

IMX6 Hummingboard

[imx6](#), [hummingboard](#), [carrierboard](#)



Description

Solid-Run's HummingBoard (during development known as Carrier-One) is the internal development board for the i.MX6 MicroSOM (System on Module), since released as a powerful micro-computing platform. Based on the scalable Freescale i.MX6 family of system-on-chip (SoC) processors ranging from a single to quad Cortex-A9 processor cores, 2D/3D hardware graphics processing unit, video decoding and encoding acceleration hardware, HDMI 1080p 3D as well a compatibility with a broad range of peripherals.

Mix & Match Feature for business customers: Choose the model that's right for you. You can choose your SolidRun uSOM and match it to each HummingBoard you wish.

Hardware specification

- Detailed Hardware specification about the Cubox-i Carrierboard can be found here: [IMX6 Hummingboard Hardware](#)
- Detailed IMX6 MicroSom specification can be found here: [IMX6 MicroSom](#)
- Additional Documents: [Hummingboard Documents](#)



Comparison Table

The Hummingboard itself is offered in 4 versions: the standard and professional version of the carrier board. The professional, or "pro", version of the carrier board offers additional features and native integrated capability for specific uses. The Hummingboard Edge and Gate got a completely new layout compared to the two other models.

Notes: The features of the MicroSoms are limited to the features of the Carrierboard/Hummingboard.

For example: MicroSom supports eMMC, but carrierboard not.

Description/Model	HummingBoard Carrierboard Base	HummingBoard Carrierboard Professional	Hummingboard Gate	Hummingboard Edge
MicroSOM	All IMX6 MicroSom Models	All IMX6 MicroSom Models	All IMX6 MicroSom Models	All IMX6 MicroSom Models
B2B Connectors	2	2	3	3
I/O Connectivity				
10/100/1000Mbps¹ Ethernet²	1x RJ-45	1x RJ-45	1x RJ-45	1x RJ-45
HDMI Out 1080p with CEC	✓	✓	✓	✓
LVDS Display Out	✗	✓	✗	✓
USB 2.0	2x Host	2x Host+ 2x Headers	2xHost Front+2xHost Back	2xHost Front+2xHost Back
Analog Audio	PWM Mono output	Stereo Out, MIC In	✗	Stereo Out, MIC In
Digital Audio Out	Coax SPDIF	Coax SPDIF	✗	✗
Camera	MIPI CSI-2, 15 pins Header ³	MIPI CSI-2, 15 pins Header ³	MIPI-CSI-2 and MIPI-DSI, Parallel Camera ³	MIPI-CSI-4 and MIPI-DSI, Parallel Camera (on GPIO header) ³
MIPI DSI	✗	✗	✓	✓
Parallel Display/ Camera I.F	✗	✗	✓	✓
CAN Bus	✗	✗	✗ ⁴	✗ ⁴
RS485	✗	✗	Header	Header
Reset Button	Internal	Internal	Internal	Internal
RTC	✗	On board	On board	On board
RTC Battery	✗	Header	On board	On board
SATA II	✗	mSATA- Full Size ⁵	✗	M.2 2242 (SATA only) ⁵
PCI- Express 2.0	✗	mPCIE- Half Size	mPCIE- Half and Full Size	mPCIE- Half and Full Size
Storage	uSD, USB	uSD, USB, mSATA	uSD/ USB	uSD/ USB/ m.2
Bootng Options	uSD	uSD	uSD/ USB	uSD/ USB/ eMMC/ m.2
MikroBus	✗	✗	✓	✗
GPIOs	26 pins Header	26 pins Header	36 pins Headers	36 pins Headers
SIM	✗	Optional, 1 connectors to mPCIE	1 connectors to mPCIE	1 connectors to mPCIE
InfraRed for Remote Control	✗	38KHz Receiver	✗	38KHz Receiver
ADC	✗	✗	✗	12 bit - 4 channels - 1 MikroBUS, 1 DC-in sensor and 2 with headers

Description/Model	HummingBoard Carrierboard Base	HummingBoard Carrierboard Professional	Hummingboard Gate	Hummingboard Edge
Mechanical and Electronic Specifications				
Voltage In	5V	5V	7V-36V	7V-36V
DC- In	uUSB	uUSB	5.5mm in	5.5mm in
Dimensions (WxL)	85mmx56mm	85mmx56mm	102mmx69mm	102mmx69mm
Enclosure available			optional metal enclosure	optional metal enclosure

Notes:

¹ 1000Mbps link is limited to 470Mbps actual bandwidth due to internal chip buses limitation.

² Ethernet PHY is on the uSOM

³ Mipi Pins: Compatible with the RPi cams on Pro/Base [OV5647](#) and Compatible with Wandboard Cam on Gate/Edge [OV5640](#)

⁴ Supported by MicroSom Rev. v1.4 and upper

⁵ Supported with SoM i2eX and above

Hummingboard Customization

Mix & Match Feature for business customers: Choose the model that's right for you. You can choose your SolidRun uSOM and match it to each Hummingboard Carrierboard you wish:

- Choose the [Carrierboard](#)
- Choose the [MicroSom](#)
- Choose optional Wifi/Bt

More Information can be found at our [Mix and Match](#) section of our [Solid-Run.com Website](#) or [contact us](#) directly.

Create your own Carrierboard

For manufacturers and developers additional information concerning "how to create your own carrierboard" can be found on this page:

[Create a IMX6 Carrierboard](#)

Remote Controls**InfraRed Remotes**

It's a GPIO based 38KHz receiver that supports lots of 38KHz based remote controls. Also [LIRC](#) is supported.

HDMI-CEC

All imx6 devices supports hdmi-cec. For further information please have a look at: [IMX6 HDMI-CEC](#)

Power Consumption

Power Supply

Base/Pro

Hummingboard offers a single powersupply (input: 110V - 220V) with two connector options: US or Europe. The power supply has the connectors directly on the brick (MicroUSB). For those living in Australia, or other countries that do not utilize the US or Europe power connectors, you can use a connector adapter to adapt the US or Europe connector to your local connector type. In this case, select the connector option that is easiest to adapt.

3rd Party Power Supplies:

Outputs 5V and is able to source 2A (3A for i4pro models). The Hummingboard Base and Professional models are using a MicroUSB connector. The Hummingboard 2.0 got a 5V-36V 5.5mm in DC-In connector.

The Hummingboard i4pro uses 1.5A in max peak (wifi/gig/processor/gpu/vpu/memory). Because the Hummingboard also supplies two 500mA USB ports, the power supply should be at least 2.5A (1.5A for Hummingboard + 1A for USB devices since it's a powered USB host ports).

Minimum Power Consumption:

On idle times; Hummingboard i4pro goes to < 1W while refreshing the HDMI out. Disabling HDMI out makes DDR clock completely gated which should be even lower.

Edge/Gate

7V-36V (12V recommended), 5.5mm DC Jack in

External Battery

External battery can be used, for example

<http://www.fit-pc.com/web/products/fit-uptime/>

Please take care of the voltage (hb pro/edge/gate)

Hummingboard Pro/Gate Enclosure

Aluminium enclosure , fits HummingBoard Edge and HummingBoard Gate.

Weight 0.45 kg

The dimensions with the enclosure are :

Length ~ 12.5cm

Width ~ 8cm

Height ~ 2.8cm



PoE

The Hummingboard Carrierboards (and Cubox-i) don't support power over ethernet (poe)

Cellular Modems

We have tested the Telit HE910-D and Sierra Wireless EM7305 , both work very well under Linux. (miniPCIe Model!)

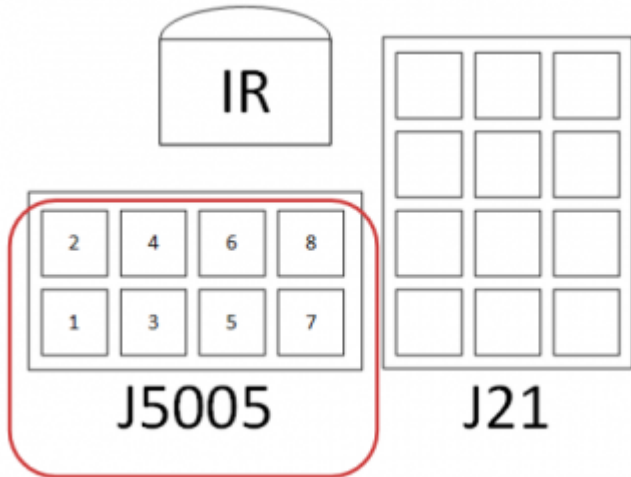
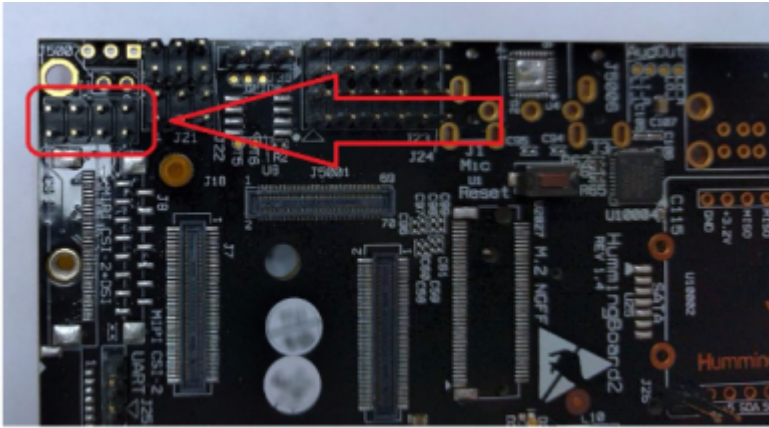
The Sierra Wireless MC74-series can cause some issues, workaround can be found [here](#). "... isolate USB3 data pins #23, 25, 31, 33 on top side of the card ".

Hummingboard Edge/Gate Boot Jumpers

Only available for rev 1.3 and above!

Hummingboard Gate/Edge is possible to boot from different media - without any fusing.

Jumpers need to be setup at J5005



To boot from:

- eMMC 3 jumpers will be needed: (1+2),(3+4), (7+8)
- MicroSD 2 jumpers will be needed: (3+4), (5+6)
- M.2 SATA SSD: 1 jumper will be needed: (1+2)
- USB OTG: No jumpers needed: ensure that no jumpers are connected to

Thermal Application Note

Here you can find the Thermal-Application-Note for the imx6 MicroSoms: [MicroSom Documents](#)

All of our SoMs are available in industrial temperature, The default temperature for the dual / quad core models is extended (-20c to 70c) and we also offer industrial and automotive grades (this is a custom order and LT will be longer).

Additional Documents

Documents like the schematics of the Carrierboards and the ROHS/CE Certificates are listed here: [Hummingboard Documents](#)

External Links and References

- [IMX6 Hummingboard Documents](#)
- [IMX6 MicroSom](#)
- [IMX6 Hummingboard](#)
- [SolidRun Hummingboard Website](#)

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