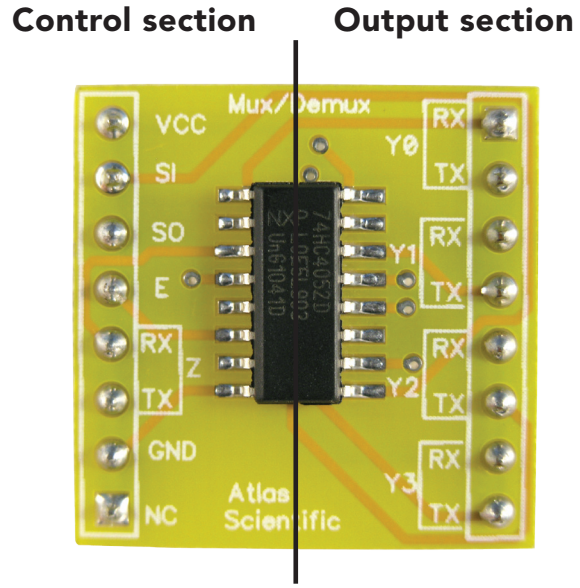
How to connect an Atlas Scientific Serial Port Connector to your microcontroller

The Atlas Scientific Serial Port Connector is based on the 74HC4052 Mux/Demux IC. This device is designed to specifically connect up to four asynchronous serial UART devices into one single microcontrollers UART RX/TX pins.

The Atlas Scientific Serial Port Connector is broken up into two sections, a control section and an output section.



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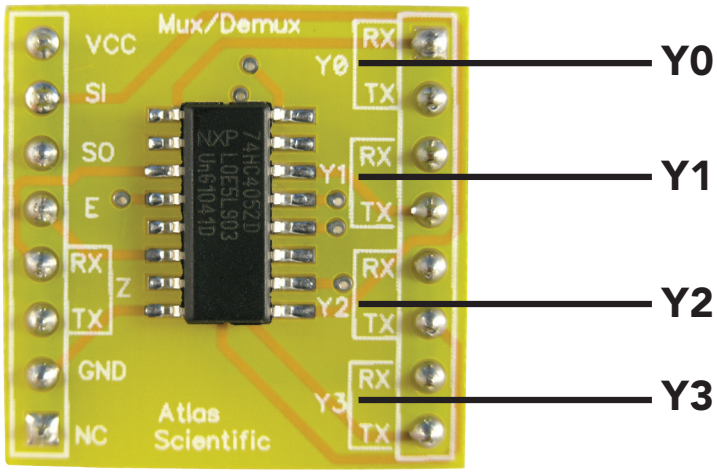
Output section

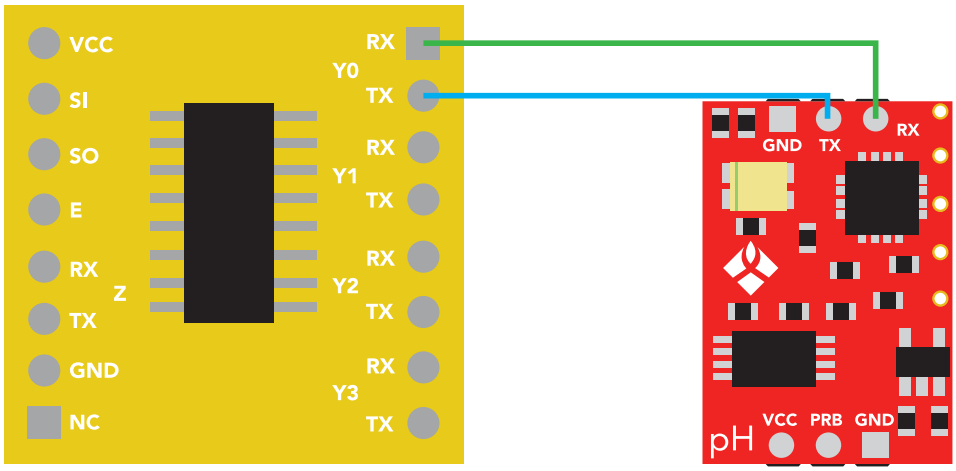
The output section consists of four output blocks.
These blocks are marked **Y0 • Y1 • Y2 • Y3**



Each of these four output blocks consist of an RX and TX pin. Each one of these RX/TX pins connects to your peripheral device.

On this breakout board TX and RX from the output blocks Y0 to Y3 connect to your peripheral devices matching pin. TX is connected to TX and RX is connected to RX.

This is correct



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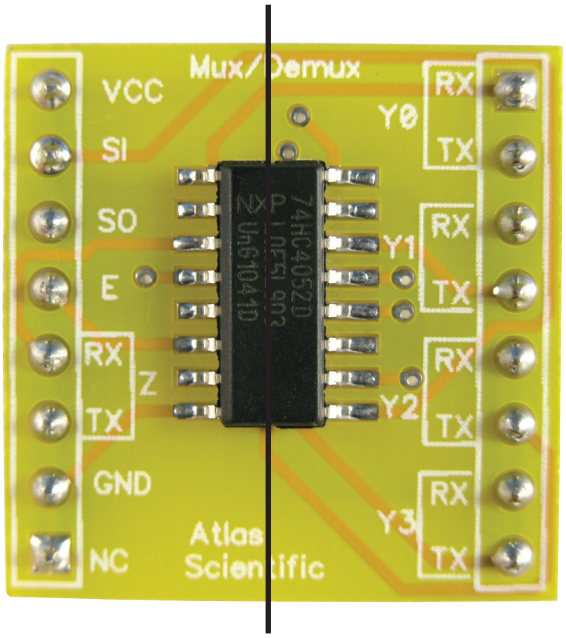
Control section

PIN NAME	PIN FUNCTION
VCC	supply voltage
S1	Output direction control 1
S0	Output direction control 0
E	Enable
RX	Data in
TX	Data out
GND	Supply ground
NC	Not connect



VCC AND GROUND

Vcc can be as high as 5 volts. One should keep VCC and GND tied to the main power bus of your system.

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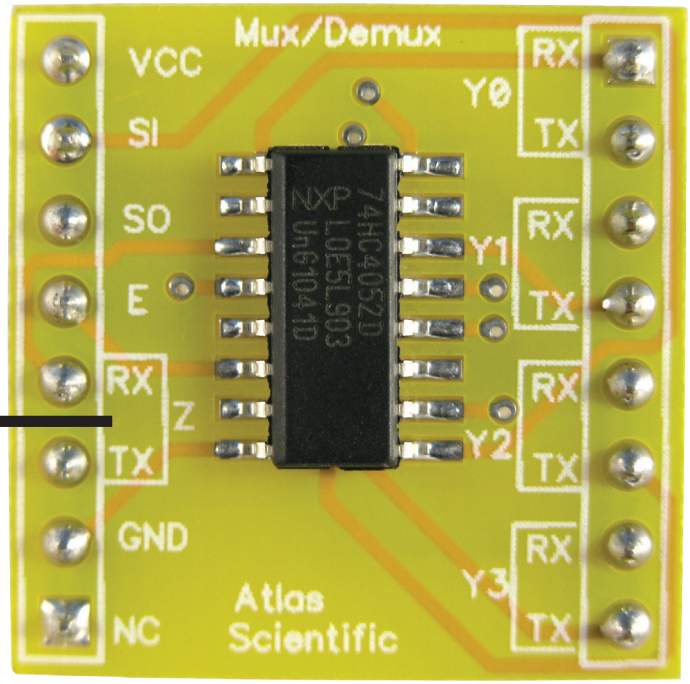
Serial Port Connector

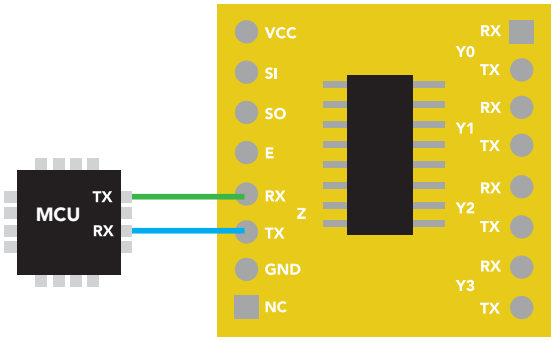


Z block

RX / TX

The main RX and TX pins are connected to the microcontrollers TX and RX pins respectively. This main RX / TX block is called the Z block and is identified by a Z on the breakout boards silkscreen.

It is important to remember that on the control side of the Serial Port Connector TX is connected to RX and RX is connected to TX.



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Serial Port Connector

S0 and S1

S0 and S1 are the control pins which guide the RX and TX signals to the correct output section (block Y0-Y3). It's best to think of them as switches, switch 0 and switch 1. These two switches have 4 possible combinations.

Comb.	Switch 0	Switch 1	Output Block
1	OFF	OFF	Y0=ON

Comb.	Switch 0	Switch 1	Output Block
2	ON	OFF	Y1=ON

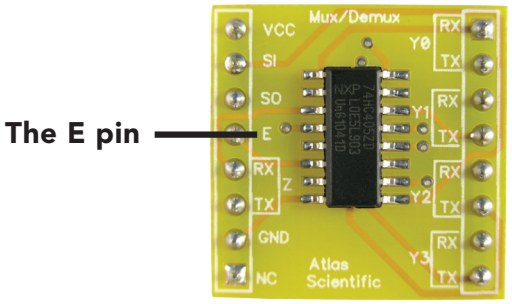
Comb.	Switch 0	Switch 1	Output Block
3	OFF	ON	Y2=ON

Comb.	Switch 0	Switch 1	Output Block
4	ON	ON	Y1=ON

Comb.	S0	S1	Block
1	0	0	Y0
2	1	0	Y1
3	0	1	Y2
4	1	1	Y3

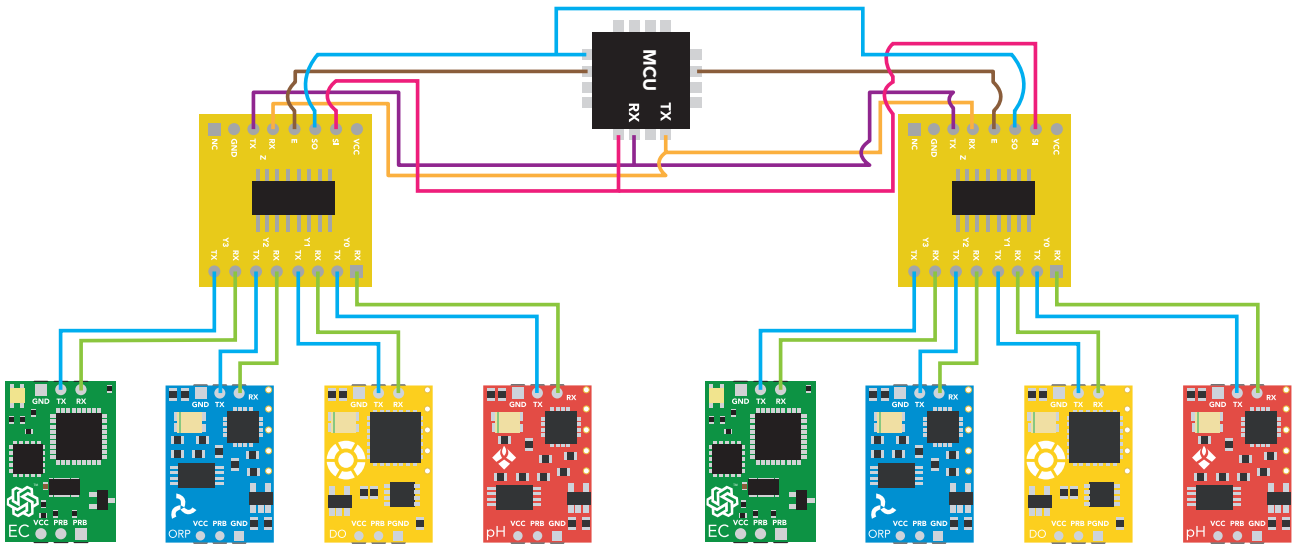
The E pin

If you have no interest in using the features of the E pin you must connect it to ground. The E pin cannot be left floating.



The pin marked "E" is the enable line. The E pin cannot be left floating. It must be connected to either a microcontroller or a ground line. E is the enable pin and it is an active low pin. This means that when E is set to 0 by a microcontroller or is pulled to ground the Serial Port Connector is working. If E is pulled high or set to 1 by a microcontroller the Serial Port Connector is not working.

At first this may seem unnecessary however, use of the E pin can allow you to control 8 or more devices with just 1 serial port and two or more Serial Port Connectors.



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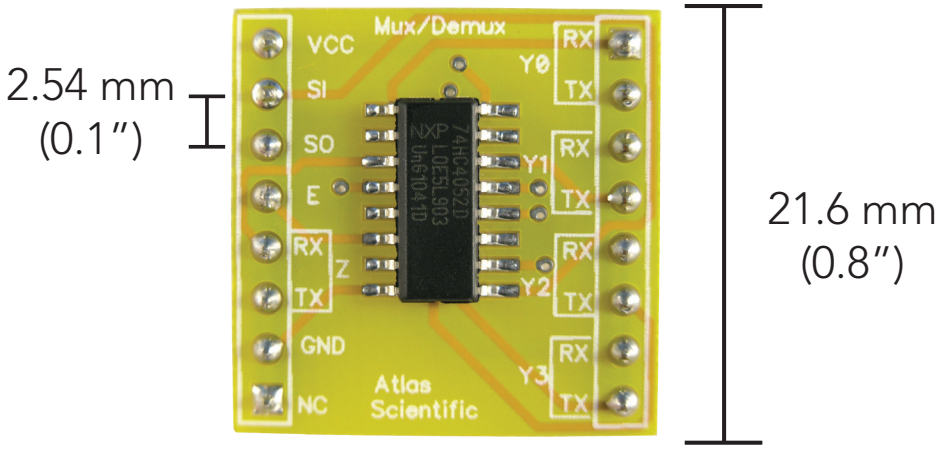
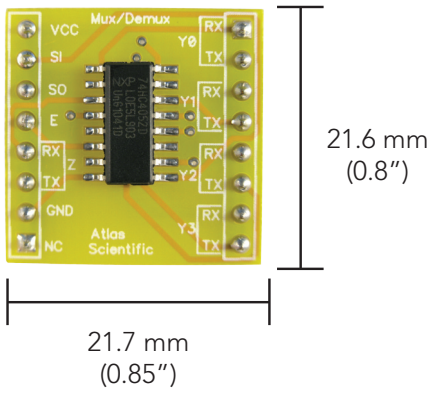
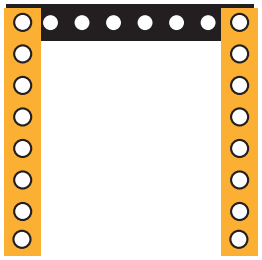
How to make a Footprint for the Atlas Scientific Serial Port Connector



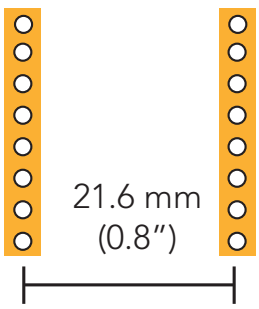


1. In your CAD software place an 8 position header.

2. Place two, 8 position header at both left and right of the 8 position header as shown.



3. Once this is done you can delete the horizontal 8 position header. Make sure that the two, 8 position headers are 21.6mm (0.8") apart from each other.



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