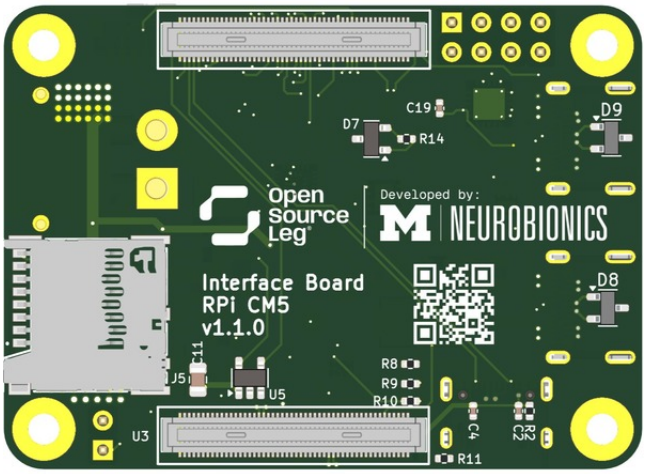
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

OSL Electronics: Interface PCB for RPi CM 5

TECHNOLOGY NUMBER: 2026-524



OVERVIEW

Carrier board standardizes power, protection, and robotics connectors, enabling rapid, repeatable integration of Raspberry Pi Compute Module 5.

- Consolidates common robotics I/O, improves power/safety handling, speeds bring-up, and supports consistent maintenance across deployments.

BACKGROUND

Raspberry Pi Compute Modules are frequently selected for robotics and embedded systems due to cost, software ecosystem, and compact form factor, but practical integration often becomes a hardware engineering project. Teams must design or assemble power input, protection, and stable connectorization before the compute module can be reliably deployed. In many labs and early-stage companies, these functions are implemented through ad hoc wiring, custom one-off boards, or inconsistent carrier solutions, which creates variability across builds. Common bottlenecks include unclear power paths, limited safeguards during bring-up, connector mismatch across sensors/actuators, and repeated effort to expose standard buses (GPIO, I2C, SPI, UART) alongside robotics-oriented interfaces like CAN. These issues slow iteration, complicate debugging and field replacement, and reduce confidence in reproducibility across multiple units. A carrier board that standardizes these integration points can reduce time spent on non-differentiating hardware and improve consistency across systems.

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Category

Robotics
Engineering & Physical Sciences
MOSS - Michigan Open Source Support/Neurobionics Lab: Electronics

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INNOVATION

The Interface Board is a Raspberry Pi Compute Module 5 (CM5) carrier designed specifically for robotics integration, emphasizing standardized power input, safety-oriented board-level features, and consistent connector access to common interfaces. Rather than requiring teams to recreate “glue” hardware for each robot, the board consolidates typical I/O needed for mechatronic systems—GPIO and serial buses (I2C, SPI, UART) as well as CAN—and includes fan control support for practical thermal management in enclosed platforms. The design focuses on reliable power routing and clearly exposed integration points, reducing variability during initial bring-up and easing maintenance when components are swapped or systems are replicated. Built and tested by the University of Michigan Neurobionics Lab for use across the Open-Source Leg stack, the board is intended to function as a repeatable hardware interface layer between CM5 compute and robotics peripherals. For end users, this translates into faster system integration and more consistent builds across prototypes and small deployments.

ADDITIONAL INFORMATION

LICENSING INFORMATION:

When you place an order, you will be asked to choose a donation amount ($5, $10, $15, or $20) that will go towards the Open Source Leg (OSL) project. Community support in the form of donations helps the OSL team maintain and update the project.

Once you place an order, the amplifier will be shipped to you by the OSL team. Delivery will take 3-6 weeks. If you have questions about the order, please reach out to Elissa Cimino (ecimino@umich.edu).

Shipping Costs

US shipping costs - $11/amplifier

International shipping costs - $40/amplifier