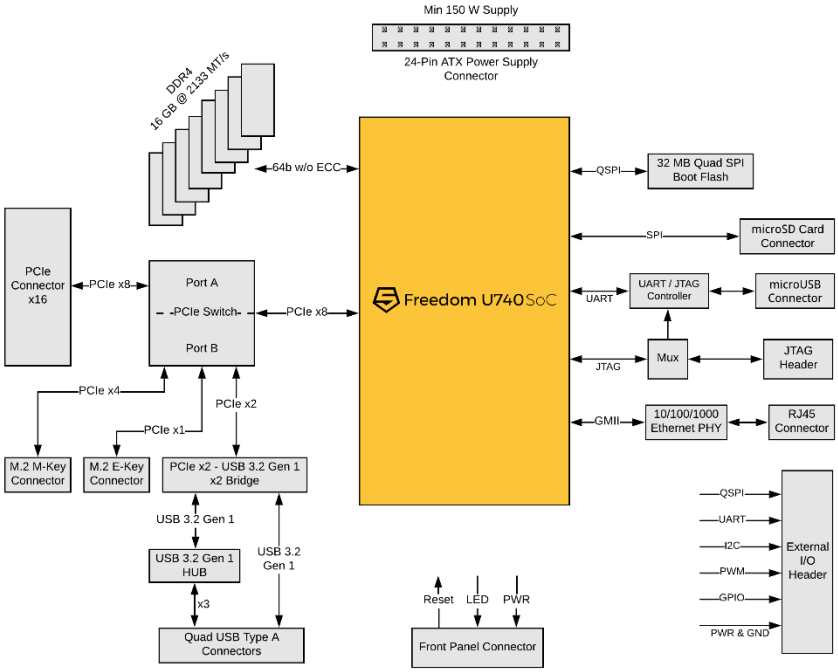
# HiFive™ Unmatched RevB

## RISC-V Powered Development PC

This updated version of the popular HiFive Unmatched board provides a high performance Linux development platform in a standard 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 2233 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 RevB 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 RevB offers four USB 3.2 Gen 1 ports for peripheral connectivity.

### Network and Connectivity

The HiFive Unmatched RevB 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 RevB 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 RevB

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 16 GB DDR4 @ 2133 MT/s
- On-board 32 MB QSPI NOR Flash
- 1x microSD card
- 1x M.2 Key M connector for SSD module (Not Included)
  - 1x PCI Express Gen 3 x4

## Network

- 1x 10/100/1000 Ethernet
- 1x M.2 Key E connector for Wi-Fi / Bluetooth module (Not Included)
  - 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
- 2x Stacked USB 3.2 Gen1 Type A Connectors
- 1x micro-USB Type B Connector
- 1x JTAG Header
- 1x 24-pin Peripheral I/O Header
  - 4x GPIO, 2x I2C, 2x QSPI, 2x UART, 1x PWM
- Header for Voltage / Current Monitor
- Mini-ITX case compliant Front Panel Connector
- Battery backed Real Time Clock

## Software

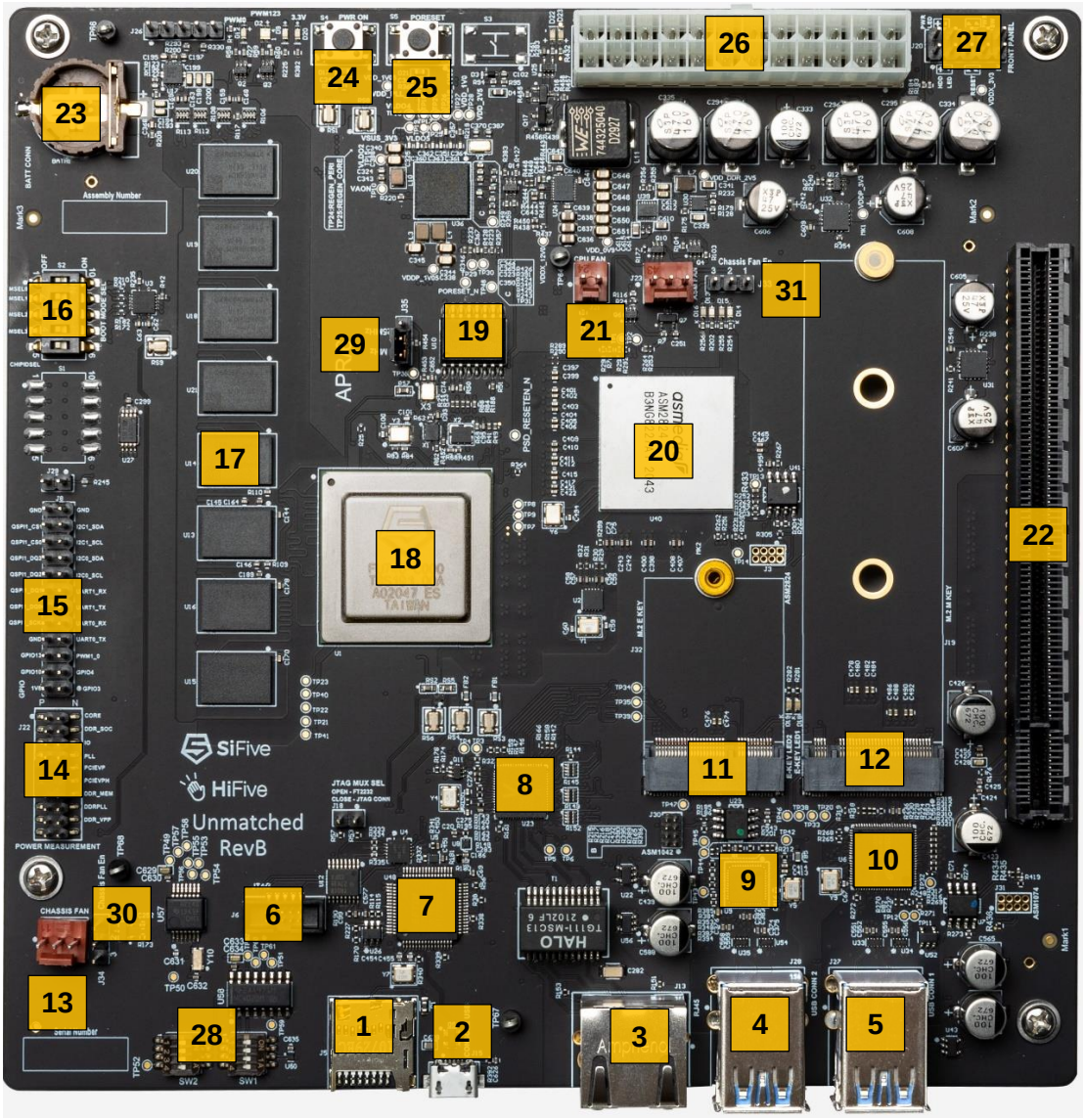
- Freedom U-SDK
  - OpenSBI
  - U-Boot
  - Linux Kernel - v5.10 or later
  - Popular system developer packages
    - GCC and LLVM toolchains
    - Performance tools and utilities

## Power

- ATX Power Supply (Not Included)

## Product SKU / Availability

- HF105-001 – Development Kit
  - Visit **www.sifive.com/boards/hifive-unmatched** for purchase options.

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|---|---|---|---|---|---|---|---|
| 1 | microSD Card Slot | 9 | PCIe - USB Bridge | 17 | DDR4 Memories | 25 | Reset Pushbutton |
| 2 | micro-USB Connector | 10 | USB Hub | 18 | FU740 SoC | 26 | ATX Power Connector |
| 3 | RJ45 Ethernet Connector | 11 | M.2 Key E Connector for WiFi/Bluetooth | 19 | 32MB QSPI Flash | 27 | Front Panel Connector |
| 4 | x2 USB Type-A Connector | 12 | M.2 Key M Connector for NVMe SSD | 20 | PCIe Switch | 28 | Auto Restart setup header |
| 5 | x2 USB Type-A Connector | 13 | Chassis Fan Header | 21 | CPU Fan Header | 29 | RTC frequency selection header |
| 6 | JTAG Header | 14 | Current Monitor | 22 | x16 PCIe Connector | 30 | Chassis fan enable header-1 |
| 7 | UART – USB Controller | 15 | GPIO Header | 23 | CR1220 Battery Connector | 31 | Chassis fan enable header-2 |
| 8 | Ethernet PHY | 16 | Boot Mode DIP Switch | 24 | Power Pushbutton | | |