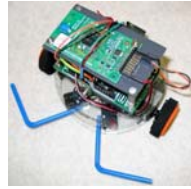


# Adding Bluetooth To A NewCDBot

By: Abraham Howell



In this article I will explain the basic steps required to add Bluetooth capability to your NewCDBot robot. We make no guarantees with regards to the content of this article and will not be responsible for any damaged equipment. We will be using the Embeddedblue Transceiver manufactured by A7 Engineering and sold by Parallax Inc. To add the Embeddedblue transceiver to a NewCDBot we will need several parts and components, which are listed below:

Qty	Part#	Description	Cost	Price	Where?
1		Embeddedblue Transceiver	99	99	<a href="http://www.parallax.com">www.parallax.com</a>
2	100811	2-Position Non-Polarized Connector	0.23	0.46	<a href="http://www.jameco.com">www.jameco.com</a>
10	100765	Female Crimps	0.11	1.1	<a href="http://www.jameco.com">www.jameco.com</a>
1	SCRAP	8-inch length of red 22-24 gauge wire	0	0	SCRAP
1	SCRAP	8-inch length of orange 22-24 gauge wire	0	0	SCRAP
1	SCRAP	8-inch length green of 22-24 gauge wire	0	0	SCRAP
1	SCRAP	8-inch length of black 22-24 gauge wire	0	0	SCRAP
1	WM2003-ND	5-Pos Housing	0.42	0.42	<a href="http://www.digikey.com">www.digikey.com</a>
10	WM2200-ND	0.1" Crimp Terminals	0.67	0.67	<a href="http://www.digikey.com">www.digikey.com</a>
		3/32" Heat Shrink Tube			SCRAP
2	166545	4-40 Hex Standoff, 1.50"L	0.75	1.5	<a href="http://www.jameco.com">www.jameco.com</a>
1		OOPic mounting deck	4	4	<a href="http://www.abotics.com">www.abotics.com</a>

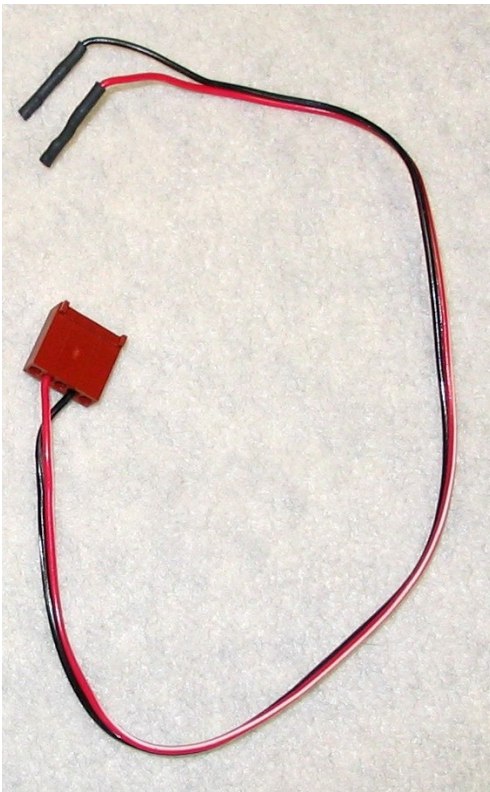
Total	107.2
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The first step will be to build the necessary cables to connect the Embeddedblue transceiver to the OOPic micro-controller. We need to build a two-wire cable, which will connect the transmit (Tx) and receive (Rx) pins from the Embeddedblue transceiver to the Tx and Rx pins on the OOPic. Start out by stripping the ends of each color wire. To build the first cable we'll need the orange wire, green wire, (2)-two position non-polarized connectors (Part#100811), and the four (Part#100765) female crimps. Simply crimp a female-crimp onto each end of both wires and then insert the wires into the non-polarized connectors as shown below.



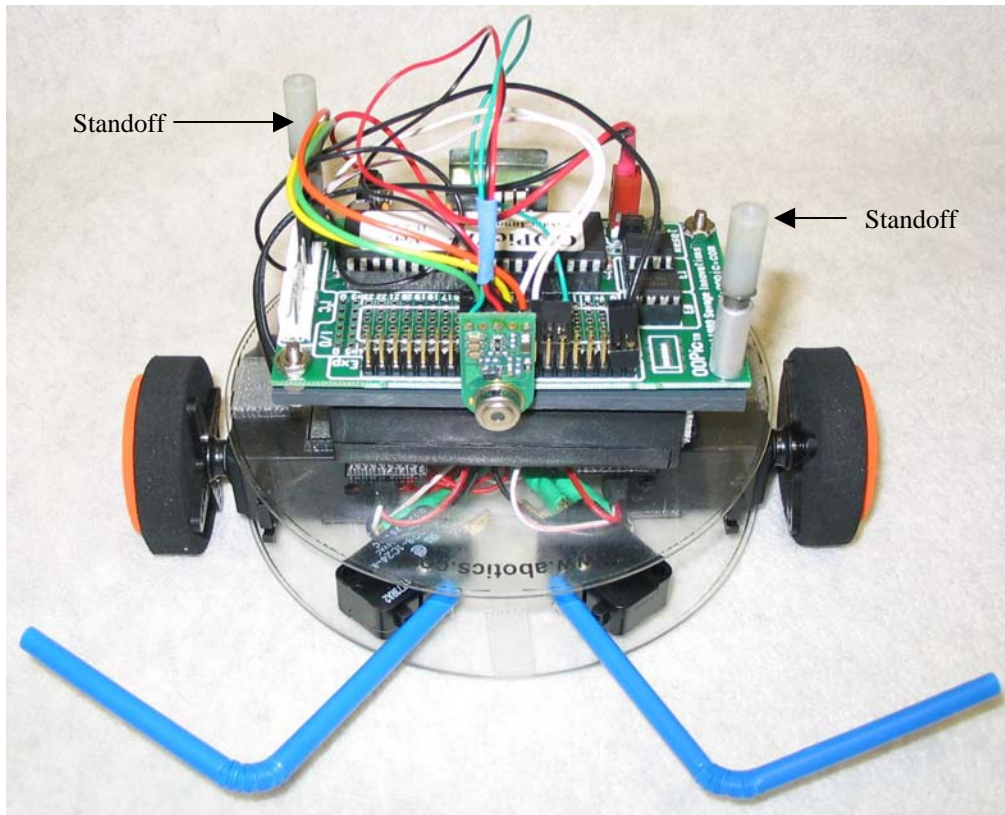
Figure#1. Assembled Tx/Rx Cable.

Next, we need to build a cable that will supply +5volts and ground to the Embeddedblue transceiver. For this cable we will need the red wire, black wire, 5-position polarized connector (Part#WM2003-ND), two of the 0.1" crimp terminals (Part#WM2200-ND), two of the (Part#100765) female crimps, and two small pieces of 3/32" heat shrink tube cut to a length of 1/4". Each wire will need to get one of each of the two different style crimps. Once the proper crimps have been made you can add a piece of heat shrink tube to the (Part#100765) female crimps. The other crimps will need to be properly inserted into the 5-position polarized connector as shown below.



Figure#2. Assembled Power Cable.

Now we are ready to install the 1.5" standoffs on our NewCDbot. We will mount the standoffs to the OOPic micro-controller as shown below. We've used round standoffs, but your standoffs may be hexagonal in shape.



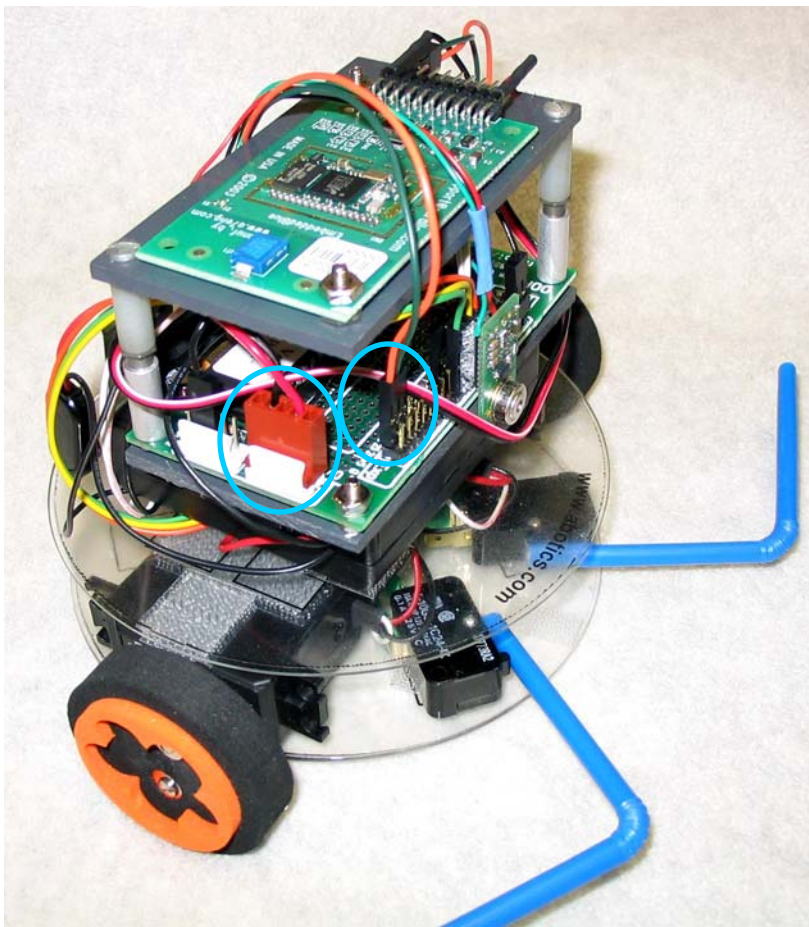
Figure#3. Standoffs mounted to NewCDbot.

Next, we need to mount the Embeddedblue transceiver to an OOPic mounting deck. We have to drill two 1/8" holes in the plastic deck to mount the transceiver. To figure out where to drill the two holes simply place the transceiver on the deck and then mark the holes using a marker. After the holes are drilled, the transceiver can be mounted to the deck using 4-40 size machine screws.



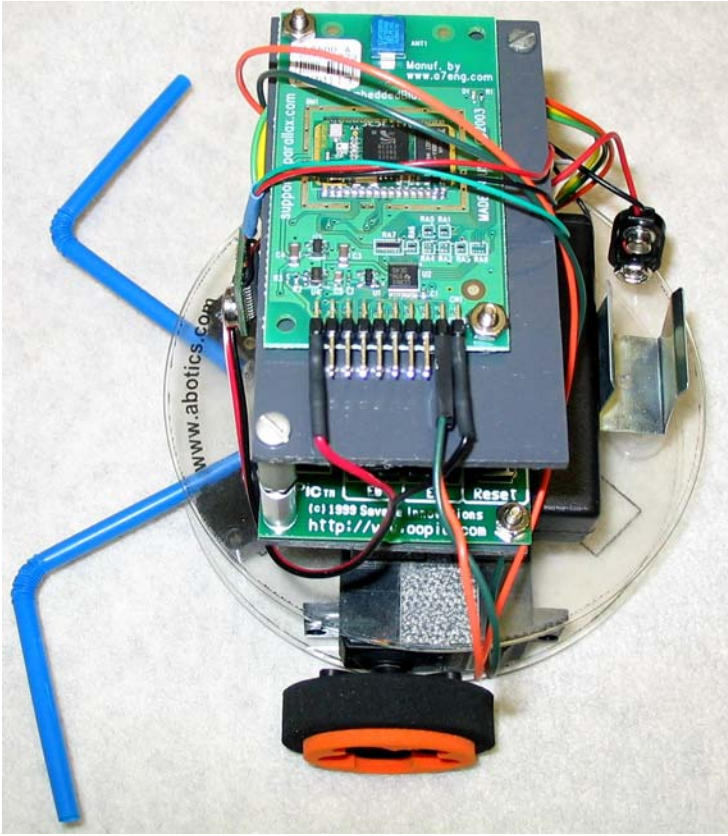
Figure#4. Embeddedblue transceiver mounted to deck.

Now you are ready to attach the mounted transceiver to the standoffs on the NewCDBot and finally wire up the cables. After installing the mounted transceiver you will need to properly connect the power cable and Tx/Rx cable to the OOPic. The power cable will get plugged into the Network connector on the OOPic, while the Tx/Rx cable will get plugged into pin#37 (Tx) and 39 (Rx) on the OOPic's I/O connector as shown below. The red wire on the power connector must connect to pin#4 (+5volts) on the Network connector and the black wire must connect to pin#2 (Ground) on the Network connector. Please refer to the OOPic website for the proper Network connections: <http://www.oopic.com/con4.htm> The orange wire should connect to pin#39 and the green wire should connect to pin#37. Please refer to the OOPic website for the proper I/O connections: <http://www.oopic.com/con40.htm>



Figure#5. Power cable and Tx/Rx cabled connected to OOPic.

Finally, we are ready to connect the cables to the Embeddedblue transceiver. The black wire must connect to either pin#1 or pin#2 (Vss) on the Embeddedblue transceiver. The red wire must connect to pin#20 (Vcc) on the Embeddedblue transceiver. The green wire must connect to pin#4 (Tx) and the orange wire connects to pin#3 (Rx) on the transceiver. Please refer to the figure below and the Embeddedblue specifications sheet for the proper pin#'s: <http://www.parallax.com/dl/docs/prod/comm/eb500Specs.pdf>



Figure#6. Power cable and Tx/Rx cable connected to transceiver.

You have successfully added Bluetooth to your NewCDbot! Please refer to any additional articles to learn how to wirelessly control your NewCDbot from a Laptop/PC or even upload an entirely new program using Bluetooth!

Please email any questions regarding this article to [abe@abotics.com](mailto:abe@abotics.com)