What is BeagleBone® Blue...
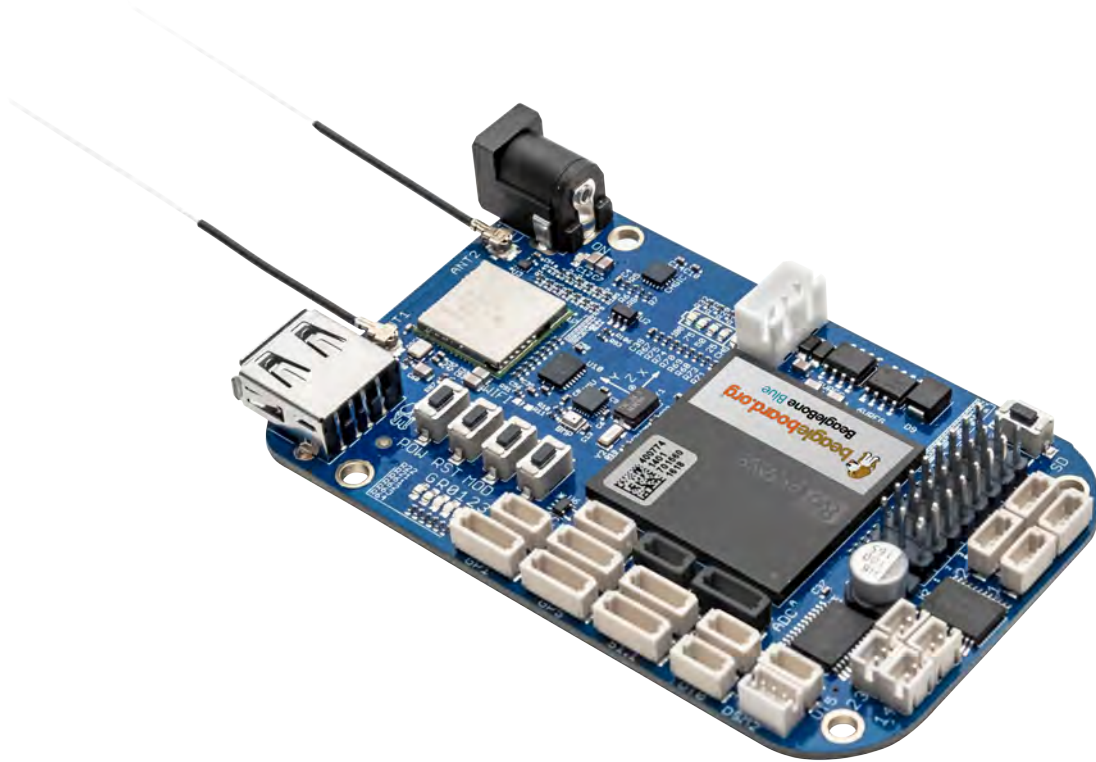
BeagleBone® Blue is the affordable and complete robotics controller built around the popular BeagleBone® open hardware computer. Linux-enabled, Blue is community-supported and fully open-source. High-performance, flexible networking capabilities are coupled with a real-time capable Linux system and a compelling set of peripherals for building mobile robots quickly and affordably. Utilizing the pre-configured WiFi access point, starting your code development is as simple as connecting a battery and opening your web browser.

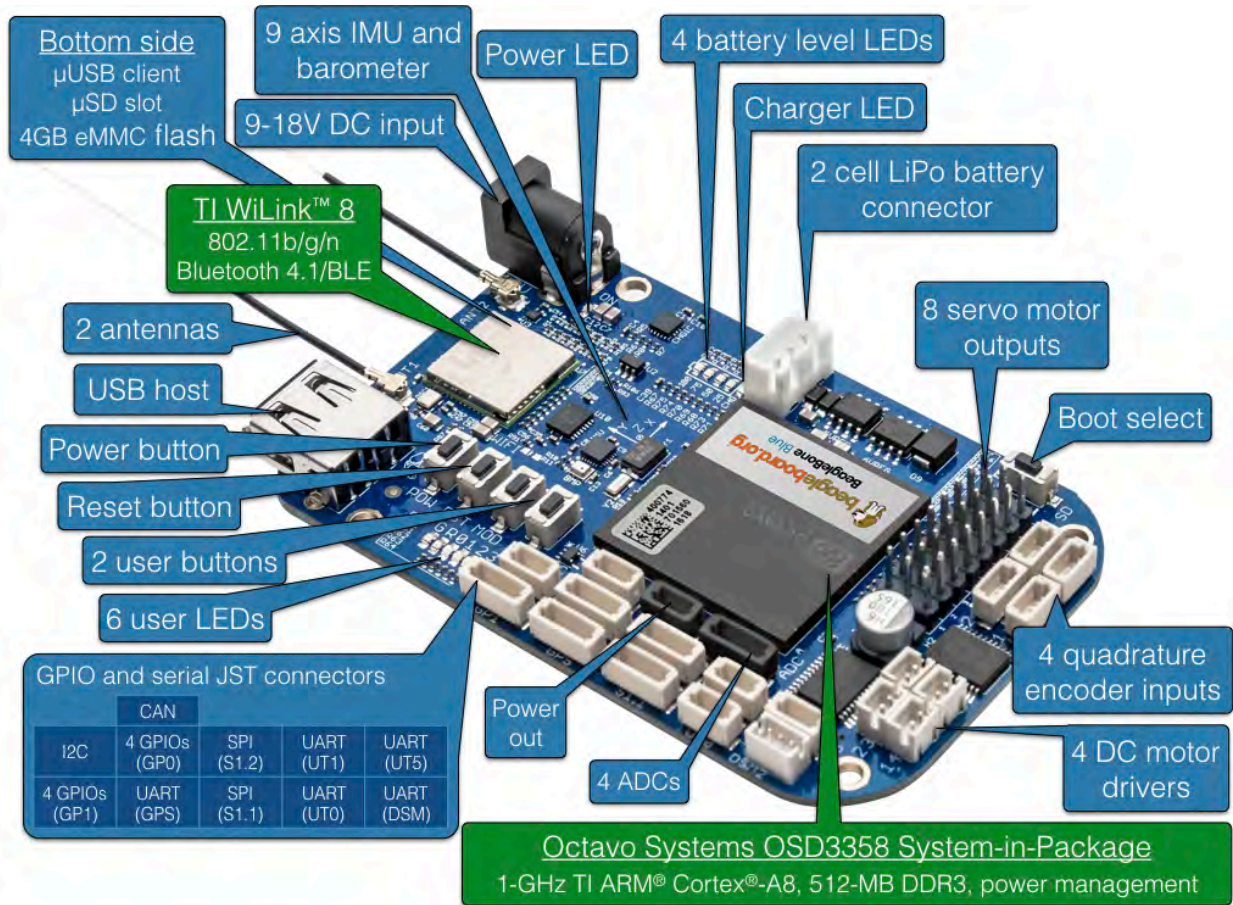Processor: Octavo Systems OSD3358 1GHz ARM® Cortex-A8

- 512MB DDR3 RAM
- 4GB 8-bit on-board flash storage
- 2×32-bit 200-MHz programmable real-time units (PRUs)
- On-board flash programmed with Linux distribution

Connectivity and sensors

- Battery: 2-cell LiPo support with balancing, 6-16V charger input
- Wireless: 802.11bgn, Bluetooth 4.1 and BLE
- Motor control: 8 6V servo out, 4 DC motor out, 4 quad enc in
- Sensors: 9 axis IMU, barometer
- Connectivity: HighSpeed USB 2.0 client and host
- Other easy connect interfaces: GPS, DSM2 radio, UARTs, SPI, I2C, analog, buttons, LEDs

Software Compatibility

- Debian, ROS, Ardupilot, ...
- Graphical programming, Cloud9 IDE on Node.js
- plus much more

Bottom side
μUSB client
μSD slot
4GB eMMC flash

9 axis IMU and barometer

Power LED

4 battery level LEDs

Charger LED

9-18V DC input

2 cell LiPo battery connector

TI WiLink™ 8
802.11b/g/n
Bluetooth 4.1/BLE

8 servo motor outputs

2 antennas

USB host

Boot select

Power button

Reset button

2 user buttons

6 user LEDs

4 quadrature encoder inputs

Power out

4 DC motor drivers

4 ADCs

GPIO and serial JST connectors

	CAN			
I2C	4 GPIOs (GP0)	SPI (S1.2)	UART (UT1)	UART (UT5)
4 GPIOs (GP1)	UART (GPS)	SPI (S1.1)	UART (UT0)	UART (DSM)

Octavo Systems OSD3358 System-in-Package
1-GHz TI ARM® Cortex®-A8, 512-MB DDR3, power management

Specifications:

a. Processor (Integrated in the OSD3358):

   i. AM335x 1GHz ARM® Cortex-A8

   ii. SGX530 graphics accelerator

   iii. NEON floating-point accelerator

   iv. 2x PRU 32-bit 200MHz microcontrollers

b. Memory:

   i. 512MB DDR3 800MHZ RAM (Integrated in the OSD3358)

   ii. 4GB 8-bit eMMC on-board flash storage

   iii. SD/MMC Connector for microSD

c. Software Compatibility

   i. Debian

   ii. Ardupilot

  iii. ROS

  iv. Cloud9 IDE on Node.js w/ BoneScript library

 d. Connectivity

  i. High speed USB 2.0 Client port: Access to USB0, Client mode via microUSB

  ii. High speed USB 2.0 Host port: Access to USB1, Type A Socket, 500mA LS/FS/HS

  iii. WiLink 1835 WiFi 802.11 b/g/n 2.4GHz. Supports the following modes

   1. 2x2 MIMO

   2. AP

   3. SmartConfig

   4. STA

   5. Wi-Fi Direct

   6. Mesh over Wi-Fi based on 802.11s

  iv. WiLink 1835 Bluetooth 4.1 with BLE

  v. Serial port:

   1. UART0, UART1, UART5 available via 4 pin JST-SH connectors

   2. UART2 available via 6 pin JST-SH connector (EM-506 GPS style connector)

   3. UART4 RX available via 3 pin DSM2 (JST-ZH) connector

  vi. I2C1 available via 4 pin JST-SH connector

  vii. SPI1 CS0 (S1.1) and SPI1 CS1 (S1.2) available via 6 pin JST-SH connectors

  viii. CAN available via 4 pin JST-SH connector (includes TCAN1051 CAN transceiver)

  ix. 8 GPIOs (GP0 and GPI1) available via 6 pin JST-SH connectors

  x. ADC inputs 0 to 3 available via 6 pin JST-SH connector

  xi. 3.3VDC and 5VDC power output via 4 pin JST-SH connector

 e. Power management:

  i. TPS65217C PMIC is used along with a separate LDO to provide power to the system (Integrated in the OSD3358)

  ii. 2 cell (2S) LiPo battery charger (powered by 9 – 18VDC DC Jack)

  iii. 6VDC 4A regulator to drive servo motor outputs

 f. Debug Support: JTAG test points

 g. Power Source

  i. microUSB USB

  ii. 2 cell (2S) LiPo battery JST-XH connector

  iii. 9 - 18VDC DC Jack

h. User Input / Output

  i. Power Button

  ii. Reset Button

  iii. Boot Button

  iv. 2 user configurable buttons (MOD, PAU)

  v. 11 user configurable LEDs (USR0-3, Red, Green, WIFI, Battery 0-3); Charger LED; Power LED

i. Motor Control (requires power from either DC Jack or 2S battery):

  i. 4 DC motor drivers

  ii. 4 Quadrature encoder inputs

  iii. 8 Servo motor outputs

j. Sensors

  i. 9 axis IMU

  ii. Barometer

Recommended Accessories

- Cable sub-assemblies:
  - UART, I2C, CAN, Quadrature encoders, PWR - 4-wire JST-SH
  - SPI, GPIO, ADC - 6-wire JST-SH

- Servo motors
  - 6V DC servo motor
- GPS
  - Adafruit Ultimate GPS breakout
- Replacement antennas
  - Antenna

- SPI TFT displays
  - Adafruit 2.4" LCD breakout