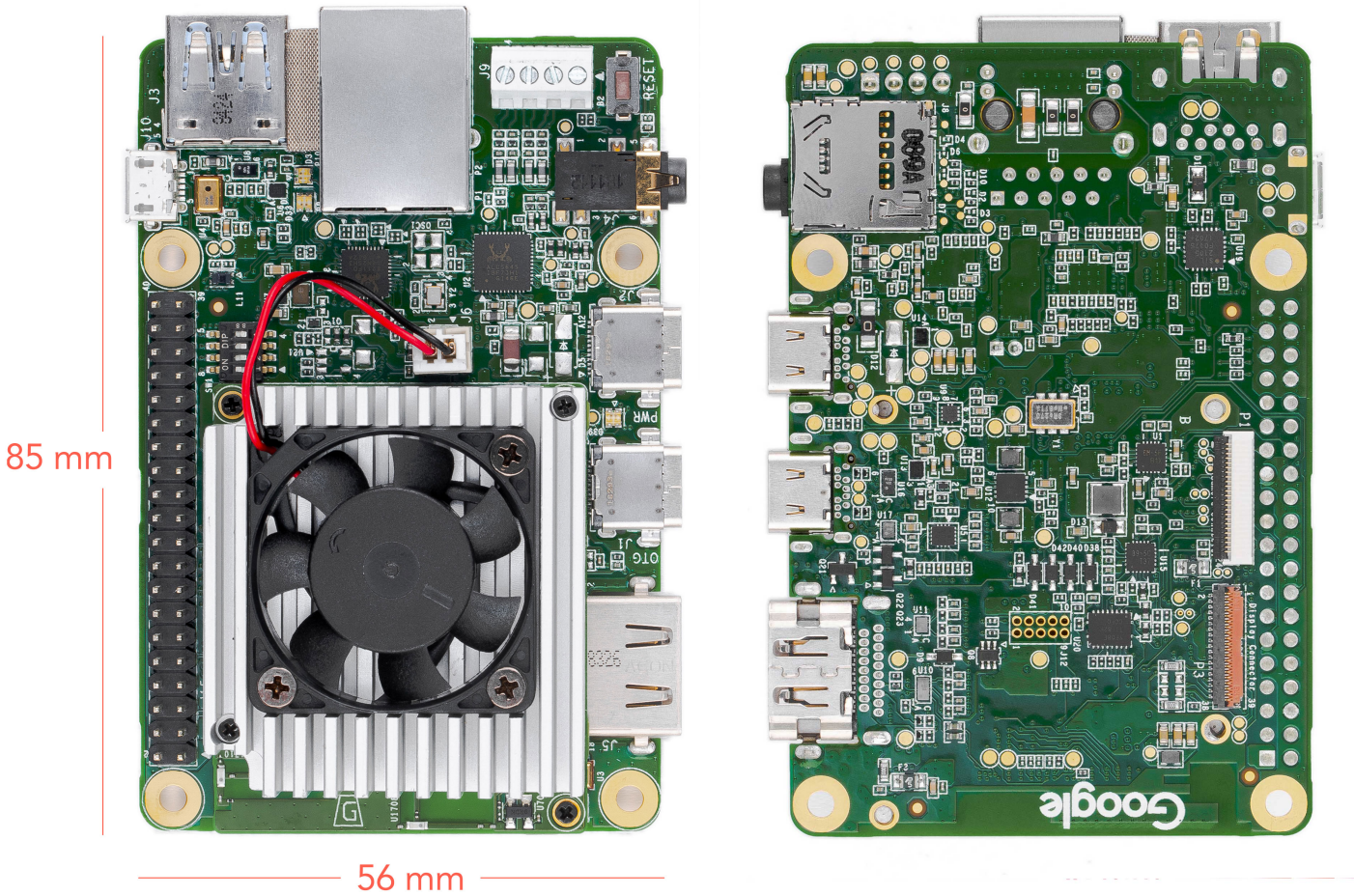
Coral

Dev Board Datasheet

Version 1.6



Version 1.6 (July 2020)

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Features

- Edge TPU System-on-Module (SoM)
  - NXP i.MX 8M SoC (Quad-core Arm Cortex-A53, plus Cortex-M4F)
  - Google Edge TPU ML accelerator coprocessor
  - Cryptographic coprocessor
  - Wi-Fi 2x2 MIMO (802.11b/g/n/ac 2.4/5 GHz)
  - Bluetooth 4.2
  - 8 GB eMMC
  - 1 or 4 GB LPDDR4
- USB connections
  - USB Type-C power port (5 V DC)
  - USB 3.0 Type-C OTG port
  - USB 3.0 Type-A host port
  - USB 2.0 Micro-B serial console port
- Audio connections
  - 3.5 mm audio jack (CTIA compliant)
  - Digital PDM microphone (x2)
  - 2.54 mm 4-pin terminal for stereo speakers
- Video connections
  - HDMI 2.0a (full size)
  - 39-pin FFC connector for MIPI DSI display (4-lane)
  - 24-pin FFC connector for MIPI CSI-2 camera (4-lane)
- MicroSD card slot
- Gigabit Ethernet port
- 40-pin GPIO expansion header
- Supports Mendel Linux (derivative of Debian)

Overview

The Coral Dev Board is a single-board computer that's ideal when you need to perform fast machine learning (ML) inferencing in a small form factor. You can use the Dev Board to prototype your embedded system and then scale to production using the on-board **Coral System-on-Module** (SoM) combined with your custom PCB hardware.

The SoM provides a fully-integrated system, including NXP's iMX 8M system-on-chip (SoC), eMMC memory, LPDDR4 RAM, Wi-Fi, and Bluetooth, but its unique power comes from Google's Edge TPU coprocessor. The Edge TPU is a small ASIC designed by Google that provides high performance ML inferencing with a low power cost. For example, it can execute state-of-the-art mobile vision models such as MobileNet v2 at almost 400 FPS, in a power efficient manner.

The baseboard provides all the peripheral connections you need to prototype a project, including USB 2.0/3.0 ports, DSI display interface, CSI-2 camera interface, Ethernet port, speaker terminals, and a 40-pin I/O header.

Key benefits of the Dev Board:

- High-speed and low-power ML inferencing (4 TOPS @ 2 W)
- A complete Linux system (running Mendel, a Debian derivative)
- Prototyping and evaluation board for the small Coral SoM (40 x 48 mm)

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Ordering information

Part number	Description
G950-01455-01 G950-03970-01 G950-04742-01	Coral Dev Board with 1 GB RAM (part number varies by region)
G950-06210-01	Coral Dev Board with 4 GB RAM

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System components

Table 1. Available Dev Board components and features

Feature	Details
Main system-on-chip (i.MX8M)	
Arm Cortex-A53 MPCore platform	Quad symmetric Cortex-A53 processors: • 32 KB L1 Instruction Cache • 32 KB L1 Data Cache • Support L1 cache RAMs protection with parity/ECC Support of 64-bit Armv8-A architecture: • 1 MB unified L2 cache • Support L2 cache RAMs protection with ECC • Frequency of 1.5 GHz
Arm Cortex-M4 core platform	• 16 KB L1 Instruction Cache • 16 KB L1 Data Cache • 256 KB tightly coupled memory (TCM)
Graphic Processing Unit (GPU)	• Vivante GC7000Lite • 4 shaders • 267 million triangles/sec • 1.6 Gigapixel/sec • 32 GFLOPs 32-bit or 64 GFLOPs 16-bit • Supports OpenGL ES 1.1, 2.0, 3.0, 3.1, Open CL 1.2, and Vulkan
Video Processing Unit (VPU)	• 4Kp60 HEVC/H.265 main, and main 10 decoder • 4Kp60 VP9 and 4Kp30 AVC/H.264 decoder (requires full system resources) • 1080p60 MPEG-2, MPEG-4p2, VC-1, VP8, RV9, AVS, MJPEG, H.263 decoder

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Feature	Details
I/O connectivity	• 2x USB 3.0/2.0 controllers with integrated PHY interfaces • 1x Ultra Secure Digital Host Controller (uSDHC) interfaces • 1x Gigabit Ethernet controller with support for EEE, Ethernet AVB, and IEEE 1588 • 2x UART modules • 2x I2C modules • 2x SPI modules • 16x GPIO lines with interrupt capability • 4x PWM lines • Input/output multiplexing controller (IOMUXC) to provide centralized pad control Note: The list above is the number of signals available to the baseboard (after considering SoC signals used by the SoM).
On-chip memory	• Boot ROM (128 KB) • On-chip RAM (128 KB + 32 KB)
External memory	• 32/16-bit DRAM interface: LPDDR4-3200, DDR4-2400, DDR3L-1600 • 8-bit NAND-Flash • eMMC 5.0 Flash • SPI NOR Flash • QuadSPI Flash with support for XIP

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Feature	Details
Display	HDMI Display Interface: • HDMI 2.0a supporting one display up to 1080p • Upscale and downscale between 4K and HD video (requires full system resources) • 20+ Audio interfaces 32-bit @ 384 kHz fs, with Time Division Multiplexing (TDM) support • SPDIF input and output • Audio Return Channel (ARC) on HDMI MIPI-DSI Display Interface: • MIPI-DSI 4 channels supporting one display, resolution up to 1920 x 1080 @ 60 Hz • LCDIF display controller • Output can be LCDIF output or DC display controller output
Audio	• 1x SPDIF input and output • 2x synchronous audio interface (SAI) modules supporting I2S, AC97, TDM, and codec/DSP interfaces • 1x SAI for 8 Tx channels for HDMI output audio • 1x SPDIF input for HDMI ARC input
Camera	• MIPI-CSI2 camera input (4-lane)
Security	• Resource Domain Controller (RDC) supports four domains and up to eight regions • Arm TrustZone (TZ) architecture • On-chip RAM (OCRAM) secure region protection using OCRAM controller • High Assurance Boot (HAB) • Cryptographic acceleration and assurance (CAAM) module • Secure non-volatile storage (SNVS): Secure real-time clock (RTC) • Secure JTAG controller (SJC)
ML accelerator	

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Feature	Details
Edge TPU coprocessor	• ASIC designed by Google that provides high performance ML inferencing for TensorFlow Lite models • Uses PCIe and I2C/GPIO to interface with the iMX 8M SoC • 4 trillion operations per second (TOPS) • 2 TOPS per watt
Memory and storage	
Random access memory (SDRAM)	• 1 or 4 GB LPDDR4 SDRAM (4-channel, 32-bit bus width) • 1600 MHz maximum DDR clock • Interfaces directly to the iMX 8M build-in DDR controller
Flash memory (eMMC)	• 8 GB NAND eMMC flash memory • 8-bits MMC mode • Conforms to JEDEC version 5.0 and 5.1
Expandable flash (MicroSD)	• Meets SD/SDIO 3.0 standard • Runs at 4-bits SDIO mode • Supports system boot from SD card
Network & wireless	
Ethernet	• 10/100/1000 Mbps Ethernet/IEEE 802.3 networks • Reduced gigabit media-independent interface (RGMII)
Wi-Fi	Murata LBEE5U91CQ module: • Wi-Fi 2x2 MIMO (802.11a/b/g/n/ac 2.4/5GHz) • Supports PCIe host interface for W-LAN
Bluetooth	Murata LBEE5U91CQ module: • Bluetooth 4.2 (supports Bluetooth low-energy) • Supports UART interface
Security	
Cryptographic coprocessor	Microchip ATECC608A cryptographic coprocessor: • Asymmetric (public/private) key cryptographic signature solution based on Elliptic Curve Cryptography and ECDSA signature protocols

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Feature	Details
Baseboard	
Connectors	• 40-pin I/O header (see pinout below) • USB Micro-B for serial console • USB 3.0 Type-A host • Gigabit Ethernet • 4-pin stereo terminal • 3.5 mm audio jack • USB Type-C power • USB Type-C data • HDMI 2.0a (full size) • MicroSD slot • MIPI DSI display (39-pin flat flex cable) • MIPI CSI-2 camera (24-pin flat flex cable)

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Block diagrams

Figures 1 and 2 illustrate the core components on the baseboard and SoM.

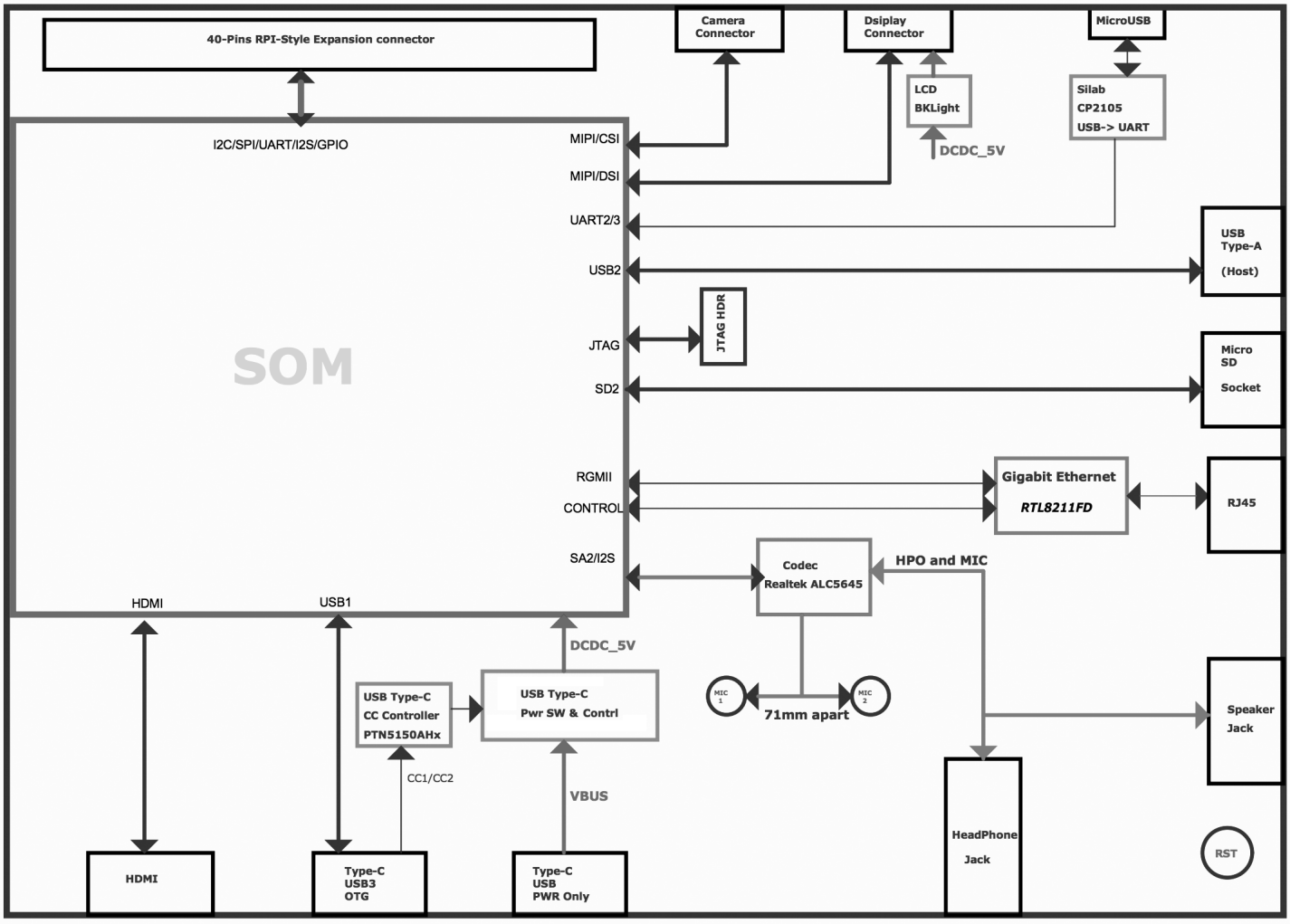


Figure 1. Block diagram of the baseboard components

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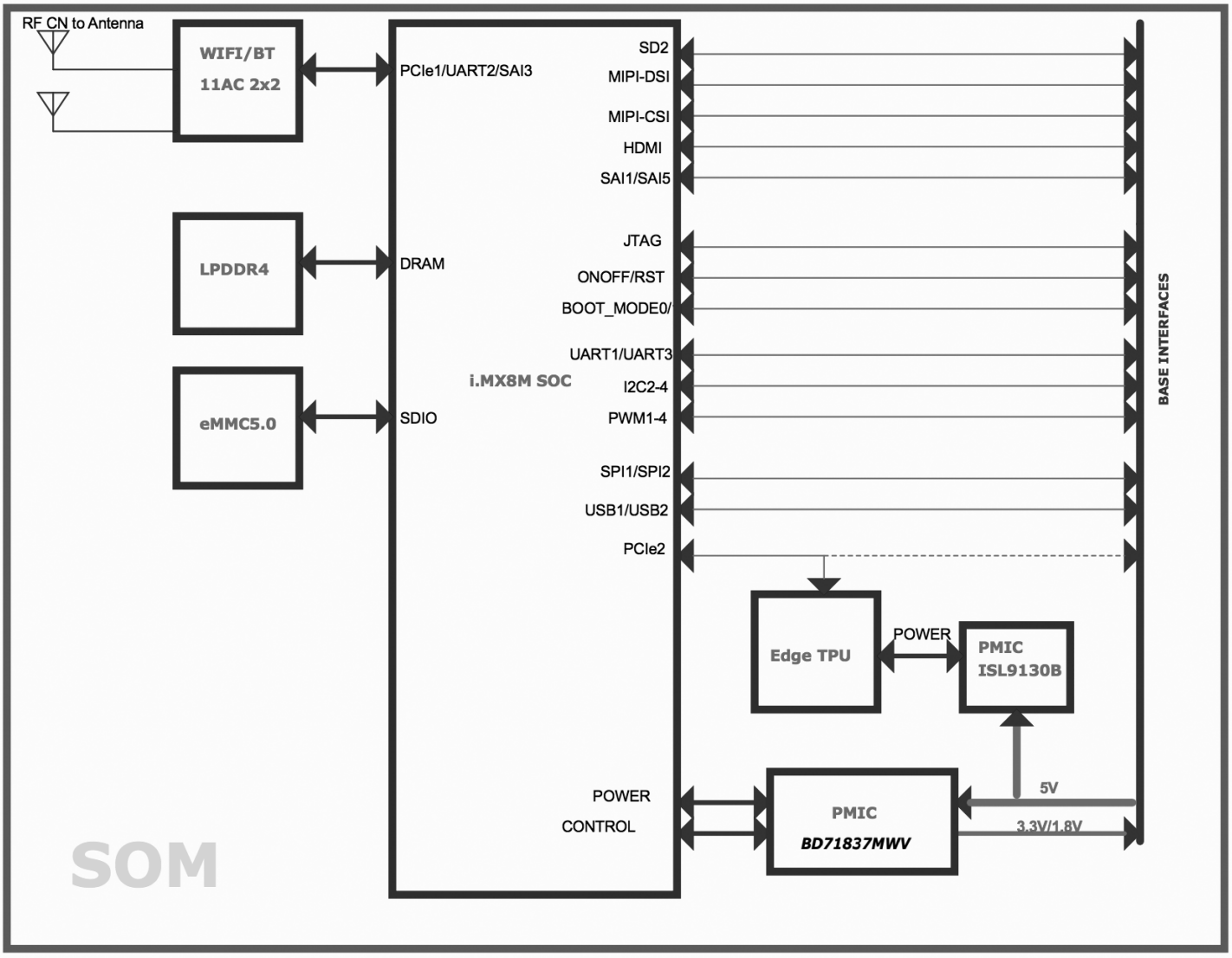


Figure 2. Block diagram of the SoM components

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Mechanical dimensions

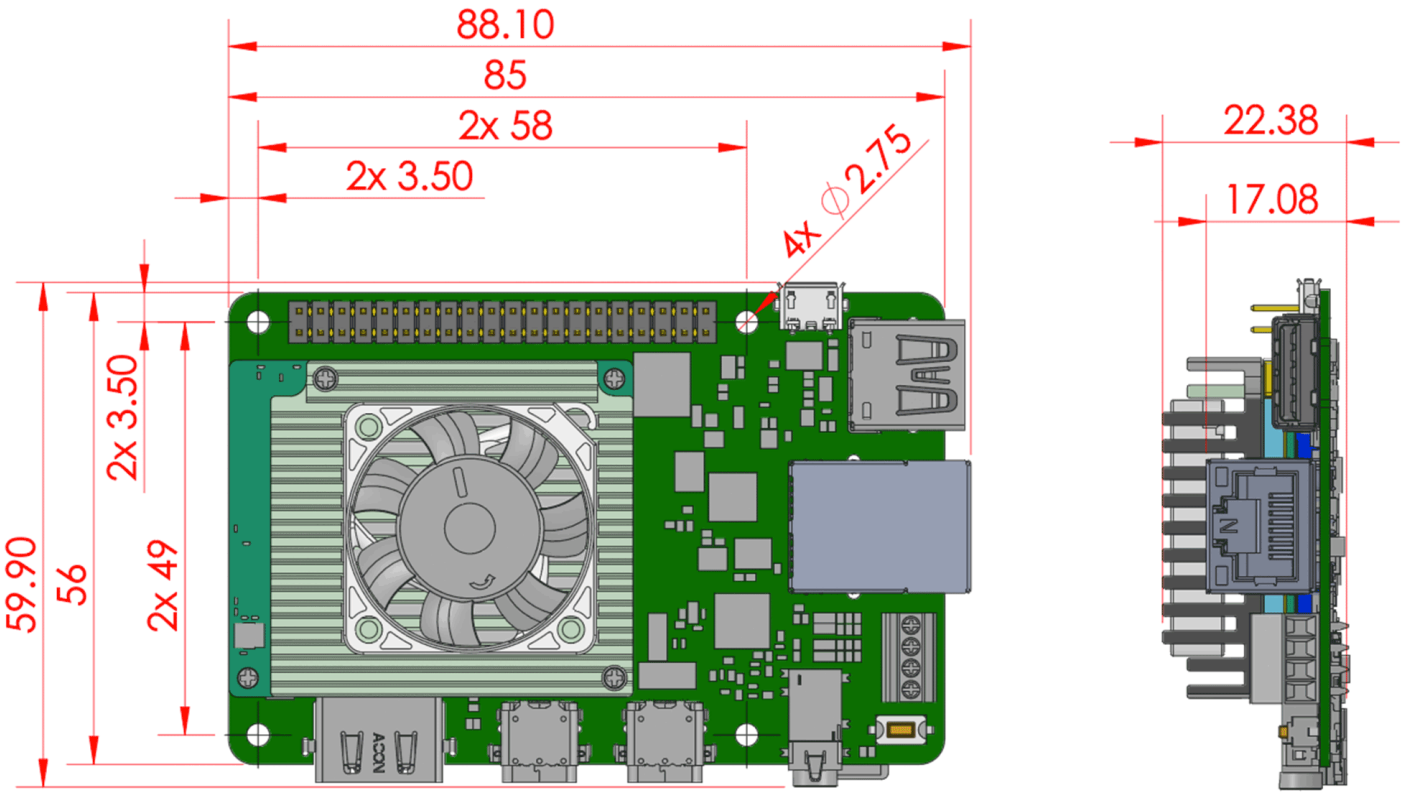


Figure 3. Coral Dev Board dimensions

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Baseboard connections

The baseboard on the Coral Dev Board provides a variety of connectors as shown in figure 4.

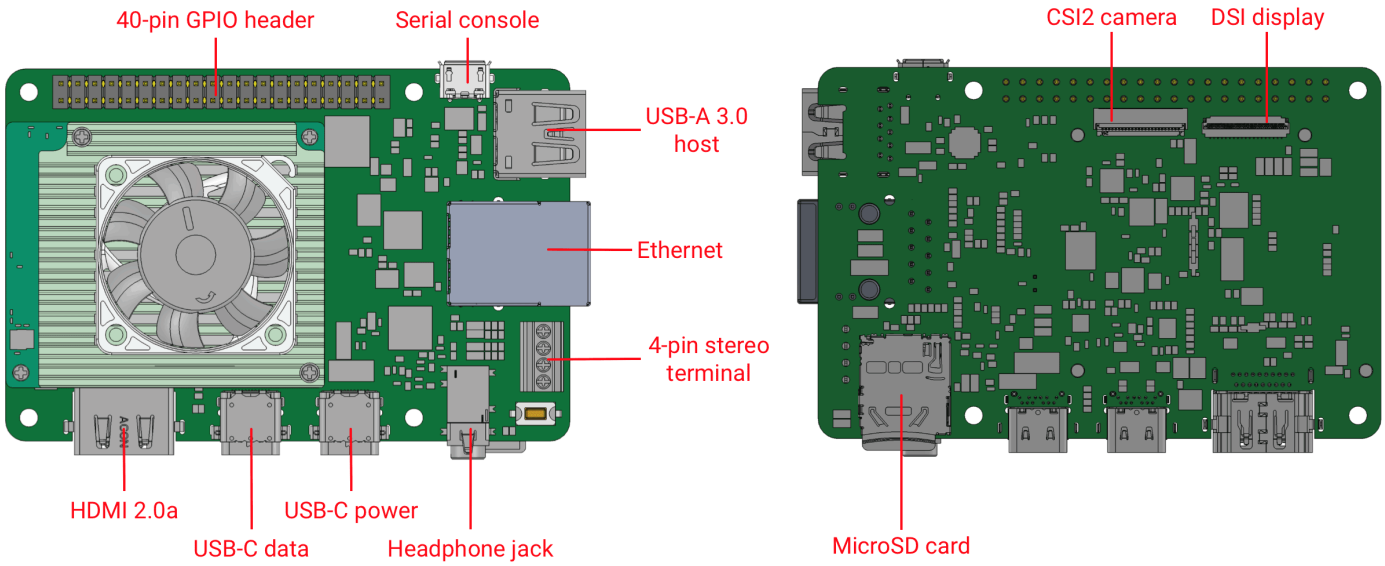


Figure 4. Connectors on the Coral Dev Board

I/O header pinout

All I/O pins on the 40-pin header are powered by the 3.3 V power rail, with a programmable impedance of 40-255 ohms, and a max current of ~82 mA.

All I/O pins have a 90k pull-down resistor inside the iMX 8M SoC that is used by default during bootup, except for the I2C pins, which instead have a pull-up to 3.3 V on the SoM. However, these can all be changed with a device tree overlay that loads after bootup.

You can interact with each pin using standard Linux interfaces such as device files (`/dev`) and sysfs files (`/sys`). For usage information, see **Connect to the Dev Board I/O pins**.

> **Caution:** Do not connect a device that draws more than ~82 mA of power or you will brownout the system.

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Table 2. Pinout for the 40-pin I/O header. (For detailed usage information, see Connect to the Dev Board I/O pins.)

SoC signal name	Baseboard signal	Header pins		Baseboard signal	SoC signal name
	+3.3 V power	1	2	+5 V power	
I2C2_SDA	I2C2_SDA	3	4	+5 V power	
I2C2_SCL	I2C2_SCL	5	6	Ground	
UART3_TXD	UART3_TXD	7	8	UART1_TXD	UART1_TXD
	Ground	9	10	UART1_RXD	UART1_RXD
UART3_RXD	UART3_RXD	11	12	SAI1_TXC	SAI1_TXC
GPIO6	GPIO_P13	13	14	Ground	
PWM3	PWM3	15	16	GPIO_P16	NAND_DATA03
	+3.3 V power	17	18	GPIO_P18	ECSPI2_SCLK
ECSPI1_MOSI	ECSPI1_MOSI	19	20	Ground	
ECSPI1_MISO	ECSPI1_MISO	21	22	GPIO_P22	ECSPI2_MISO
ECSPI1_SCLK	ECSPI1_SCLK	23	24	ECSPI1_SS0	ECSPI1_SS0
	Ground	25	26	ECSPI1_SS1	ECSPI1_SS1
I2C3_SDA	I2C3_SDA	27	28	I2C3_SCL	I2C3_SCL
GPIO7	GPIO_P29	29	30	Ground	
GPIO8	GPIO_P31	31	32	PWM1	PWM1
PWM2	PWM2	33	34	Ground	
SAI1_TXFS	SAI1_TXFS	35	36	GPIO_P36	ECSPI2_SS0
NAND_DATA07	GPIO_P37	37	38	SAI1_RXD0	SAI1_RXD0
	Ground	39	40	SAI1_TXD0	SAI1_TXD0

Key:

Synchronous Audio Interface (SAI)	Serial Peripheral Interface (SPI)	General Purpose I/O (GPIO)	+5 V power
Inter-Integrated Circuit (I2C)	Universal Asynchronous Receiver-Transmitter (UART)	Ground	+3.3 V power

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Universal Asynchronous Receiver-Transmitter (UART)

Each UARTv2 module supports the following:

- 7- or 8-bit data words, 1 or 2 stop bits, programmable parity (even, odd, or none).
- Programmable baud rates up to 4 Mbps.
- 32-byte FIFO on Tx and 32 half-word FIFO on Rx supporting auto-baud.

> **Note:** By default, the Mendel operating system configures UART1 for use with the the serial console.

Synchronous Audio Interface (SAI)

Each SAI module supports full duplex serial interfaces with frame synchronization, such as I2S, AC97, TDM, and codec/DSP interfaces.

Inter-Integrated Circuit (I2C)

Serial interface for external devices.

Serial Peripheral Interface (SPI)

Full-duplex enhanced Synchronous Serial Interface, with data rate up to 52 Mbit/s. Configurable to support Master/Slave modes, four chip selects to support multiple peripherals.

Pulse Width Modulation (PWM)

Operates on a frequency of 0-66 Mhz. Provides a 16-bit counter and is optimized to generate sound from stored sample audio images. It can drive motors and generate tones. It uses 16-bit resolution and a 4x16 data FIFO to generate sound.

Serial console port

The micro-USB port (see "serial console" in **figure 4**) provides access to the serial console based on the CP210x USB to UART Bridge Controller. Only Linux and Mac are officially supported for serial console connections, as follows.

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Connect with Linux

1. Run the following commands to add the required udev rule:

```
sudo sh -c "echo 'SUBSYSTEM==\"usb\", ATTR{idVendor}==\"0525\", MODE=\"0664\", \
GROUP=\"plugdev\", TAG+=\"uaccess\"' >> /etc/udev/rules.d/65-edgetpu-board.rules"

sudo udevadm control --reload-rules && udevadm trigger
```

2. Determine the device filename for the serial connection by running this command on your Linux computer:

```
dmesg | grep ttyUSB
```

   You should see two results such as this:

```
[ 6437.706335] usb 2-13.1: cp210x converter now attached to ttyUSB0
[ 6437.708049] usb 2-13.1: cp210x converter now attached to ttyUSB1
```

3. Use the name of the *first* filename listed as a `cp210x converter` to open the serial console connection (this example uses `ttyUSB0` as shown from above):

```
screen /dev/ttyUSB0 115200
```

Connect with Mac

1. Install the following device driver.

> Caution: Before installing the following package, be sure you've applied all available macOS software updates. Otherwise, you might be blocked from installing due to system security that disables the Allow button in System Preferences.

Install the CP210x USB to UART Bridge Virtual COM Port (VCP) driver for Mac.

2. Connect with this command:

```
screen /dev/cu.SLAB_USBtoUART 115200
```


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> Help! If `screen` prints `Cannot access line '/dev/ttyUSB0'`, then your Linux user account is not in the `plugdev` and/or `dialout` system group. Ask your system admin to add your account to both groups, and then restart your computer for it to take effect.
>
> If you see `[screen is terminating]`, it might also be due to the system groups, or there's something else wrong with `screen`—ensure all `screen` sessions are closed (type `screen -ls` to see open sessions), unplug the USB cable from the Dev Board, and then try again.

> **Tip:** You can also connect to the board via MDT (only with boards running Mendel 3.0 or higher).

HDMI port

This is a full-size HDMI 2.0a port.

By default, the output is locked at a resolution of 1920 x 1080 to avoid GPU pressure and power costs when driving higher resolution displays.

If your display does not support 1920 x 1080, you can change this setting by editing file at `/etc/xdg/weston/weston.ini`: In the `[output]` section, edit the line `mode=1920x1080` to be a resolution of your choice. You may also delete this line completely, and it will then use the highest resolution supported by the monitor (but doing so can degrade the overall system performance if it is higher than 1920x1080).

USB 3.0 ports

There are three USB 3.0 ports:

- **USB Type-A host:** Operates as a USB 3.0 host that can provide power. Use this port for your peripherals, such as a USB camera.

  > Caution: Do not connect a device that draws more than 1 A of power or you will brownout the system.

- **USB Type-C data:** Operates as a USB "on the go" (OTG) device port, so the Dev Board appears as a USB device to a connected host device. Use this port to **connect to the shell over USB** or to **flash the board**.
- **USB Type-C power:** Use this to power the board with a 2-3 A at 5 V DC connection.

Ethernet port

The Gigabit Ethernet port (RJ45) supports 10/100/1000 Mbps Ethernet/IEEE 802.3 networks.

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4-pin stereo terminal

We recommend using a 4 ohm, 3 watt speaker. A higher ohmage results in a much quieter output.

The stereo terminal is a 4-pin 2.54 mm-pitch terminal connector for stereo speakers. Wire functions are as follows (from left to right, as shown in figure 5):

- 1: Speaker left positive
- 2: Speaker left negative
- 3: Speaker right positive
- 4: Speaker right negative

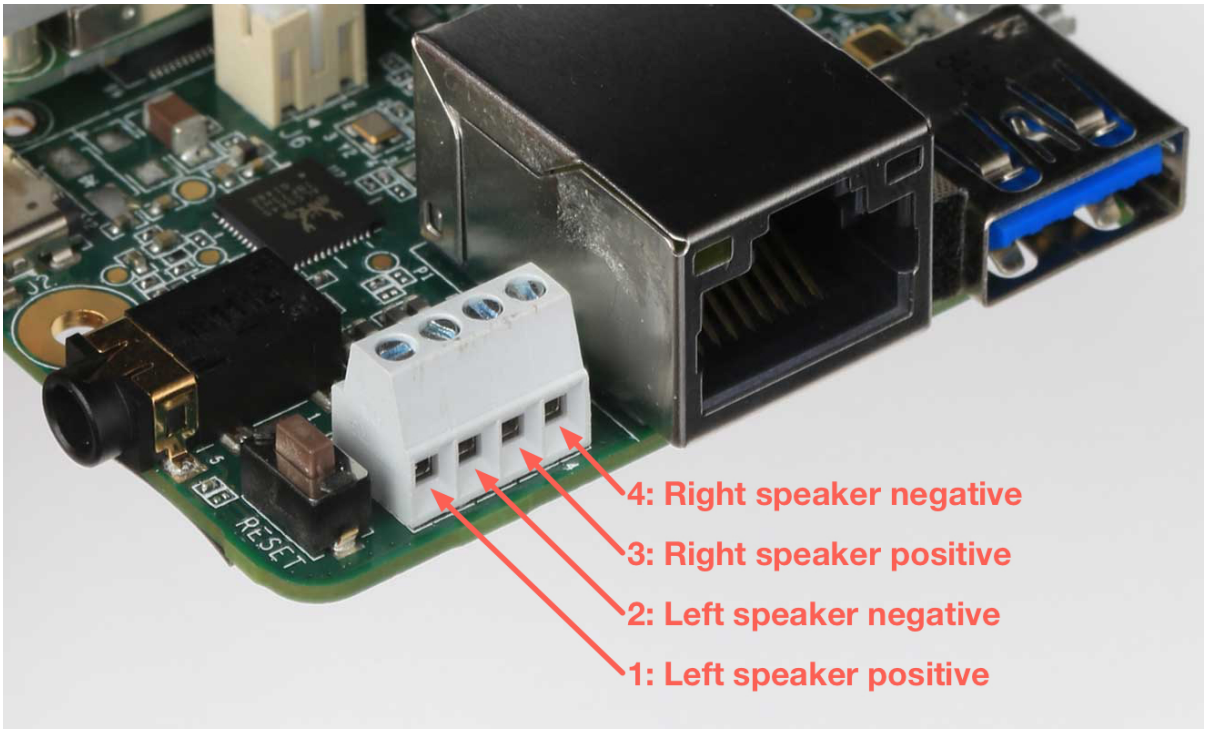


Figure 5. Stereo speaker terminals

MicroSD slot

The MicroSD card meets the SD/SDIO standard, up to version 3.0. It can be used as expanded memory for the system or as the disk for the system image. If the entire system fails, you can use the SD card to reflash U-Boot onto the board (see the **flashing instructions**).

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MIPI DSI display connector

The MIPI DSI display connector is a 39-pin flex cable connector that provides 4 lanes with resolution up to 1920x1080 at 60 Hz. The connector pinout is as follows.

Table 3. MIPI DSI pinout

Pin #	Name
1	GND
2	---TP5
3	---TP20
4	---TP2
5	GND
6	MIPI_DSI_D2_P
7	MIPI_DSI_D2_N
8	GND
9	MIPI_DSI_D1_P
10	MIPI_DSI_D1_N
11	GND
12	MIPI_DSI_CLK_P
13	MIPI_DSI_CLK_N
14	GND
15	MIPI_DSI_D0_P
16	MIPI_DSI_D0_N
17	GND
18	MIPI_DSI_D3_P
19	MIPI_DSI_D3_N
20	GND

Pin #	Name
21	DSI_TE
22	---
23	V1V8
24	---
25	DISP_LEDA
26	DISP_LEDK1
27	DISP_LEDK2
28	VOP_5p5_CONN
29	VON_N5p5_CONN
30	LED_PWM
31	GND
32	GND
33	--- TP21
34	GND
35	DISPLAY_I2C_SCL_1V8
36	DISPLAY_I2C_SDA_1V8
37	DSI_VSP_EN
38	DSI_TS_nINT
39	DSI_RESETB

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MIPI CSI-2 camera connector pinout

The MIPI CSI-2 camera connector is a 24-pin flex cable connector that's designed for the Coral Camera. The connector pinout is as follows.

Table 4. Pinout for camera cable connector

Pin	Name
1	GND
2	MIPI_CSI_D0_N
3	MIPI_CSI_D0_P
4	GND
5	MIPI_CLK_N
6	MIPI_CLK_P
7	GND
8	MIPI_CSI_D1_N
9	MIPI_CSI_D1_P
10	GND
11	MIPI_CSI_D2_N
12	MIPI_CSI_D2_P

Pin	Name
13	GND
14	MIPI_CSI_D3_N
15	MIPI_CSI_D3_P
16	GND
17	CAM_PWDNB
18	CAM_CLK (NC)
19	GND
20	CAM_I2C_SCL
21	CAM_I2C_SDA
22	CAM_VSYNC (NC)
23	CAM_RESETB
24	3.3V

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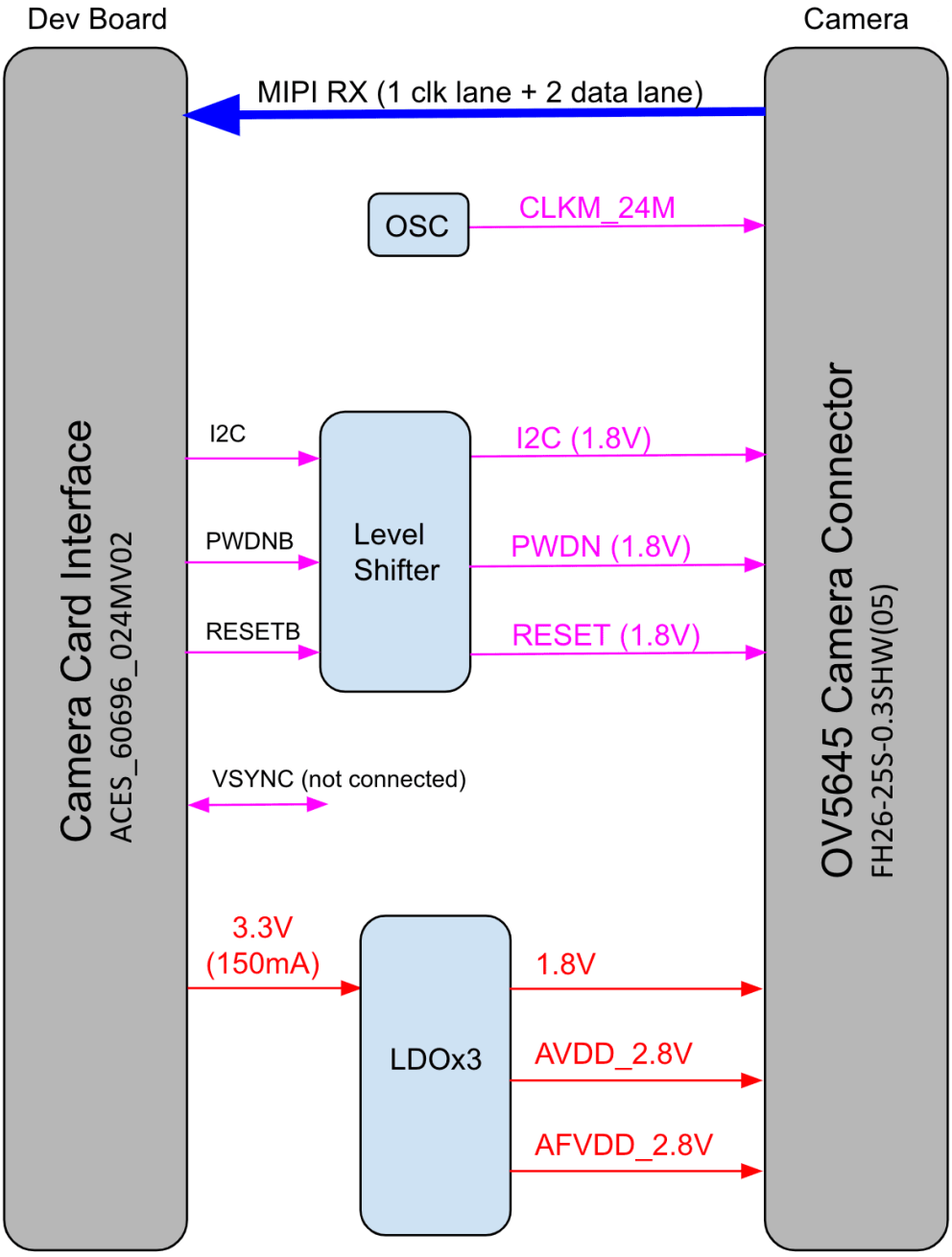


Figure 6. Camera adapter card diagram

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System power

The Coral Dev Board must be powered by 2-3 A at 5 V DC using the USB Type-C power port (see **figure 4**).

> **Caution:** Do not attempt to power the board by connecting it to your computer.

The SoM has one primary PMIC (BD71837MWV) from Rohm for the iMX 8M SoC complex, LPDDR4, eMMC, and Wi-Fi/Bluetooth. It integrates 8 DC-DC buck regulators and 7 LDOs to provide all power rails required by iMX 8M SoC and commonly used peripherals.

Boot mode

The baseboard includes 4 switches (indicated in figure 7 to control the boot mode. By default, they are set to boot from eMMC. You can change the boot mode as follows.

Table 5. Boot mode switches

Boot mode	Switch 1	Switch 2	Switch 3	Switch 4
Serial download	Off	On	[Don't care]	[Don't care]
eMMC	On	Off	Off	Off
SD card	On	Off	On	On

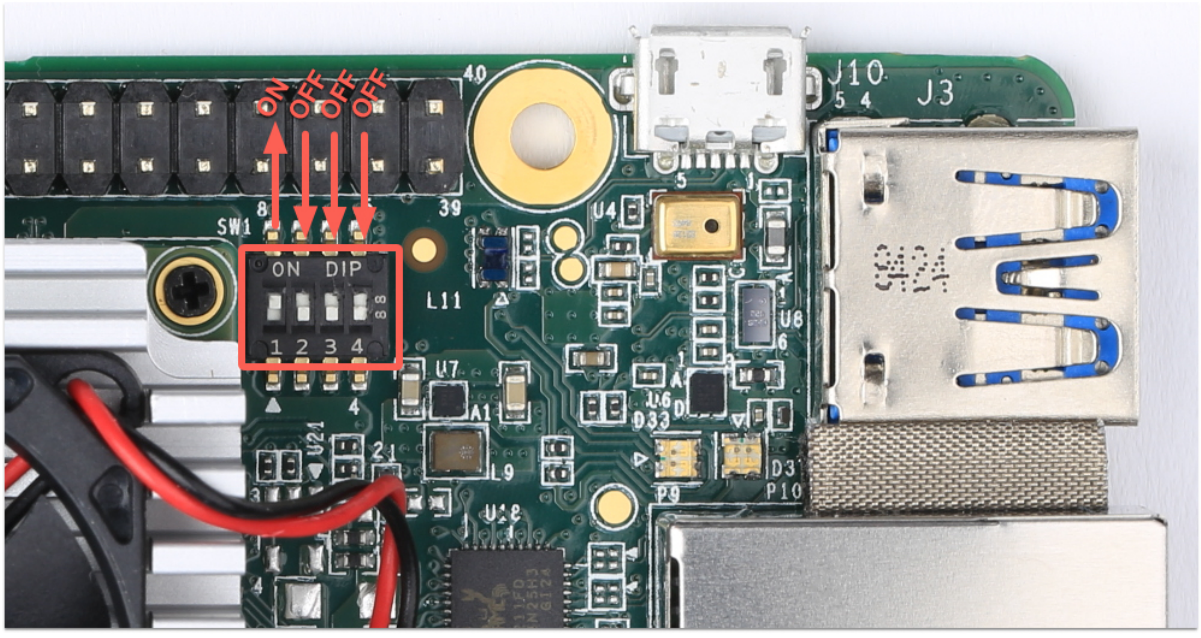


Figure 7. Boot mode switches, set to boot from eMMC

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System reset

You can restart the system with the RESET button shown in figure 8.

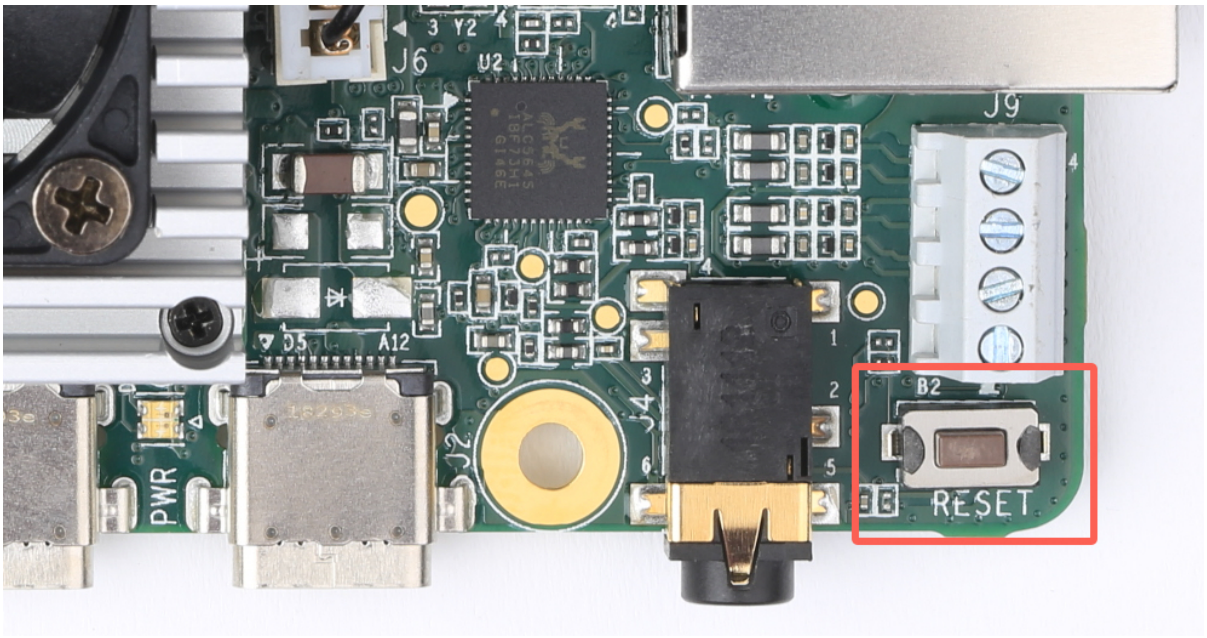


Figure 8. System reset button

Software and operation

The Dev Board factory setting includes only the U-Boot bootloader software on the eMMC memory. To use the board, you need to flash the **Mendel operating system** (a derivative of Debian Linux). For instructions, see the **Get started guide**.

The Mendel system includes software that's specially-designed for the Dev Board and required to operate the Edge TPU. It also includes Python APIs that make it easy to perform inferences with TensorFlow Lite models.

For information about how to create models and run inferences on the Edge TPU, read **TensorFlow models on the Edge TPU**.

> Caution: Avoid touching the heat sink during operation. Whether or not the fan is running, the heat sink can become very hot to the touch and might cause burn injuries.

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Caution: **Do not unplug the Dev Board to shut it down**. Doing so could corrupt the system image if any write operations are in progress. Instead, safely shutdown the system with the following command:

```
sudo shutdown now
```

When the red LED on the Dev Board turns off, you can unplug the power.

LED behavior

The Dev Board has two sets of on-board LED lights: one LED for power status, and a pair of LEDs providing the status of the serial port.

The Ethernet port also has a pair of LED lights.

Power LED

The LED that provides power status is situated between the Power (PWR) and USB On-The-Go (OTG) ports. It lights up red when the board is powered up and switches off when either power is removed or the main SoC is shut down (for example, when a `sudo shutdown` command is issued).

Serial port LEDs

The board has green and yellow LEDs near the serial console connector (USB micro-B), those show TX/RX activity via serial interface. The green LED lights up when there is activity on the RX line (indicating data is being received over the serial interface), while the yellow LED lights up when there is activity on the TX line (indicating that data is being transmitted over the serial interface).

SoM hardware details

The system-on-module (SoM) included with the Dev Board is based on NXP's iMX 8M system-on-chip (SoC) and contains all the essential system hardware, including the Edge TPU and Wi-Fi/Bluetooth radios. It is attached to the Dev Board baseboard with three 100-pin board-to-board connectors.

Note: If you are interested in using the Coral SoM with custom PCB hardware (instead of the baseboard provided with the Dev Board), you can learn more about the standalone SoM in the Coral SoM datasheet.

Figure 9 shows the dimensions of the SoM.

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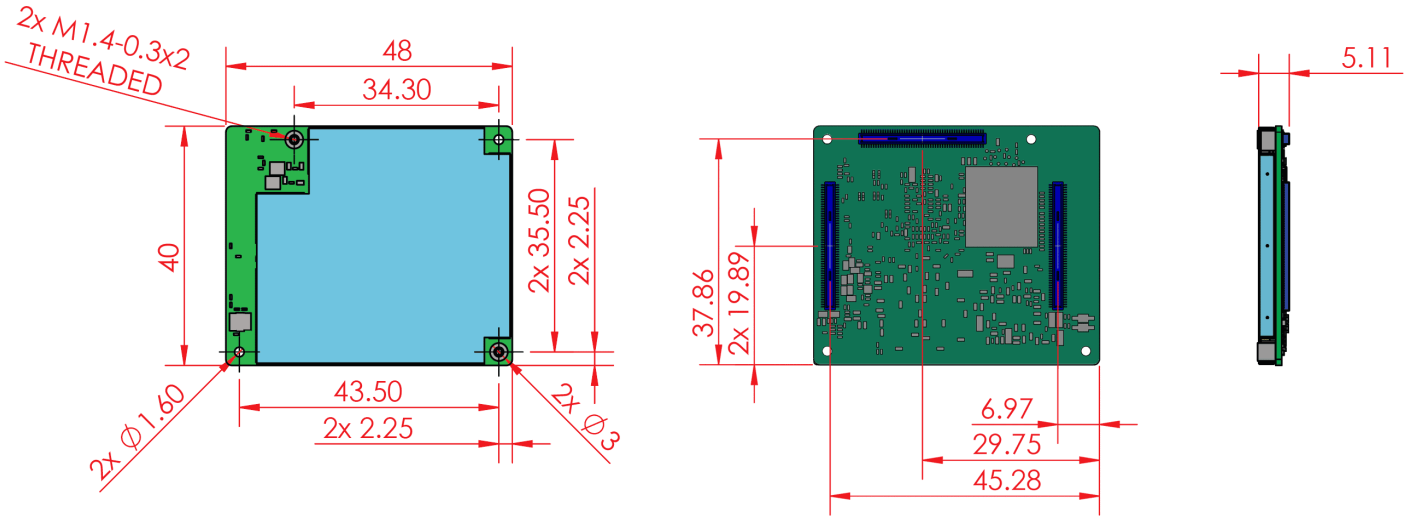


Figure 9. Coral SoM dimensions without the heat sink and fan

Recommended operating conditions

To ensure reliable operation and performance, the board should operate in the following environment:

- Temperature: 0-50° C

Thermal solution

To maintain functional heat levels the Dev Board includes a heat sink and a fan with the following specifications:

- Speed: 9k RPM
- Airflow: 138 LPM (4.9 CFM)
- Voltage: 5 V DC
- Power (peak): 0.65 W
- Static pressure: 42 Pa (0.17 in-H2O)

> **Caution:** Avoid touching the heat sink during operation. Whether or not the fan is running, the heat sink can become very hot to the touch and might cause burn injuries.

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Environmental and mechanical reliability tests

Table 6. Verified results for environmental and mechanical reliability tests

Test	Conditions	Verified
Temp cycling	Non-op, -40° C (LT) to 85° C (HT), 7 minute ramp, 23 minutes dwell, 60 minutes/cycle	200 cycles
Heat soak	Non-op, 85° C @ 85% RH	200 cycles
Audio jack cycling	50% manual plug/unplug, 50% uniaxial machine plug/ unplug	1000 cycles
HDMI cycling	Manual plug/unplug	100 cycles
MicroSD cycling	Manual plug/unplug	100 cycles
Vibration	3 axes (X, Y and Z), 15 minutes per axis, 10-500 Hz. Amplitude: 2.16 Grms	45 minutes
USB-C connector cycling	Manual plug/unplug	1000 cycles
USB-A connector cycling	Manual plug/unplug	1000 cycles
Micro USB connector cycling	Manual plug/unplug	1000 cycles
Fan run life	40°C, 65% RH	70k hours

Certifications

Table 7. Dev Board certifications

Country	Agency
USA	FCC
European Union	CE
Hong Kong	CE
Japan	VCCI
Korea	KC
Ghana	NCA

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Country	Agency
Taiwan	BSMI/NCC
Australia	RCM
New Zealand	RCM
India	WPC
Thailand	NBTC
Singapore	IMDA
Oman	TRA
Philippines	NTC

Schematic and layout files

Table 8. Dev Board schematics, layout, and 3D files

File	Description
Coral-Dev-Board-baseboard-schematic.pdf	Baseboard schematic in PDF
Coral-Dev-Board-baseboard-schematic-Altium.zip	Baseboard schematic files in Altium format
Coral-Dev-Board-baseboard-layout-Allegro.brd	Baseboard CAD layout in BRD format
Coral-Dev-Board.STEP	Dev Board (baseboard and SoM) 3D CAD file in STEP format

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Document revisions

Table 9. History of changes to this document

Version	Changes
1.6 (July 2020)	• Added part numbers for all SKU variants.
1.5 (June 2020)	• Correction to MIPI-CSI2 count.
1.4 (April 2020)	• Updated the 40-pin I/O header pinout to be searchable.
1.3 (January 2020)	• Added information on LED behavior.
1.2 (August 2019)	• Added schematic and layout files
1.1 (August 2019)	• Camera cable pinout corrected.
1.0 (June 2019)	• Removed SoM hardware details (now instead see the **SoM datasheet**) • Added Edge TPU performance details • Added table captions • Retitled some sections • Miscellaneous copy edits
Beta (March 2019)	Initial release

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