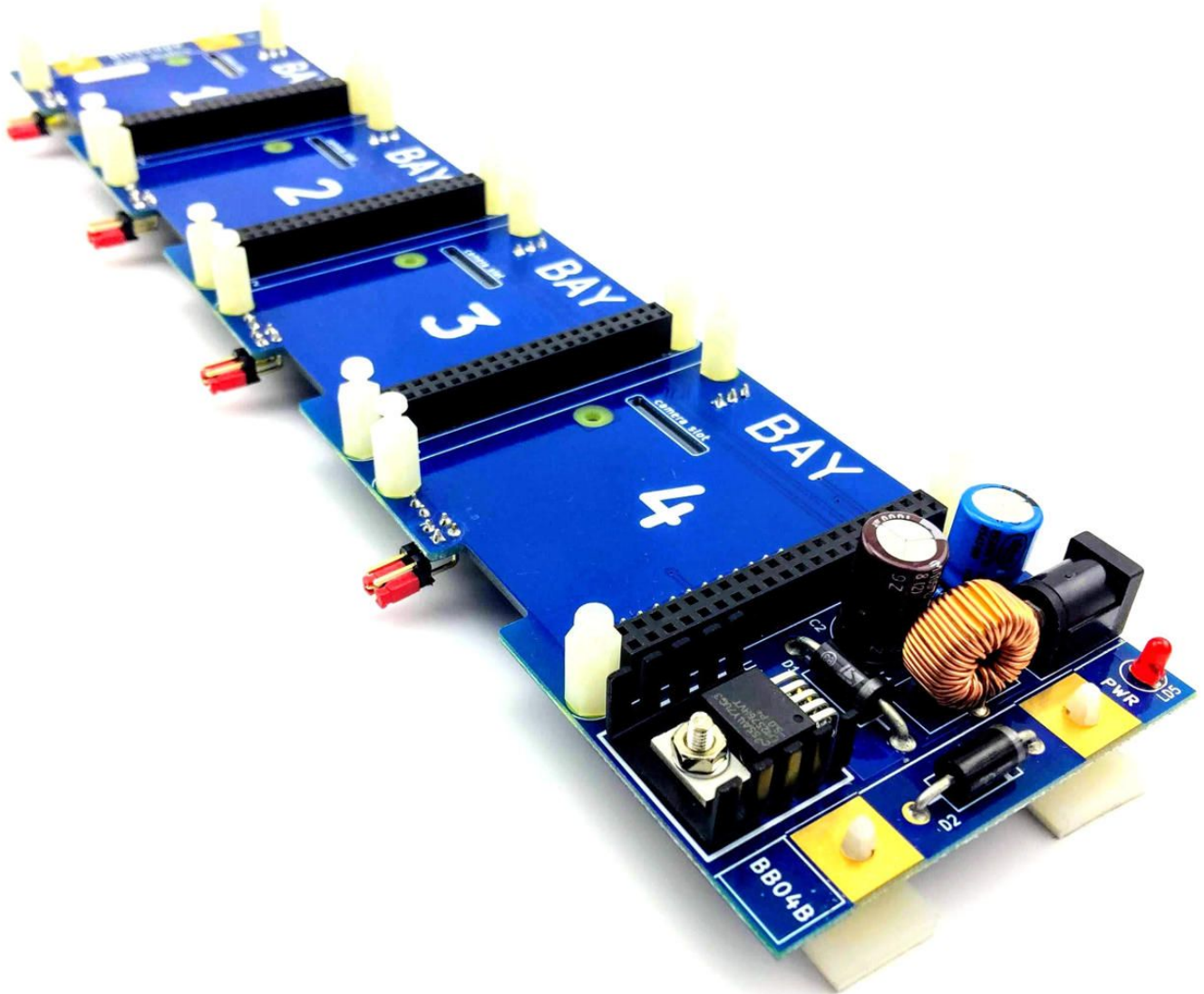
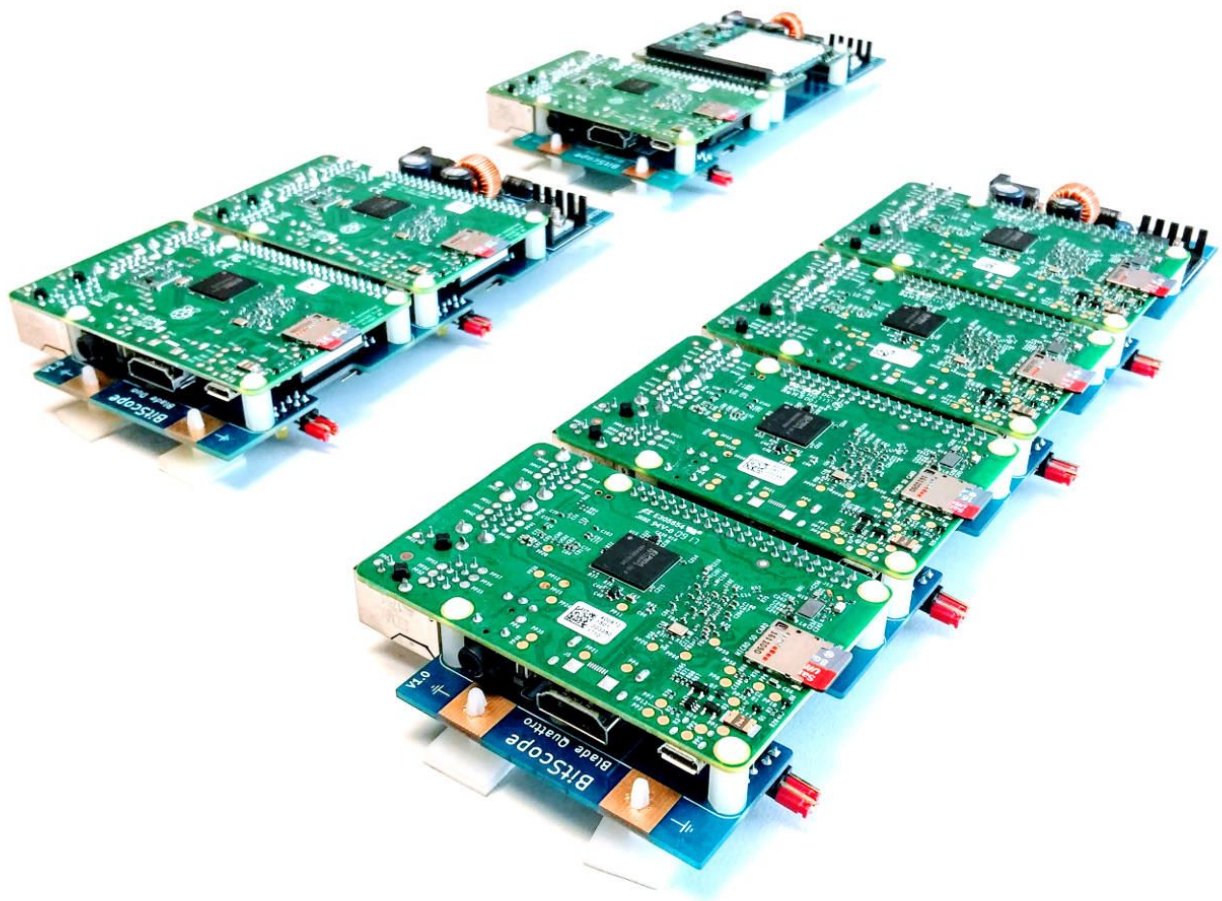


# BitScope Blade Quattro



Industrial Deployment Solution for Raspberry Pi.

# Overview >



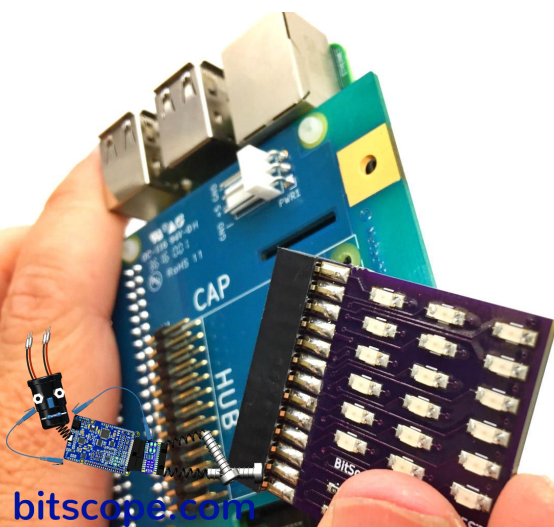
**Blade Quattro** is one of three **BitScope Blade** industrial motherboards for Raspberry Pi.

It simplifies Raspberry Pi deployment with mounting options ranging from open frame with M3 mounting tabs, desktop and wall mounting to 19" racks, cluster packs and modules.

Blade Quattro accepts DC power from 12V to 48V via a socket or via the mounting tabs. Local 5V regulation ensures the Raspberry Pi and expansion cards are powered reliably and auxiliary connectors are available to power external devices such as cooling fans.

The USB and Ethernet ports are accessible at the rear, Micro SD cards at the front and the HDMI port at the left edge for connection of a monitor to one Raspberry Pi. An expansion bus supports hub cards connected underneath for I2C, SPI, GPIO and serial I/O.

Blade Quattro offers a compact way to build scalable Industrial IoT, Edge and Cluster compute applications with Raspberry Pi.



# Features >

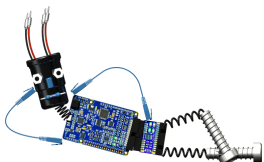
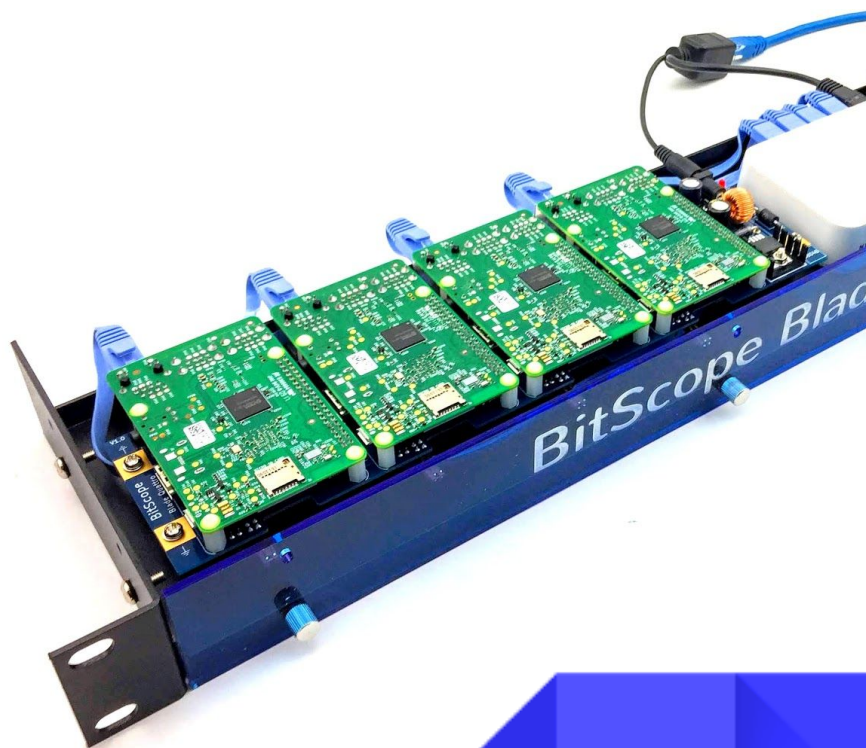
Blade Quattro offers the following features and capabilities:

1. Supports **Raspberry Pi A+, B+, 2B, 3B, 3B+** and **Zero W**.
2. Accepts DC power from **12V to 48V DC** (up to 20W).
3. Connect power via **2.1mm/2.5mm** or **Power Tabs**.
4. Supports **Passive PoE** with (optional) injector cables.
5. **Regulated 5V power** for attached devices (such as fans).
6. Can power **external USB devices** such as SSD and HDD.
7. Individual **power** and **interrupt** control for Raspberry Pi.
8. Accessible **USB** and **Network** ports and one **HDMI** port.
9. Blade **HUB expansion** bus and **AUX power** connectors.
10. Supports **Blade Rack** and **Cluster Pack** solutions.

Blade Quattro is ideal for building a small cluster of four Raspberry Pi.

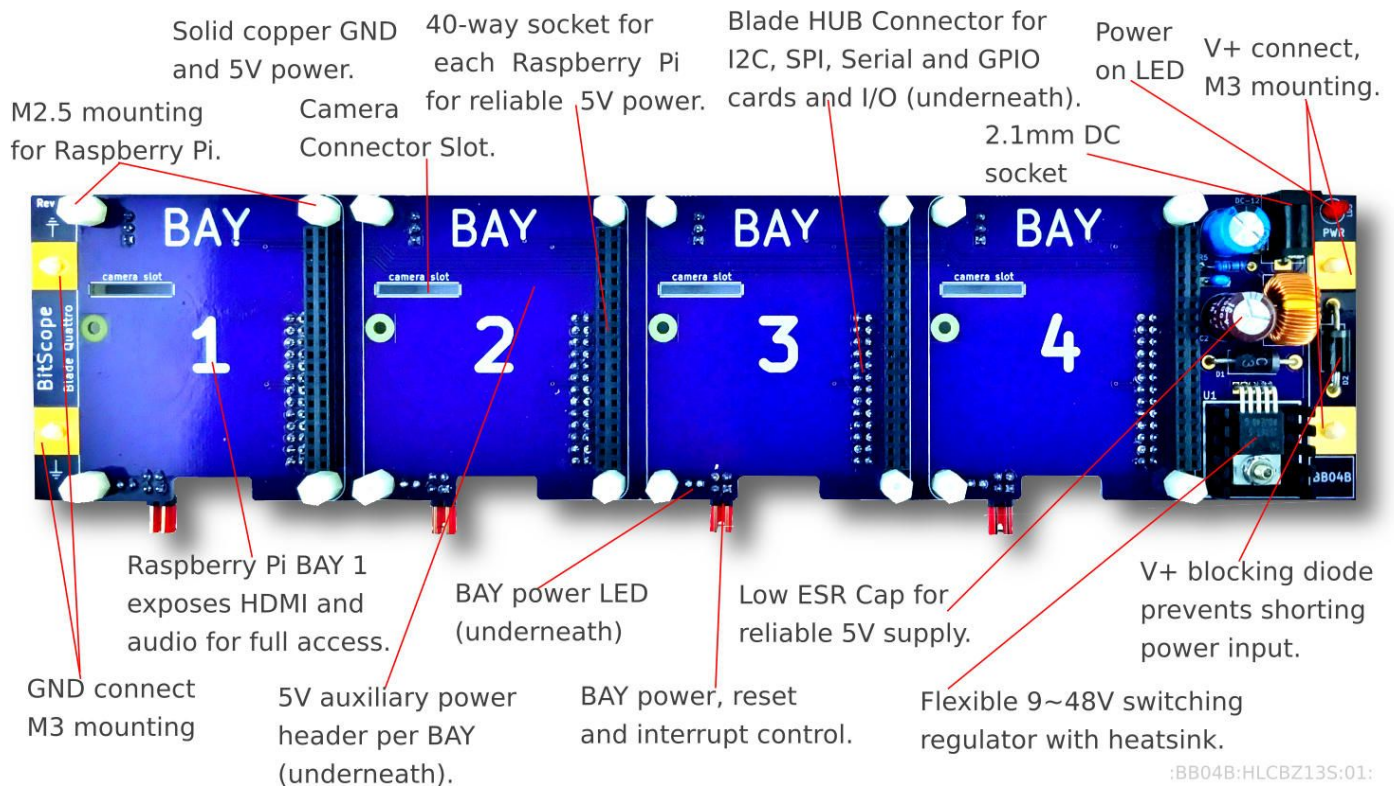
Quattro accepts DC power from 12V to 48V, which can be unregulated, SLA battery backed or delivered via a 24V passive PoE connection.

Micro SD cards are not required in many cases because Raspberry Pi can net boot from a remote server or from one of the Raspberry Pi in the cluster itself (via an SD card or USB drive connected to one USB port).





# Product Details >



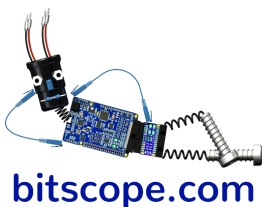
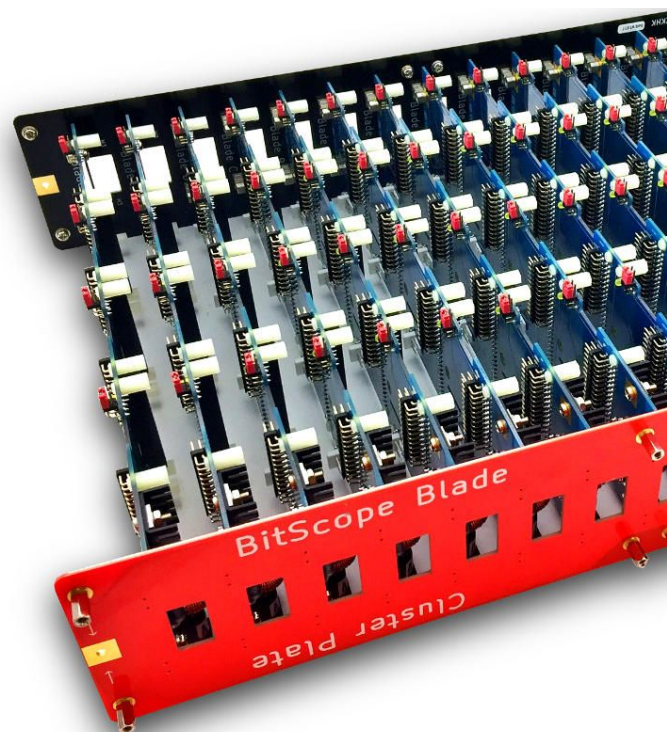
Blade Quattro provides four mounting BAYs for up to four Raspberry Pi.

Underneath each BAY is a HUB bus for expansion cards and AUX power connectors which can power external 5V devices such as cooling fans or other peripherals. A total load of up to 20W can be supported by each Blade.

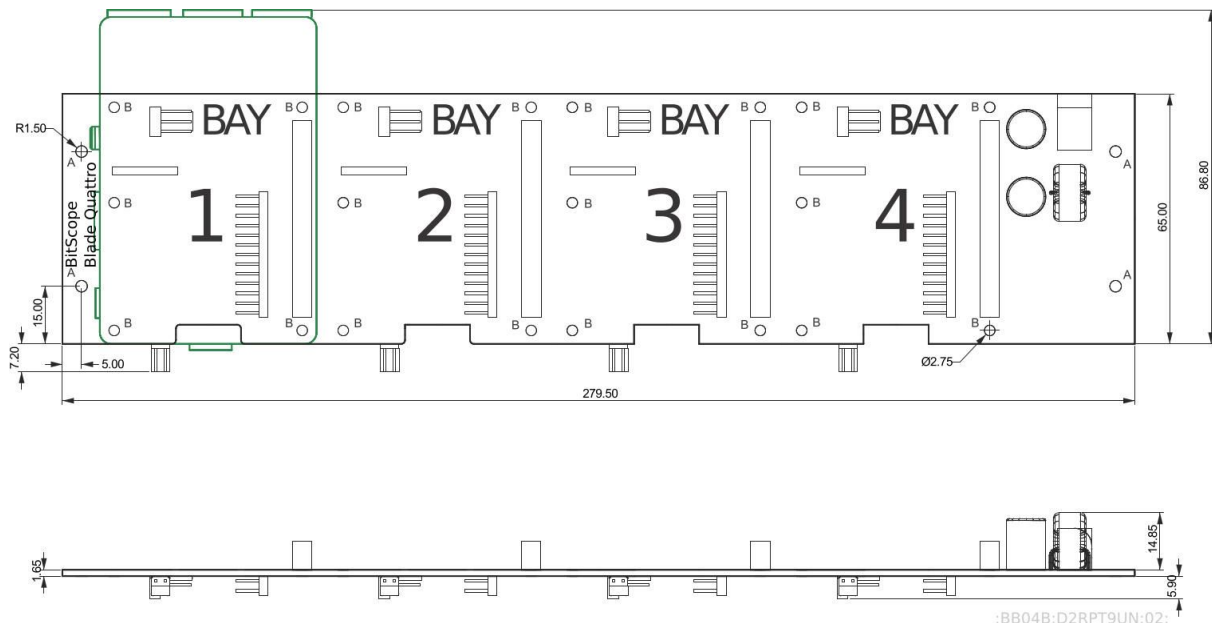
A header controls the power to each Raspberry Pi without the need to switch the external power source. It's compatible with the BitScope Control Plane for remote control of Raspberry Pi.

The standard kit includes stand-offs and mounting tabs and screws. It can be powered via the mounting tabs for "power wiring free" use in clusters and racks.

Quattro is the ideal Cluster Computing platform that scales from 4 nodes to many hundreds.



# Mechanical >



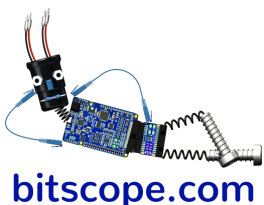
Like all Blades, Quattro is compatible with BitScope Blade Rack mounting solutions.

Up to 10 Blade Quattro can be mounted in a 7RU 19" Rack unit. Cluster plates and rear fans facilitate 12V~48V power distribution and cooling.

Each Raspberry Pi may be individually powered and Network, USB accessible at the rear. The HDMI of the lower Raspberry Pi is accessible at the base.

A removable perspex front panel allows Micro SD access. Limited WiFi and Bluetooth may be used, for example to provide remote wireless access to the cluster in the rack.

A range of small and large rack systems as well as full cluster solutions are available for Blade Quattro. They are also available in cluster packs and modules for building bespoke computing solutions and large scale compute clusters with Raspberry Pi.





# Small Racks >

BitScope Blade Racks built with multiple Raspberry Pi and networking are available.

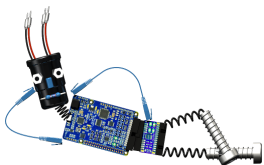
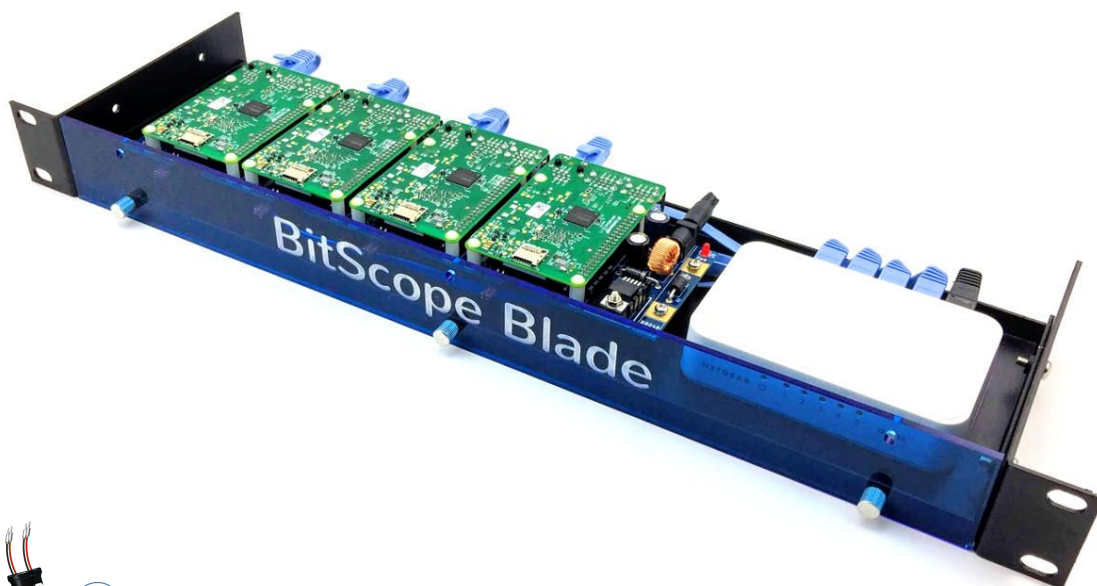
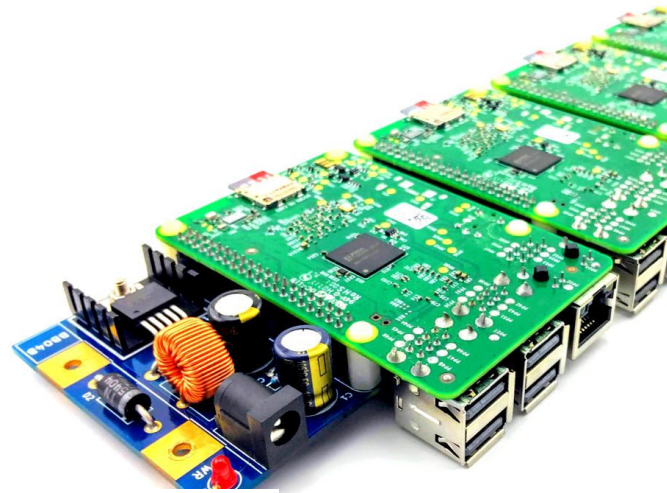


The 1RU **Blade Rack Four** integrates one Blade Quattro and a 5-port GBit network switch internally mounted. The perspex front panel allows WiFi and Bluetooth radios to be accessed externally.

The BitScope Blade and an internal switch are included. The Raspberry Pi are sold separately.

Power supplies from 12V to 48V with sufficient power rating are compatible. Raspberry Pi 3B requires up to 7W and 3B+ requires up to 10W per node. Passive PoE may be used to power the Blade boards and switch.

A range of configurations are available upon request.



# Cluster Packs >

For larger installations using many more Raspberry Pi, **Cluster Packs** can be used.

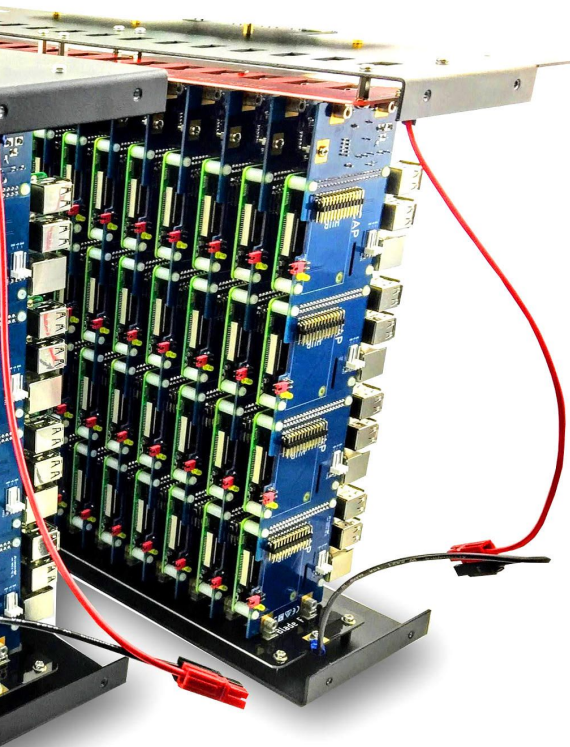
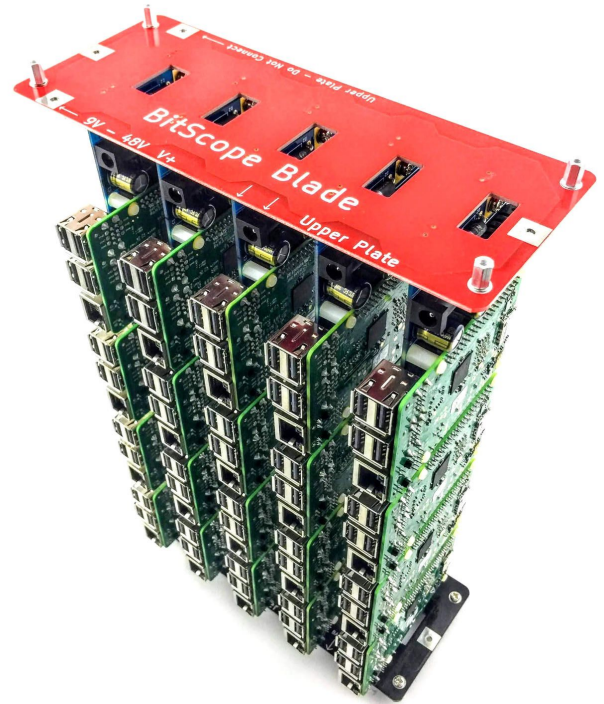
Cluster Packs consolidate up to five BitScope Blade to offer a compact and convenient way to power and mount a large number Raspberry Pi.

Up to 20 Raspberry Pi can be supported.

Packs are built with **Cluster Plates**. Cluster Plates are available separately or bundled are part of a Cluster Pack.

Plates include nuts, bolts, mounting tabs and power wiring required to connect a power source.

Cluster Plates distribute power to all Blades in the pack eliminating the need for individual power wiring for each Blade.



Mechanical specifications are available to enable mounting in custom metalwork and larger cluster plates are available to support 60 Raspberry Pi in a single Cluster Pack.



# Large Racks >

**Large Blade Racks** are built using one or two Cluster Packs.

Blade Racks are available in sizes supporting up to 40 Raspberry Pi in a single rack.

They work with Raspberry Pi 2B, **3B** and **3B+** subject to the power budget and the power supply used.

One Blade Rack comprise two Cluster Pack 20. Like the smaller racks, these models are compatible with standard 19" racks.



Racks have removable perspex front panels for operational visibility and WiFi accessibility. They also allow access to Micro SD cards.

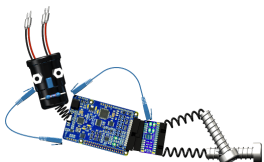
Four cooling fans, powered by the Blade boards, are mounted at the rear of rack to ensure airflow.

All Raspberry Pi USB and LAN ports are accessible at the rear and the HDMI ports of each Raspberry Pi

in Blade Bay 1 are available at the base of the rack unit.

Power is normally connected via a dual power bus for use with a pair of power DC supplies. Any power supply that meets the power load of the rack and provides 12V to 48V will work.

Power supplies used for 24V LED lighting are well suited.





# Cluster Modules >

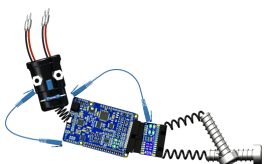
BitScope **Cluster Modules** are a turn-key compute cluster solutions for Raspberry Pi. They comprise Blade Duo and Quattro in large Cluster Packs mounted in 19" rack units.



Available in 48, 96 and 144 node sizes, they use the same power and mounting solution as the Large Blade Racks but they also include an integrated network fabric with up to 60Gb/s external bandwidth, built-in power supplies and rack stackable cooling systems.

Each module includes a Cluster Control Plane for out-of-band remote power control.

Whether it's a single Raspberry Pi and HAT for Industrial IoT or a 3000 core cluster for HPC R&D, BitScope Blade offers the perfect scalable deployment solution.



## Warnings >

- This product should only be connected to a power source rated for 12V to 48V DC capable of providing 12W to 24W or more. Any external power supply used with Blade shall comply with relevant regulations and standards applicable in the country of intended use.
- This product should be operated in a well-ventilated environment and, if used inside a case, the case should not be covered.
- Whilst in use stand-alone, this product should be placed on a stable, flat, non-conductive surface and should not be contacted by conductive items.
- The connection of incompatible devices may affect compliance, result in damage to the unit, and invalidate the warranty.
- All peripherals used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.
- The cables and connectors of all peripherals used with this product must have adequate insulation so that relevant safety requirements are met.

## Safety Instructions >

To avoid malfunction of or damage to this product, please observe the following:

- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose to heat from any source; the Raspberry Pi and Blade Solo are designed for reliable operation at normal ambient temperatures.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- Whilst it is powered, avoid handling the printed circuit board, or only handle it by the edges to minimise the risk of electrostatic discharge damage.

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