The first Raspberry Pi rugged mission computer

For system designers who understand the potential of the Raspberry Pi ecosystem, this is the solution you've been waiting for. A fully MIL-rugged, deployable mission computer. For those seeking to learn more, visit the Raspberry Pi Compute Module 4 website.

The Parvus® DuraCOR® Pi features the CM4108032 with 8GB RAM, 32 GB Flash, plus WiFi and Bluetooth. For I/O, the DuraCOR Pi provides connectivity to a Gigabit Ethernet interface, 2x USB ports, HDMI output, and external access to Raspberry Pi® HAT signals. Internal expansion includes a standard Raspberry Pi 40-pin Hardware on Top (HAT) connector, single Mini PCIe connection, MIPI Camera, and Display interfaces. WiFi and Bluetooth can be individually disabled via hardware configuration. A Power-over-Ethernet (PoE) option is also available. Optimally designed for extreme size, weight, and power (SWaP)-sensitive mobile, airborne, ground, manned/unmanned vehicles, and sensors, it's small enough to be integrated into a wearable device or installed on nearly any platform.

The DuraCOR Pi provides system integrators 100% compatibility with the Raspberry Pi ecosystem, including the vast array of supported OSs, toolsets, and frameworks. It brings the expansive Raspberry Pi ecosystem to a fanless IP67 design (dust and waterproof) that has undergone extensive qualification testing per extreme MIL-STD-810, MIL-STD-461, MIL-STD-1275, MIL-STD-704, and RTCA/DO-160 conditions for environmental, power, and EMI compliance for demanding civil and military platforms.

Key Features

- Raspberry Pi CM4, model CM4108032
- Low-SWaP IP67 rugged enclosure
- WiFi and Bluetooth connectivity (may be disabled via hardware)
- MIL-STD-810, DO-160, MIL-STD-461 qualification (EMI, thermal, shock, vibration, altitude, humidity, etc.)
- Modular mechanical design with MIL-DTL-38999 circular connectors

Applications

- Civil and military edge computing
- SWaP-sensitive I/O translation
- Tactical ground, sea, and air manned and unmanned vehicles
- Wearable edge computing
- Outdoor and underground platforms

POWERED BY Raspberry Pi

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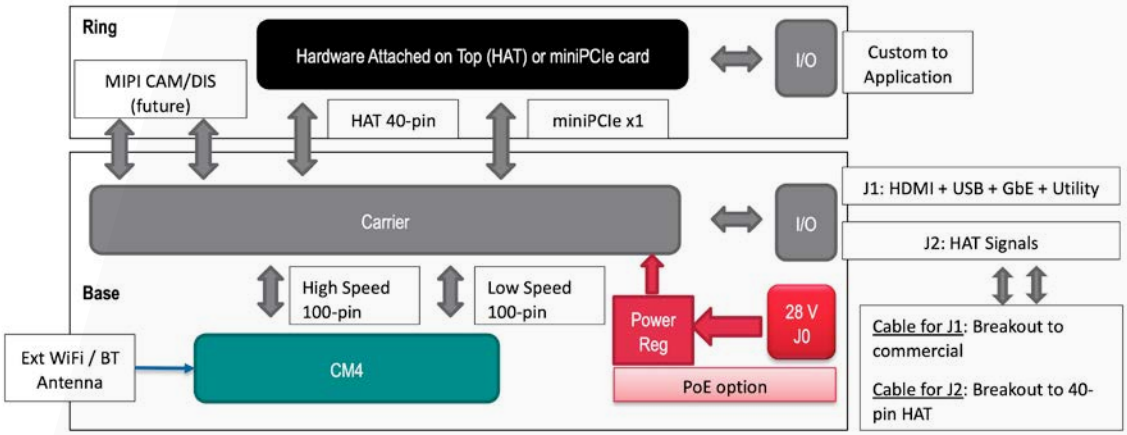
Expandability

Parvus products can be stacked to extend functionality and performance via their expandable ring system design. This enables system designers to configure the exact mix of DuraCOR Pi mission computers and HAT modules required for their specific application. The ultra-small form factor (USFF) DuraCOR Pi can also be combined in a stack with the similarly miniaturized Parvus DuraNET® 20-11 network switch.

What's more, DuraCOR Pi supports I/O expansion via a standard RPi 40-pin HAT connector. The DuraCOR Pi unit can be easily extended with one or more HAT modules via a flexible expansion ring system that allows additional module rings to be stacked on top of the unit housing. To support common I/O options and HAT application development, GPIO and serial I/O and signals from the 40-pin HAT connector are also accessible via a MIL-STD-38999 connector on the unit's front panel.



Specifications

Base Unit (no HAT) dimensions (H x D x W) (estimated, excl connectors):

- 1.20 x 2.49 x 3.34" (30.5 x 63.2 x 84.8 mm)
- 1.33 x 3.33 x 3.34" (33.7 x 84.5 x 84.8 mm) with optional mounting bracket flanges

Base Unit (no HAT) weight: approx. 0.5 lb (~0.23 kg)

Installation:

- Four (4) mounting holes on the bottom for 6-32 hardware
- Optional MCH-2562-01 mounting bracket kit

Connectors:

- J0: Omnetics Metal Nano Circular (MNC) for power input
- J1/J2: Glenair 801 Series Mighty Mouse micro-miniature MIL-DTL-38999-like connectors with environmental sealing

Cooling: Passive natural convection without moving parts, forced air, or fans

Enclosure and finish: Corrosion-resistant, aluminum alloy with black anodize finish per MIL-A-8625

Environmental Specifications

Qual tested to meet MIL-STD-810G and RTCA/DO-160G

Operating temperature:

- -40 to +85°C (-40 to +185°F) ambient (per MIL-STD810G Methods 501.5 and 502.5)
- -40 to +70°C (per DO-160G, Sect 4 Cat A2 and D2 and Section 4.5.5, Category V/Table 4-1)

Storage temperature:

- -55 to +85°C (per DO-160G, Section 4, Category A2)
- -40 to +85ºC (-40 to +185ºF) per MIL-STD-810G Method 502.5 and Method 501.5

Humidity (operating/transport):

- Up to 95% RH @ 40°C, non-condensing (per MIL-STD810G, Method 507.5, Procedure II
- DO-160G, Section 6, Category B, Section 6.3.2

Operating shock:

- 40 g, 11 ms, 3 pos/neg per axis, 18 terminal peak shock pulses per MIL-STD-810G Method 516.6, Procedure I
- 6 g, 11 ms, terminal peak shock pulses per DO-160G, Section 7, Class A

Crash hazard shock:

- 75 g, 11 ms, 12 terminal peak shock pulses, 2 pos/neg per axis (per MIL-STD-810G Method 516.6, Procedure V

Random vibration:

- 3 axes, 1 hour/axis, per MIL-STD-810G, Method 514, per Procedures I and II and DO-160G Section 8, Category S, Curve B3 per combined jet-helo-tracked vehicle profile

Ingress (dust/sand):

- No ingress (similar to IP67)
- MIL-STD-810G Method 510.5, Procedure I and II, DO-160G, Section 12, Category S

Water immersion:

- No leakage per 1 meter submersion, 30 minutes (similar to IP67)
- MIL-STD-810G, Method 512.5, Procedure I, 1 meter, 30 minutes

Operating altitude:

- Up to 50,000 ft (15,240 meters) per DO-160G, Section 4, Category D2, Section 4.6.1
- 30,000 ft (9,144 meters) per MIL-STD-810G, Method 500.5, Procedures I-II

Ordering Information

Item	Part #	Description
DuraCOR Pi	COR-Pi-01	DuraCOR Raspberry Pi, BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz, 8 GB RAM
DuraCOR Pi with Expansion Ring	COR-Pi-11	DuraCOR Raspberry Pi, BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz, 8 GB RAM + Expansion Ring w/connectors
Breakout Cable Set	CBL-PIA-01	Starter Breakout Cable Set for DuraCOR Pi (Mating circular 801 Series and Nano connectors to commercial connectors, Powered, Keyed Connectors
Breakout Cable Set with Expansion	CBL-PIA-HAT	Starter Breakout Cable Set for DuraCOR Pi + Expansion (Mating circular 801 Series and Nano connectors to commercial connectors, No Power, Keyed Connectors