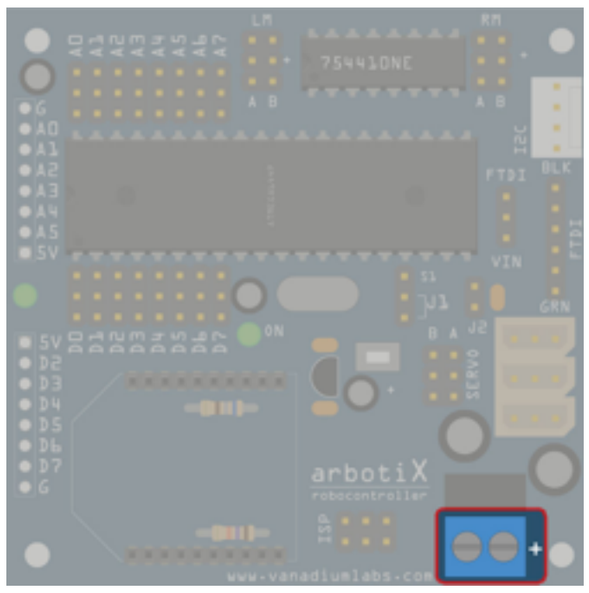
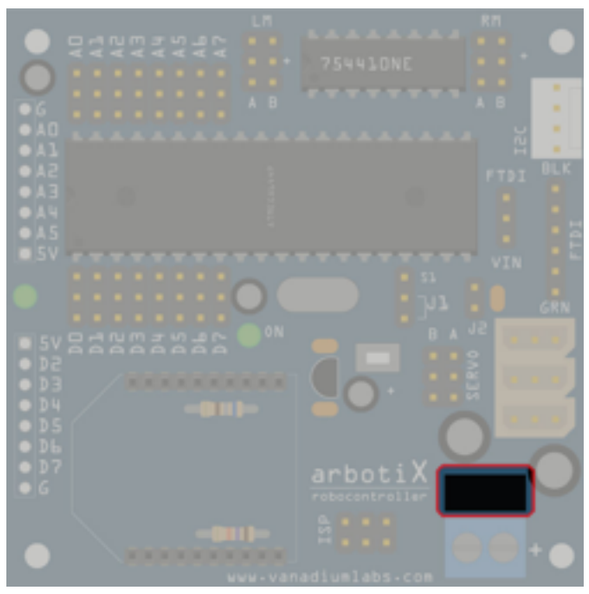
ArbotiX Hardware Overview

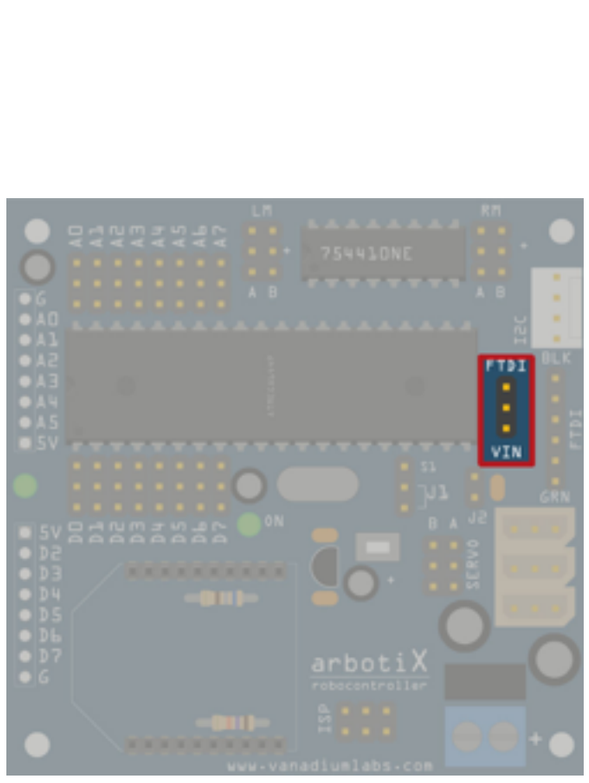
DC Power Jack
The DC power jack will provide power to any DYNAMIXEL and Hobby Servos connected to the ArbotiX. This port can also power the rest of the board with 5v through the 5v Regulator.



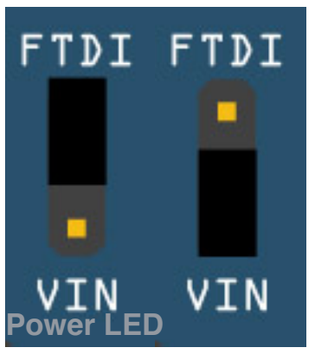
Regulator
The 5V regulator will step down the input voltage from VIN to 5V for the ATMEGA644p and devices. It is normal for the regulator to get hot to the touch.



Power Selection Jumper
The Power Selection Jumper will allow you to choose how to power the ArbotiX's microcontroller circuitry. By connecting the jumper between the middle pin and the 'FTDI' Pin, the microcontroller will be powered from the 5v supply from the FTDI cable - in most cases this is 5v from your computer's USB connector. Connecting the jumper between the middle pin and 'VIN' will power the microcontroller from the 5v regulator, which is powered by the power supplied to the DC Power



Terminals

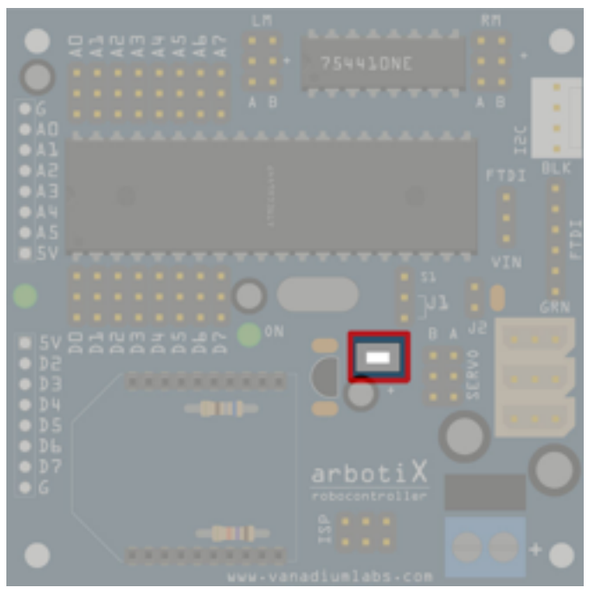


Power LED

This LED will turn on when the ATMEGA644 is getting a 5v power signal.

Reset Button

This Button will reset the ArbotiX and restart the loaded program, providing the J2 jumper is set.

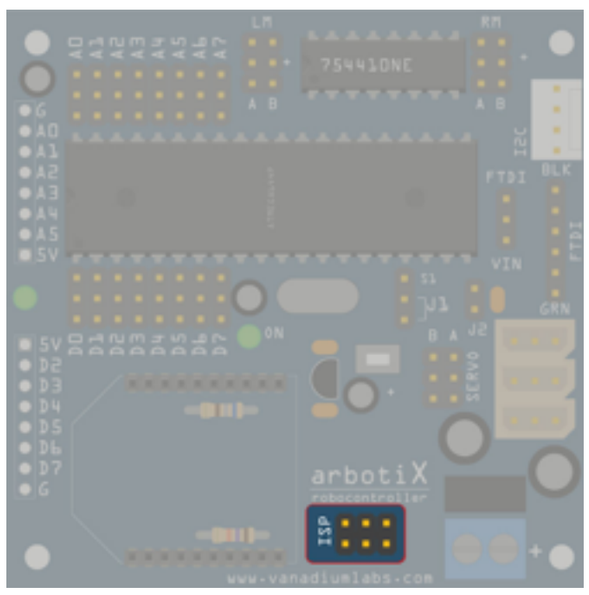


FTDI Serial Port / Programming Port

The FTDI port is a dual programming and serial port. By connecting an FTDI device (like a FTDI Cable or a UartSBee you can program the ArbotiX and relay serial communications.

-The FTDI port and the XBee socket share a serial port, so only one can be used at a time.

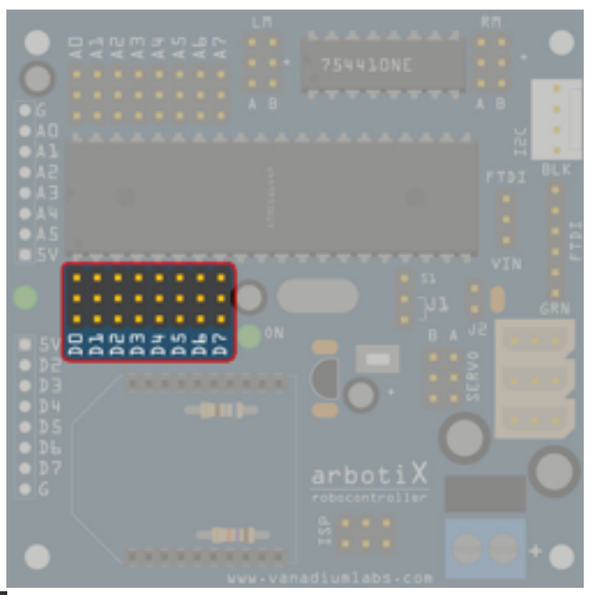
ISP Programming Port



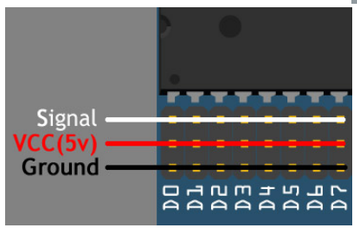
The ISP (In System Programmer) port is a secondary way of programming the ArbotiX. The main advantage of using the ISP port over the FTDI port is that it does not require a serial connection. This means you can leave your XBee plugged in while you program your ArbotiX. The disadvantage is that you cannot send or receve serial communications via the ISP port.

-The ArbotiX can only be programmed via FTDI if the ATMEGA644p has a Bootloader on it. All ArbotiX units ship with a bootloader, but programming via an ISP programmer will overwrite the bootloader.

Digital I/O Headers

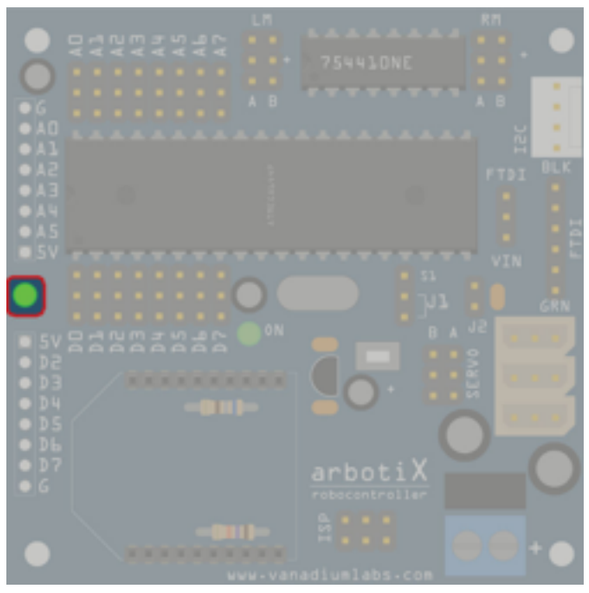


The Digital I/O headers give you easy access to the ArbotiX's 8 digital pins. Each header has a Signal-Voltage-Ground configuration, making them plug and play compatible with many sensors like RobotGeek and Phidgets Sensors.



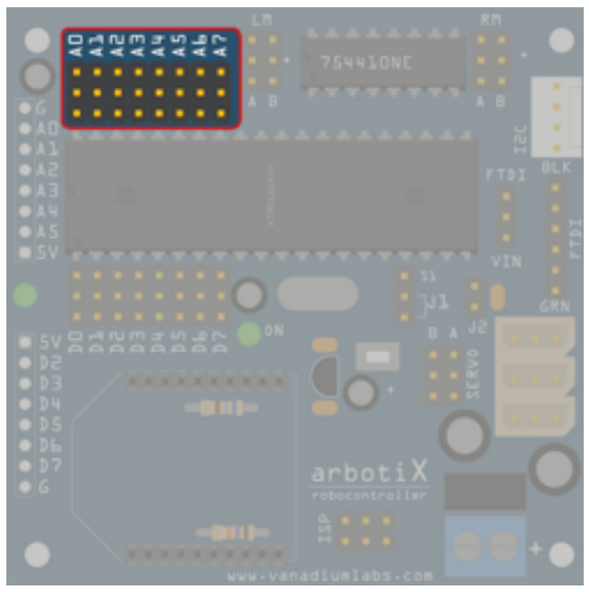
Digital Pins `D3` and `D4` are PWM pins and usable with the `analogWrite` function.

User LED

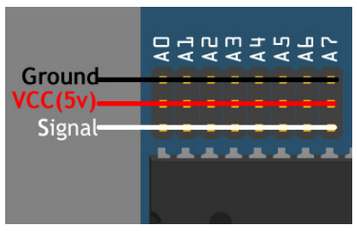


The User LED is connected to pin 0.

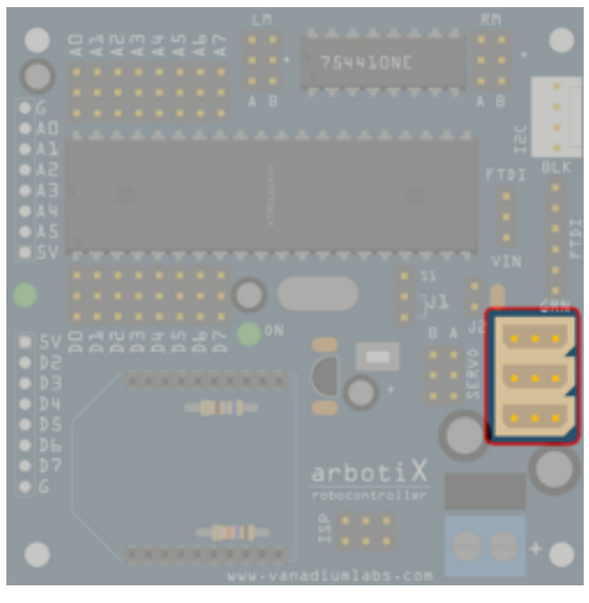
Analog Input Headers



The Analog Output headers give you easy access to the ArbotiX's 8 analog pins. Each header has a Signal-Voltage-Ground configuration, making them plug and play compatible with many sensors like RobotGeek and Phidgets Sensors. Analog pins can also be used as digital pins.



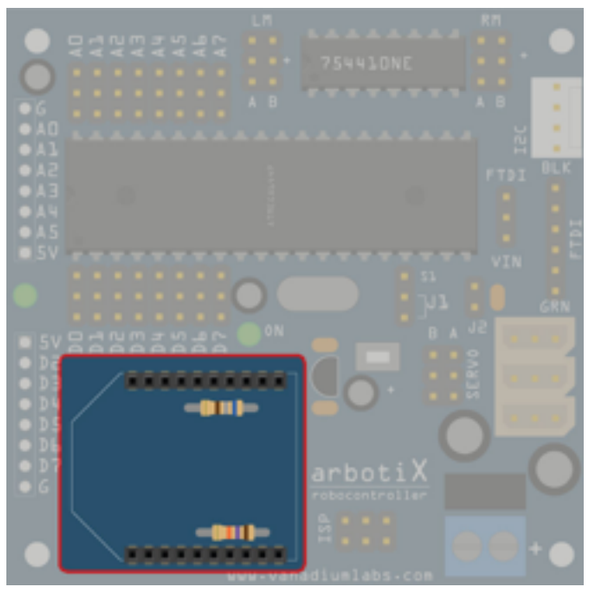
3x 3-Pin DYNAMIXEL Ports (TTL)



These 3 ports will allow you to Plug DYNAMIXEL servos directly into the ArbotiX. DYNAMIXEL servos can be daisy-chained, or you can add a AX/MX Power Hub to expand your ports even more. Because all the DYNAMIXEL servos will be on the same serial port, all 3 ports on the ArbotiX are electrically identicle.

-These ports are only compatible with 3-Pin TTL DYNAMIXEL servos. If you would like to use the ArbotiX with 4-pin RS-432 DYNAMIXEL servos, use the RX-Bridge

XBee Socket



The XBee socket allows you to quickly add wireless communications to your ArbotiX by pluggin in an XBee.

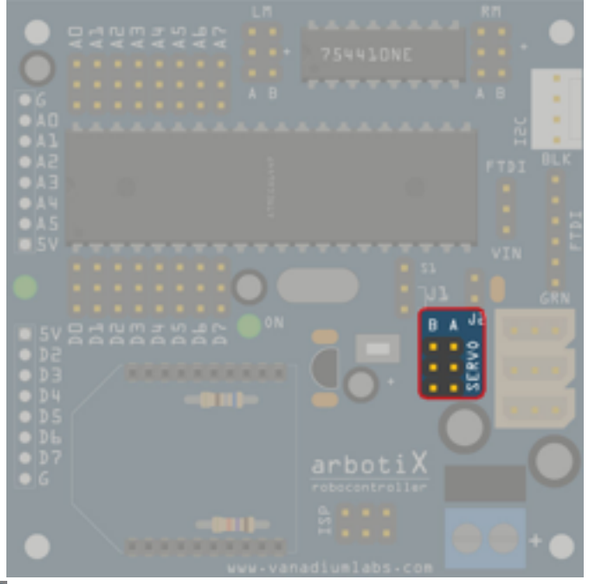
-The XBee socket shares a serial port with the FTDI port, so only one of those can be used at a time.

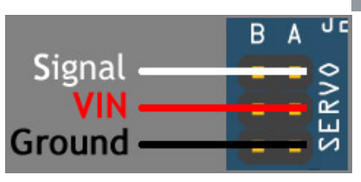
-The ArbotiX Robocontroller is not compatible with XBee pros.

2x Hobby Servo Ports

The 2 Hobby servo ports will allow you to connect 2 standard Hobby

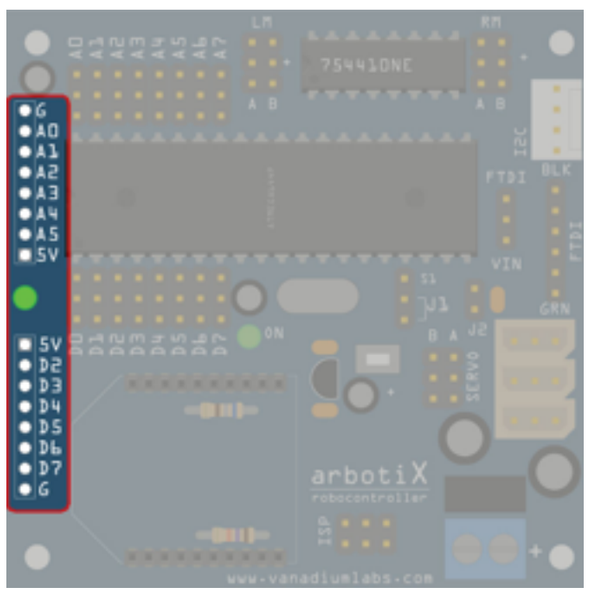
servos to the ArbotiX Board. The control signal will be generated from the ATMEGA644p, while the power signal will be generated from VIN, whatever voltage you have plugged into the DC Power Terminal





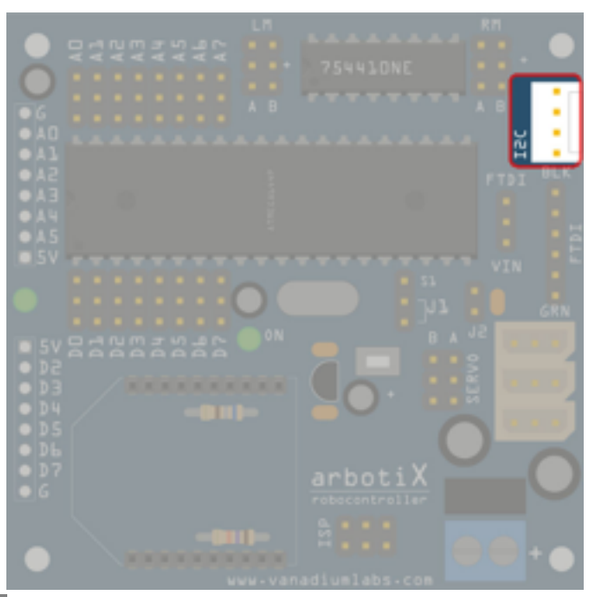
Extra Pins

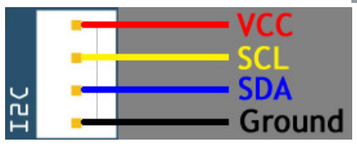
These extra pins will allow you to directly connect to the ATMEGA644p's digital I/O and analog input. This can be handy if you have devices that don't use the standard 3-pin header or need to create an expansion BUS.



IIC Port

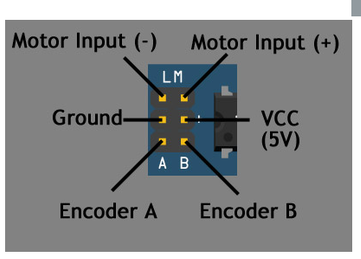
The IIC port will allow you to easily connect IIC devices to your ArbotiX.



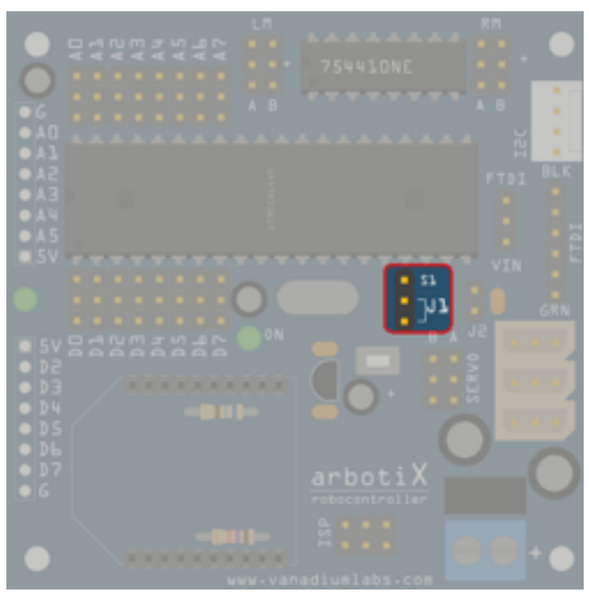


Motor Control Headers

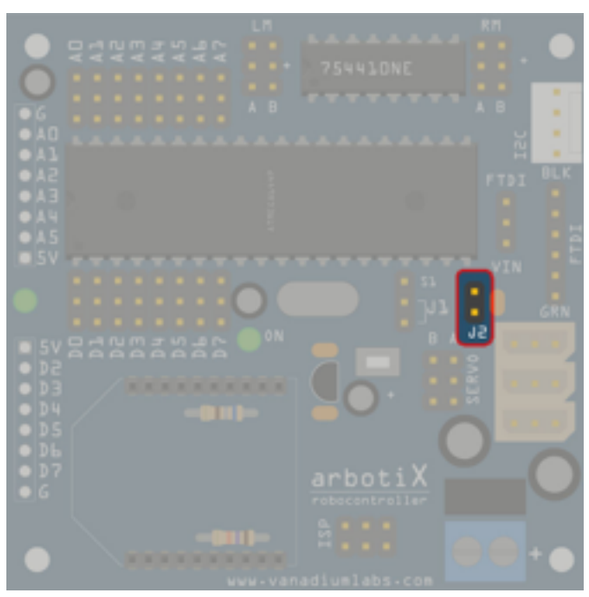
The Motor control circuitry will allow you to control 4 standard motors.



Serial Jumper(J1)



Reset Jumper(J2)
This jumper connects the reset pin on the ATMEGA644p to the reset button and the FTDI port. This allows the Arduino IDE to reset the ATMEGA chip for programming.



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- Regulator
- Power Selection Jumper
- Power LED
- Reset Button
- FTDI Serial Port / Programming Port
- ISP Programming Port
- Digital I/O Headers
- User LED
- Analog Input Headers
- 3x 3-Pin DYNAMIXEL Ports (TTL)
- XBee Socket
- 2x Hobby Servo Ports
- Extra Pins
- IIC Port
- Motor Control Headers
- Serial Jumper (J1)
- Reset Jumper (J2)

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