

Blue Penguin

Keystone Electronic Solution's flagship product, the Blue Penguin, is a CPU module that allows users to create computers and open-source platforms to fit their own specifications. Blue Penguin gives users complete control over how they develop and create solutions in a cost-effective and customisable environment.

Relying on Keystone's version of Linux, dubbed Guinux, the Blue Penguin's operating system closely follows desktop and server Linux distributions in order to create a familiar and predictable development experience.



Guinux provides access to over 13,000 packaged applications and libraries, available for installation from the Guinux web repository.

Key Features

Blue Penguin's onboard support for scripting languages such as lua, PHP and Python allows for immediate onboard application development and deployment without the use of cross compilers.

The Guinux cross compile tool chain and development libraries are available for customers from the Guinux site.

Linux Device Tree support enables the quick and easy deployment of the Blue Penguin module on any custom hardware. This allows Keystone to provide services such as the development of bespoke Blue Penguin mother board PCBs,

Blue Penguin's specifications:

- SAMA5D36 ARM Cortex-A5 processor running at 532MHz
- 32-bit RAM access with either 256 or 512 Mbytes of DDR2 RAM
- Micro SD-card holder with supporting up to 32Gbytes
- JTAG connector
- Two SPI flashes for the main Guinux (Linux) operating system
- Low power consumption and only requires 3.3V at typical 300mA to operate
- The board fits into a 200 pin SODIMM connector

customisation of the Linux kernel and drivers for specialised hardware, as well as Linux application development and integration.

The Blue Penguin module combines ease of use with functionality. The module only requires a 3.3 volts power source to function. At 68x48mm, it is smaller than a credit card.

The module plugs into a standard 200-pin SODIMM connector on the customer's application board. The SODIMM connector holds the module firmly in place for most applications. The module also has one mounting hole if more rigidity is required.

- The end user has access through the SODIMM connector to the following peripherals:
 - Two MAC/Ethernet interfaces at 10/100Mbps each
 - Four USARTS ports
 - 2 UARTS ports
 - Debug UART
 - 8-bit High speed multimedia card interface
 - Two synchronous serial controllers

- 1 SPI interface
- Three twin-wire interfaces
- One CAN interface
- One Soft modem
- Two USB hosts and one USB device

- 24-bit LCD with resistive touch interface and an image sensor interface
- Image sensor interface
- 10 ADC channels
- GPIOs

Software

The Blue Penguin supports and is pre-programmed with Guinnux (Linux). Current protocols and software in the Guinnux distribution are listed below but not limited to.

- Linux kernel version 3.10.16 – Device tree Enabled
- IPTables based NAT gateway and firewall
- Pacman Package Manager
- SSH remote login support

- SSL
- HTTP with CGI support
- FTP
- DHCP
- DNS
- Lua scripting interface
- Python scripting interface
- Mono .NET framework
- Standard GNU/glibc development runtime environment

Development resources

Low cost, fast prototyping development board for the Blue Penguin is available as the Blue Penguin Mother Board. The board exposes all the I/O interfaces of the Blue Penguin CPU module to three 40-pin headers. The board also contain a fully functional Ethernet, USB host and device and a debug serial port for a COM port on a PC. The Mother Board requires a 5V power supply to function.

About Keystone Electronic Solutions

Keystone Electronic Solutions is an electronics research and design company offering our clients the opportunity to outsource their research and development as well as production to a highly skilled team of electronic engineers.

We have both the intellectual capital and the infrastructure to create new and innovative ways of designing and manufacturing electronic products, making use of the best available technology and maximising efficiencies to substantially reduce manufacturing and implementation costs.

Our expertise includes both electronics and IT hardware and software, enabling us to develop the total solution for your product creation, as well as integrating the resulting product into any existing manufacturing or IT environment.

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