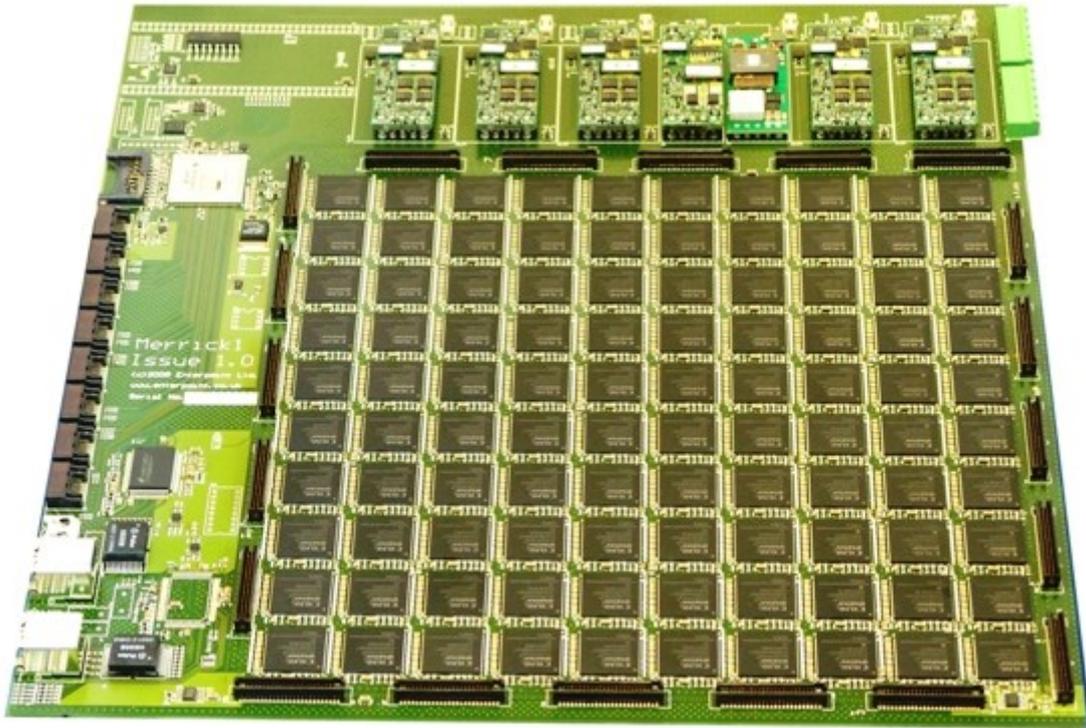


Merrick 1



Merrick1 is an innovative advanced High Performance Computing (HPC) Platform that is also useful for ASIC Prototyping and Emulation. Merrick1 offers a market beating cost effective solution in all of these applications. Enterpoint offer a wide range of supporting products and service options for this product. We can also offer a full customisation of any part of this product.

FPGAs

10 x 10 array of Xilinx™ Spartan™-3A DSP XC3SD3400A-4CSG484C. Commercial -5 and industrial -4 grade also available at extra cost. We can also fit XC3SD1800A as an alternative allowing use of free Webpack™ ISE™ software with this board.

Controller FPGA – Xilinx™ Virtex™-5 XC5VLX30T.

Array Connections

Each array FPGA has 40 wired connections on each side to it's adjacent FPGA or I/O connector. These are wired as differential pairs but may be used single ended. I/O voltage is fixed at 2.5V. Using a standard configuration of 20 wires in each direction, LVDS as I/O standard, you can implement a connection scheme of 1 forward clock + 1 alignment strobe + 8 data lines giving 500+ Mbyte/s between adjacent FPGAs in each direction.

Column routing is also implemented. Fourteen shared wires connect a column of ten devices to the Controller FPGA. The intention of these is as clocks but may be used in any fashion desired. These wires are configured as 7 differential pairs but may be used single ended.

Termination to 1.25V is implemented on each wire at the bottom of the column. The Controller FPGA can also implement termination as part of its configuration.

Row routing is currently not implemented but will be added in later revisions. Column routes via the Controller FPGA can be used for patching between FPGAs not adjacent, or “close”, in the array.

Array Power

The array is separated into 5 sections each with 50-100A capability on the 1.2V core voltage. These can be individually turned on and off as needed. Array JTAG chains are split to correspond to this arrangement and partial array operation is possible.

General I/O

1600 user I/O available on array. 3.3V power is available on external world connectors allowing external interface modules for unusual I/O standards. Each I/O connector supports 20 pairs of LVDS or 40 single ended. Multiple connectors/FPGA interfaces can be used for bigger interfaces.

High Speed I/O

8 sets of TX/RX connected through SATA style connectors. Half channels have TX/RX reversed configuration to allow board stacking connections with cheap and available SATA cables.

Ethernet

Two 10/100/1000 base-T interfaces available. MAC hard IP cores within controller FPGA.

USB

Simple FT232R based USB interface. Use as a serial port or a more advanced interface.

Flash Memory

128Mbit SPI Flash. Configures Controller FPGA and can also be used for MicroBlaze™ code storage.

MMC Interface

MMC card slot.

Oscillators

25Mhz simple oscillator. User 8 pin 3.3V dil clock socket.

Clock Generator1

Cypress CY22394 clock generator. Provides 3 clocks to Controller FPGA.

Clock Generator2

ICS844071 For high speed serial interfaces. Has 8 pin, 3.3V oscillator socket allowing user choice of base frequencies by plugging in suitable oscillator.

LEDs

100+ LEDs available. There is one LED per array FPGA and an indicator bank for general use.

Input Power Supply

Nominal single 48V input only needed. Other voltages possible contact us for possibilities. Board ground can be

JTAG

Separate Controller FPGA and Array FPGA JTAG 2×7 2mm headers. The Array has capability to be configured remotely via Ethernet or High speed Interfaces via the controller FPGA.

Fan Connectors

Four 3 pin fan connectors with rpm monitoring capability. Standard output voltage is supply is input but capability to fit a regulator for other voltages.

Dil Header

Expansion capability with our standard modules.

Battery Holder

Allowing the use of an encrypted bitstream for the Controller FPGA. Facilitates IP locking to an individual board and user control etc..

Size

Merrick1 is built in a standard 9U height for rack mounting.

Thermal

Merrick1 can run simple tasks with passive cooling but will require active cooling by fans and heatsinks etc. to maximise performance. We have a range of cooling support options for this board and contact us for more information.

Typical Applications

ASIC Prototyping

Biometric Modelling and Analysis

Data Mining, Analysis and Extraction.

Financial Modelling and Analysis

Image Processing

Weather System Modelling and Analysis

Custom Solutions

The modular nature of Merrick1 allows us to derive customer specific variants by removing part of the array and replacing with custom electronics. It is possible to implement these changes and build a prototype in a timescale as low as 4 weeks although 8-12 is our typical quote for a board of this complexity. NRE charges do apply for this service. Contact us for more details of what we can do for you.

General Leadtimes

Merrick1 is usually a build to order board. Our typical quoted leadtime will be 4-8 weeks but as low as 1 week or better is possible on the standard product.

Algorithm Development

Our team of skilled engineers can convert your algorithm into a FPGA design for use on Merrick. Please ask for a quote if this of interest.

Board Rentals

A standard Merrick1 can be rented at GBP £2000, USD \$3000, per month subject to minimum rental period and deposit. Additional costs for shipping, insurance and taxes may also apply.

Data Centre/Server Rental

We are now running our initial test system. This system will be expanded over the next to increase capacity. Should this be of interest please contact our sales team.

Backup Support

We can offer a guaranteed product replacement plan to purchasers of Merrick1. For a fixed monthly fee you get a time guaranteed replacement board if your board should fail in service. Please contact us for more details of this service.