors for the I/O facilities offered by the PXA320 processor and TRITON-320, including a CompactFlash type II socket, SD/MMC card socket, 3 x RS232 connectors, USB-



StarterKit-4 Baseboard (100mm x 220mm)

device and USB-Host connectors, and a D-SUB15 VGA connector for the video DAC. In addition, there is a DM9000 10/100 BaseT Ethernet, a UCB1400 audio codec and touchscreen controller with two 3.5mm audio connectors.

The on-board power supply has an 6 - 24V input range and both 3.3v and 5v are available on-board.

To facilitate creation of a production baseboard, full schematics are provided for the StarterKit-4. We offer a custom baseboard design and production service for customers with tight time-to-market constraints who wish to focus their efforts on application development.

There is also a JTAG interface, which can be used for the connection of a debug probe, such as the Sophia EJ-Debug emulator which works with both Platform Builder and GDB.

StarterKit-4 TFT LCD Touch-Screen

The optional Xenarc 700TSV features a 7" TFT LCD monitor and touch-screen, with physical resolution of 800 x 480. The screen interfaces to TRITON-320 via a video output, and the touch facility via a USB port on the StarterKit-4.

This provides a useful starting point for out-of-the-box operation, but an LCD touch-screen suitable for the application can easily be connected directly to the PXA320 display controller via supplied headers, and is easily integrated by setting parameters in the generic display driver supplied with both BSPs.

TRITON-320 Feature and Option Summary

The PXA320 includes a long list of standard peripherals which are accessible via the module. Some additional functionality is provided by the StarterKit-4 baseboard, and most interfaces are brought to either a connector or header on the baseboard.

The complete list of connectors on StarterKit-4 is:

- DIMM200 TRITON socket
- CompactFlash Type II socket, true-IDE or CF mode
- SD/MMC card socket
- 3xRS232 on headers
- USB device
- USB host
- Video Output to D-SUB 15
- 2x3.5mm stereo line-in/out
- JTAG
- 10 Mbit/100Mbit Ethernet
- 3xRS232 on flat headers
- all TRITON pins on headers
- operating voltage 6 - 24v

TRITON Starter-Kit systems, whether running Linux or Windows CE are sold and supported worldwide by PXA specialist Direct Insight, who also offer a broad range of complementary solutions including compilers, debuggers, JTAG interfaces, graphics software, driver development tools, device programming solutions, JTAG test systems, in-circuit emulators and more.

We also offer a custom baseboard design and manufacture service.

Visit our regularly updated website at www.directinsight.co.uk or call +44 1295 768800 for further information.

<i>TRITON-320 Feature:</i>	processor	module	baseboard
UART / RS232	3		
I2C Interface	1		
LCD controller	2		
AC'97	1		
I2S	2		
SSP (synchronous serial port)	4		
IrDA (InfraRed)	1		
Bluetooth UART	1		
SD card / SDIO (4-bit)	2		
MMC / CompactFlash (incl. IDE mode)	2		
USB Host	1		
USB Device	1		
SPI	2		
PWM controller	4		
JTAG	1		
UCB1400 Audio Codec			✓
Touch screen interface			✓
Keypad Controller	1		✓
Connectors (see list)			✓
Video DAC / VGA out			✓
Power Management IC		✓	
Multiplexed 16bit ext. memory i/f		✓	
Ethernet 10/100 BaseT			✓
Mobile SDRAM(MB)		64	
NAND Flash (MB)		128	
Processor clock max (MHz)	806		
Temperature Range		-25 to +85C	
Real Time Clock		✓	
PDF schematics			✓
<i>* other PXA320 interfaces such as QCI, MSL, USIM etc. via headers. Please check website for detailed BSP support</i>			



Direct Insight Ltd, The Hayloft, Greatworth Hall,
Greatworth, Banbury, OX17 2DH, United Kingdom
Phone: +44 1295 768800 info@directinsight.co.uk