

HiFive™ Unmatched

RISC-V Powered Development PC

The HiFive Unmatched from **SiFive®** ushers in a new era of RISC-V Linux development platform in a PC form factor. Powered by the SiFive Freedom U740 RISC-V SoC and targeted for creating RISC-V applications, the platform features 8 GB of 64-bit DDR4 memory operating at 2400 MT/s and high-speed interconnects with PCIe Gen 3 x8 operating at 7.8 GB/s, Gigabit Ethernet, and USB 3.2 Gen 1. Software development is supported with Freedom U-SDK from SiFive, which provides a fast and convenient software environment to quickly build and modify a custom Linux distribution for this RISC-V PC.

SiFive Freedom U740

The SiFive Freedom U740 features a high performance 64-bit dual-issue, superscalar RISC-V U7 core complex configured with four U74 cores and one S7 core, an integrated high speed DDR4 memory controller, root complex PCI Express Gen 3 x8 and standard peripherals.

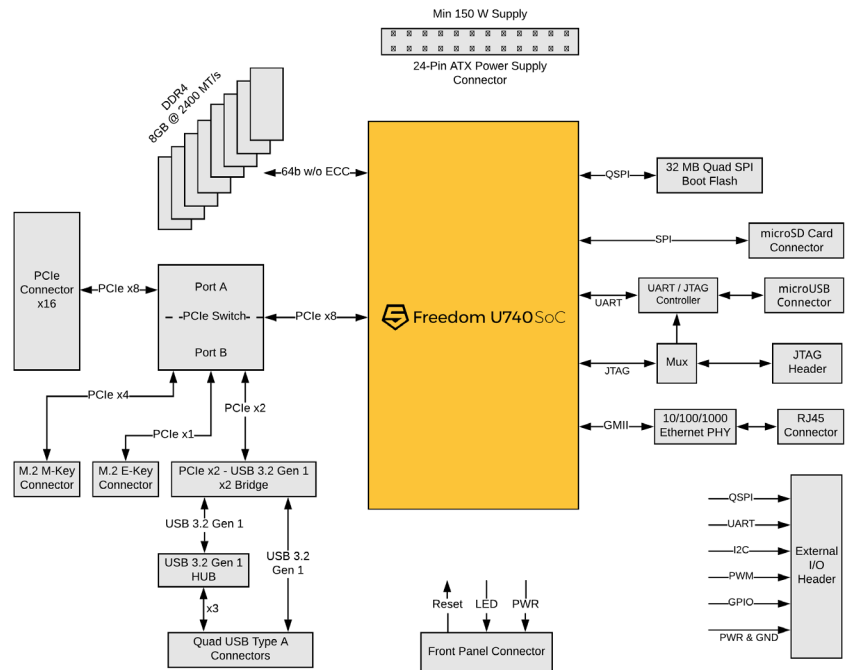
PCI Express and USB3

The HiFive Unmatched can be further enhanced with additional extension cards such as 3D graphics with the on-board x16 PCI Express card connector. Interconnect between the expansion cards and Freedom U740 is achieved using the on-chip PCI Express Gen3 x8 interface.

Additionally, HiFive Unmatched offers four USB 3.2 Gen 1 ports for peripheral connectivity.

Network and Connectivity

The HiFive Unmatched supports both wired and wireless connectivity. A 10/100/1000 Ethernet port provides fast dedicated wired connection to the network. Optionally, wireless connectivity to the home or enterprise network can be achieved using a Wi-Fi / Bluetooth M.2 module plugged into the on-board M.2 Key E connector.



Blazing Fast Boot and Extensible Storage

The on-board 32 MB Quad SPI NOR Flash enables fast boot.

Storage can be further expanded with the microSD card slot and the ultra-fast M.2 SSD module with 3.9 GB/s data throughput on 4 lanes of PCI Express Gen3.

Freedom U-SDK

The Freedom U-SDK allows you to create a custom Linux distribution and is based on the collaborative open-source Yocto Project. The layer model makes it easy to add or remove system components from the reference configuration to customize and build your own Linux based system.

The HiFive Unmatched ships with a microSD card that boots the prebuilt Freedom U-SDK image to a serial console and if a compatible video card is present, it will boot to a desktop environment.

HiFive Unmatched



Specifications & Features

CPUs

- Dual-issue in-order 64-bit execution pipeline
- Quad-core 64-bit SiFive U74
 - RV64GC (RV64IMAFDC)
 - 32KB I-Cache / 32KB D-Cache per core
- Embedded 64-bit SiFive S7 Core
 - RV64IMAC
 - 16KB I-Cache / 8KB DTIM
- 2 MB Coherent Banked L2-Cache

Memory and Storage

- On-board 8 GB DDR4 memory
- On-board 32 MB QSPI NOR Flash
- 1x microSD card
- 1x M.2 Key M connector for SSD module (sold separately)
 - 1x PCI Express Gen 3 x4

Network

- 1x 10/100/1000 Ethernet
- 1x M.2 Key E connector for Wi-Fi / Bluetooth module (sold separately)
 - 1x PCI Express Gen3 x1
 - 1x USB 2.0

Form Factor

- Mini-ITX 170 mm x 170 mm (6.7 in x 6.7 in)

I/O

- 1x PCI Express Gen3 x8 via a PCIe x16 slot
- 4x USB 3.2 Gen1 Type A Connectors
- 2x microUSB Type B Connectors
- 1x JTAG Header
- 1x 24-pin Peripheral I/O Header
 - 4x GPIO, 2x I2C, 2x QSPI, 2x UART, 1x PWM
- Mini-ITX case compliant Front Panel Connector
- Battery backed Real Time Clock

Software

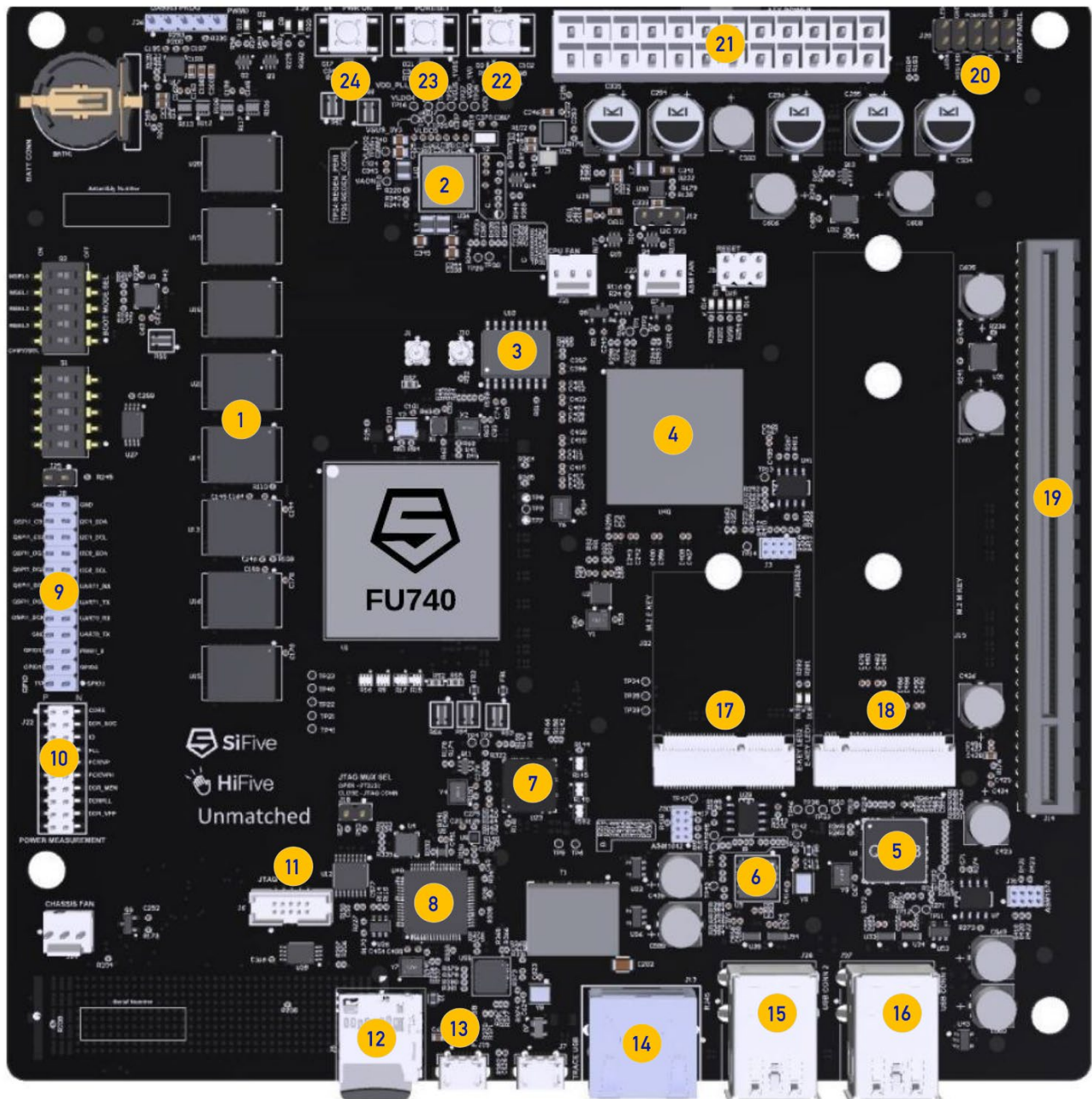
- Freedom U-SDK which includes
 - OpenSBI / U-Boot / Linux Kernel
 - Popular system developer packages
 - GCC and LLVM toolchains
 - Performance tools and utilities
- Bare metal support with Freedom E-SDK

Power

- 150W ATX Power Supply (sold separately)

Availability Q4 2020

- Pre-order: sales@sifive.com



1	DDR4 SDRAM	7	Ethernet PHY	13	microUSB – UART Console	19	x16 PCIe Connector
2	PMIC	8	UART – USB Controller	14	RJ45 Connector	20	Front Panel Header
3	QSPI Flash	9	Expansion Header	15	x2 USB Connector	21	24-pin ATX power connector
4	PCIe Switch	10	Current Monitor	16	x2 USB Connector	22	FU740 Reset
5	USB Hub	11	JTAG Header	17	M.2 Key E Connector	23	Global Reset
6	PCIe - USB Bridge	12	microSD Card Slot	18	M.2 Key M Connector	24	On/Off Switch