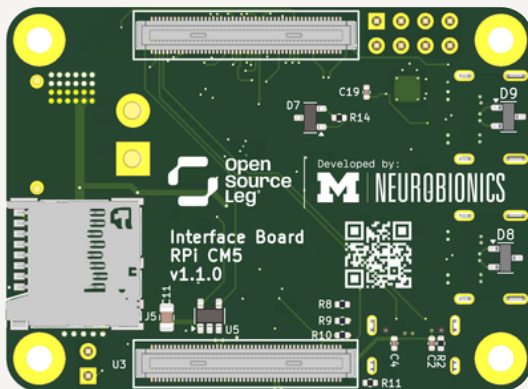


Board Version 1.1.0

RPi CM5 Interface Board

Breakout board for the Raspberry Pi Compute Module 5

The RPi CM5 Interface Board is an add-on module for the Raspberry Pi Compute Module 5 (RPi CM5) that is designed to provide plug and play functionality for sensors and actuators across a wide variety of robotics applications. It is built and tested by researchers at the University of Michigan's Neurobionics Lab.



RPi Interface Illustration

Features

- Safe RPi Shutdown
- Status LEDs
- Programmable RGB LED
- IMU (Bosch BHI260AP)
- SD Card Slot
- Real-Time Clock
- Test Points

Technical Specifications

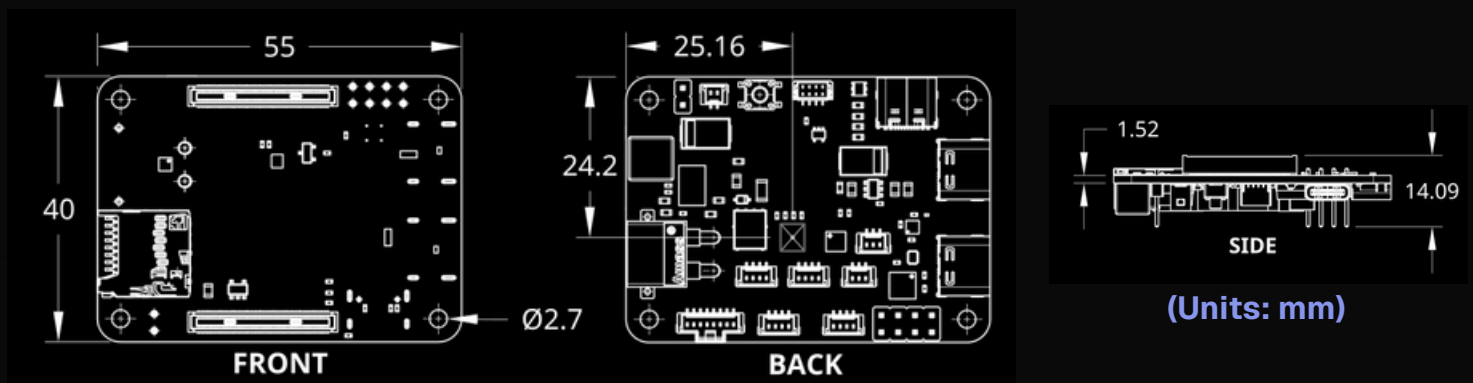
Category	Specification
Module Support	Raspberry Pi Compute Module 5 (CM5) / CM5 Lite
Input Voltage	15V – 53V (XT-30 Connector) 5V (USB-C)
Power Output	5V @ 5A (SMPS) 3.3V @ 1A (LDO)
USB Interface	2x USB-C 3.0 (High-Speed Communication)
CAN Bus	2x CAN Bus (MCP2515 Controller + MCP2562 Transceiver)
Sensors	Bosch BHI260AP (6-Axis IMU) on SPI0 chip select 1
Storage	MicroSD Card Slot (for CM5 Lite boot/storage)
Cooling	4-Pin Fan Connector (PWM Control + Tachometer)
Dimensions	55.00 mm × 40.00 mm × 14.09 mm

Mechanical Details

Mounting Holes: 4 × 2.7 mm (Standard M2.5)

Max Height (w/o CM): 14.09 mm (Top of USB-C connector to bottom pins)

Total Stack Height (w/ CM): 17.6 mm



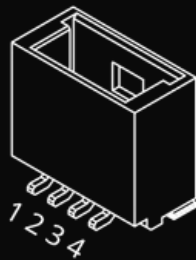
IMU Origin (relative to interface board)

Figure 1: Mechanical Drawing & Sensor Origin

Pinout & Interfaces pt.1

UART-1 (Molex PicoClasp, 4-Pin)

Pin	Function
1	+3.3V
2	UART1_TX
3	UART1_RX
4	GND



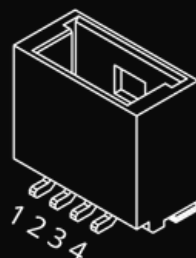
SPI-1 (Molex PicoClasp, 8-Pin)

Pin	Function
1	+3.3V
2	SPI1_CS _n 2
3	SPI1_CS _n 1
4	SPI1_CS _n 0
5	SPI1_SCLK
6	SPI1_MISO
7	SPI1_MOSI
8	GND



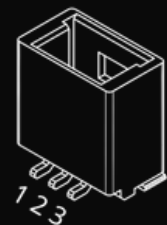
UART-2 (Molex PicoClasp, 4-Pin)

Pin	Function
1	+3.3V
2	UART2_TX
3	UART2_RX
4	GND



CAN Bus (Molex PicoClasp, 3-Pin)

Pin	Function
1	GND
2	CAN_P
3	CAN_N



I2C-2 (Molex PicoClasp, 4-Pin)

Pin	Function
1	+3.3V
2	I2C2_SDA
3	I2C2_SCL
4	GND



GPIO HEADERS

Pin	Function
1	GPIO_25
2	GPIO_23
3	GPIO_7
4	+3.3V
5	GPIO_27
6	GPIO_24
7	GPIO_22
8	GND

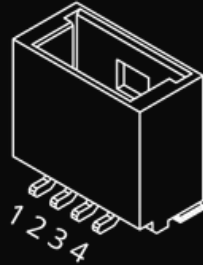


Pinout & Interfaces pt.2

I2C-3

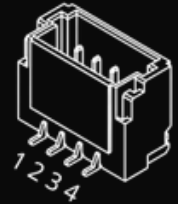
(Molex PicoClasp, 4-Pin)

Pin	Function
1	+3.3V
2	I2C3_SDA
3	I2C3_SCL
4	GND



Fan Port, JST 4-Pin Connector

Pin	Function
1	Tachometer
2	GND
3	PWM
4	+5V



Other Components

- **Signal LEDs:** 5V, 3.3V, Power, and Activity
- **Programmable RGB LED:** Addressable RGB LED for user feedback and debugging
- **J4 External Switch:** Can be used for safe RPi shutdown with an external switch using a Molex PicoClasp 2-pin connector
- **Safe Shutdown Circuit:** Allows clean shutdown of the Raspberry Pi without power corruption
- **Real-Time Clock (RTC):** Maintains system time when RPi is off (only interface board is powered).
- **Test Points:** Labeled test points for power rails and key signals to assist debugging
- **Boot Configuration Access:** Hardware support for CM5 boot and bring-up workflows