

# Bridge Board

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The bridge board connects two camera modules, external connectors and i.MX8M Plus module.

Connectors placed on the board are,

- [Hirose DF40C-100DS-0.4V](#)
- [Hirose CX80B1-24P](#)
- [Hirose microSD DM3BT-DSF-PEJS](#)
- [TE Connectivity 45PIN 0.3MM 571-4-2328724-5 FPC 3-2328724-5 \\$0.41](#)
- [Hirose DF40C-34DS-0.4V \(Mouser\)](#)
- [Amphenol M.2 Connector Key B 10128787](#)
- [CR2450 battery holder BAT-HLD-006-SMT](#)

## Camera Module 201 row connectors

These two connectors have identical pinouts and connect the bridge board to two Camera Modules.

Pin 1 is indicated on the board by a dot.

Toward thin part with microphone and other sensors

Pin	Code	Type	Details	Voltage
1	AF_VDD	Power	Reserved for Autofocus	3.3V
2	AVDD_2V8	Power	Analog, Max 500mA	2.8V
3	DOVDD	Power	Power for I/O circuit, Max 500mA	1.8V
4	VCC_1V8	Power	1.8V ,MAX 200mA	1.8V
5	GND	Power	GND	
6	CAM_FSIN	I/O	Frame sync input	
7	CAM_STROBE	I/O	Frame sync output	
8	EXTCLK	Input	External Clock Input (MCLK)	
9	ATT_INT	Output	Interrupt Attached Sensor, Active L	1.8V?
10	ATT_XSHUT	Input	Attached Sensor XSHUTDOWN	1.8V
11	Reserved	AF/PWM	PWM Motor control (NC)	
12	I2C_SCL	I/O	I2C1_SCL(pullup resistor 2.2K)	1.8V
13	I2C_SDA	I/O	I2C1_SDA(pullup resistor 2.2K)	1.8V
14	BCLK / SCK	I2S	Bit clock line	1.8V
15	WS / LRCLK	I2S	Word clock line	1.8V

Pin	Code	Type	Details	Voltage
16	SDATA1	I2S	Input data 1	1.8V
17	SDATA2	I2S	Input data 2 (NC)	1.8V

Towards image sensors

Pin	Code	Type	Details	Voltage
34	AGND	Power	Analog ground	
33	RESET	Input	Camera Reset, Active Low (RSTB)	
32	PWRDN	Input	Camera Power Down	
31	Reserved			
30	Reserved			
29	-		GND	
28	CSI_RX_D0P	Camera	MIPI_CSI_RX_D0+	1.8V
27	CSI_RX_D0N	Camera	MIPI_CSI_RX_D0-	1.8V
26	-		GND	
25	CSI_RX_D1P	Camera	MIPI_CSI_RX_D1+	1.8V
24	CSI_RX_D1N	Camera	MIPI_CSI_RX_D1-	1.8V
23	-		GND	
22	CSI_RX_D2P	Camera	MIPI_CSI_RX_D2+	1.8V
21	CSI_RX_D2N	Camera	MIPI_CSI_RX_D2-	1.8V
20	-		GND	
19	CSI_RX_CLKP	Camera	MIPI_CSI_RX_CLK+	1.8V
18	CSI_RX_CLKN	Camera	MIPI_CSI_RX_CLK-	1.8V

## Camera Module Development and testing

The bridge board can be used to test Camera Modules. Connections from the image sensors are connected to the RPi Zero 22pin connector. This allows the bridge board to be connected to a [Raspberry Pi CM 4 IO Board](#) or [Tinker Edge R](#) for testing.

The 3.3V pin can go both ways depending on setup.

1. When the MCU daughter board is mounted alternate cameras can be connected to the 15 pin connectors instead of to the Camera Module connectors. This means that the board must supply power out on the 3.3V pin and receive power over the USB plug

Pin # Name Description 1 GND Ground 2 CAM\_D0\_N MIPI Data Lane 0 Negative 3 CAM\_D0\_P MIPI Data Lane 0 Positive 4 GND Ground 5 CAM\_D1\_N MIPI Data Lane 1 Negative 6 CAM\_D1\_P MIPI Data Lane 1 Positive 7 GND Ground 8 CAM\_CK\_N MIPI Clock Lane Negative 9 CAM\_CK\_P MIPI Clock Lane Positive 10 GND Ground 11 CAM\_IO0 Power Enable 12 CAM\_IO1 LED Indicator 13 CAM\_SCL I2C SCL 14 CAM\_SDA I2C SDA 15 CAM\_3V3 3.3V Power Input

For development and testing there are additional optional connectors,

- 2 \* RPi compatible [TE Connectivity 15pin 1mm FPC 1-84952-5](#)
- [TE 45 pins Wire-to-Board FPC 0.3 4-2328724-5 \(Mouser\)](#) \$0.41

MIPI DSI display output

## Other notes

Inspiration from [https://www.waveshare.com/wiki/IMX219-83\\_Stereo\\_Camera?spm=a2g0o.detail.1000023.2.296d4832DZoK0X](https://www.waveshare.com/wiki/IMX219-83_Stereo_Camera?spm=a2g0o.detail.1000023.2.296d4832DZoK0X)

Use accelerometer ICM20948: Accelerometer: Resolution: 16-bit Measuring Range (configurable):  $\pm 2$ ,  $\pm 4$ ,  $\pm 8$ ,  $\pm 16g$  Operating Current: 68.9uA Gyroscope: Resolution: 16-bit Measuring Range (configurable):  $\pm 250$ ,  $\pm 500$ ,  $\pm 1000$ ,  $\pm 2000^\circ/\text{sec}$  Operating Current: 1.23mA Magnetometer: Resolution: 16-bit Measuring Range:  $\pm 4900\mu\text{T}$  Operating Current: 90uA

Development breakouts (bigger version more connectors)

- 24 pins MIPI CSI ?
- 40 pins for MIPI CSI cams

Alternative Eye connectivity

- [DF40GL-44DP-0.4V\(58\)](#)
- [DF40GL-44DS-0.4V\(58\)](#)

Mating with

- [Hirose DF50C-100DP-0.4V](#)
- [Hirose DF40C-34DP-0.4V\(51\) for Eye - Mouser](#)

Not used:

- [MAX14998ETO+T IC DISPLAY PORT MUX 4CH 42TQFN](#)

Key B PCIe x2 SATA USB 2.0 / 3.0 AUDIO UIM HSIC SSIC I2C SMBus

Alternate USB 2 pinouts / gpio ?

Allow 30mm wide, 42mm long module (thickness S3 ? = 1.5mm on top)

M.2 Key B - LoRA LR62E, Semtech SX1262 module <https://www.fanstel.com/lr1262>

WiFi M.2 B key module 2242 2230 MT7612U <https://www.asiarf.com/shop/hot-sales/wifi-m-2-b-key-module-2242-2230-mt7612u-11ac-2x2-867-mbps-m27612-bu3/>

M.2 Key B - Wavlink AX3000 M.2 WiFi 6 3000Mbps WiFi Card Intel AX200 WiFi / BT 5.1

<https://www.newegg.com/wavlink-690a5d-usb-3-0/p/OXM-00B5-00052?>

Description=m.2%20wifi&cm\_re=m.2\_wifi--OXM-00B5-00052--Product&quicklink=true

M.2 Key B - Dell OEM Wireless 5808E DW5808E M.2 Mobile Broadband 4G LTE WWAN Card 4GP3D

[https://www.newegg.com/p/OXM-005R-000P1?Description=m.2%20lte&cm\\_re=m.2\\_lte--OXM-005R-000P1--Product](https://www.newegg.com/p/OXM-005R-000P1?Description=m.2%20lte&cm_re=m.2_lte--OXM-005R-000P1--Product)

SMB Assembly China <https://www.nextpcb.com/>

SMB Assembly Europe <https://www.smtlowcost.com>