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
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

- Chassis with geared DC motors: Pololu Romi Chassis
  - Wheel encoders
  - Chassis - Black

- Cable sub-assemblies:
  - UART, I2C, CAN, Quadrature encoders, PWR - 4-wire JST-SH
  - SPI, GPIO, ADC - 6-wire JST-SH
  - Motors - 2-wire JST-ZH - wired receptacle
  - DSM - 3-wire JST-ZH

- Cables
  - microUSB -- standard

- Batteries
  - 2S1P LiPo with 3-wire JST-XH charge connection

- Power supplies
  - 12V, 4A with 5.5mm/2.1mm center positive and power cord

- Servo motors
  - 6V DC servo motor

- GPS
  - Adafruit Ultimate GPS breakout

- Replacement antennas
  - Antenna

- USB cameras
  - Logitech C270
  - Logitech C920

- SPI TFT displays
  - Adafruit 2.4" LCD breakout