Instructions for using the Serial Wireless Communication code & hardware

HARDWARE SETUP

You must have a pair of matched radio modems. They are labeled, so pick a pair with the same label on both. Attach them to the robot (the portable actually) and plug in power. When you hit the power switch on the side of the modem, the green power light should blink and then stay on steady.

**WARNING:** when you turn on the modem, the scout momentarily resets. So, please turn on the modem and then turn on the scout (then the modem will get powered up) and try to never turn off and on the modem itself while the scout is on.

The left red light at this point should be off or blinking. If it is continuously on, something is broken. It should only be continuously on when you have established a connection. When it is blinking, that means it senses that another pair of radio modems, within range, are talking to one-another.

As for the serial port, you can connect it either to COM1 (which we ordinarily connect to the robot) or to COM4 (which is the PCMCIA serial port card). You should almost exclusively connect it to COM4—especially if you intend to control the robot at the same time!

The PCMCIA cards have special cables that plug into the card and into the serial plug. **These are FRAGILE, so please be careful.**

NOTE: Once you establish the link (the red light goes steady), then if you interrupt power to a modem, it will break the link and the link must be reestablished. If you are powering the modems from the robot power and you turn the robot off, be aware of this!
SOFTWARE/JAVA TEST

Get two computers with the PCMCIA serial cards and associated cables. Get the modems plugged in and powered up. Now on both computers, start up the Java project that you’ll find in 16x62/SerialComm. Take a look at the comments in serialPort. These are helpful! The commands you’ll be using, when you put thisserialPort.java class in your own project, are:

```java
openSerial(4,5);
closeSerial();
sendByte(?);
setReadTimeout(10); [for example]
readByte();
```

Now execute the project!

Let’s open the serial port on both computers. Specify port number 4 (COM4), baud number 5 (115200 baud) and click openSerial. The return value below should go to 0. If not, then click again. If it becomes -1, then there’s a problem. Trying closing it and opening it. Make sure another program doesn’t already have that serial port open.

Now pick a receiver and a transmitter. On both computers, type 10 into the argument and click on setReadTimeout to set the timeout to 10 milliseconds on read. So, it waits for up to 10 milliseconds for something to read then gives up. It should return 0 I believe. At any rate, if it doesn’t work it returns -6.

Now time to establish the link. The radio modems are set up to come up when powered on in command mode. On one of them, you command it to establish a link. If this is successful, then they’re in data modem automatically and the red lights turn on. To do this, I’ve set it up so all you have to do is send the radio modem “wms1<enter>”. That’s four characters total. You can do this with the sendByte button (from just one of the portables!). Each time, the return value should be zero. The windows there are for typing in a number between 0 and 255 to specify the character, so send the following numbers:

- 119
- 109
- 115
- 49
- 13

As soon as you click sendByte on 13, the led lights indicating a radio connection should begin to burn. You’re connected!
Now, when the modem was in command modem (when you typed in “wsm1<enter>”), then it echoed a bunch of stuff and even sent you a “Succeeded!” message. So you have to clean out your buffer. You can do this on both radio modems. Just hit readByte until instead of returning numbers between 0 and 255 you just get back a -1, at which point you’ve cleaned out the input buffer.

Now pick a number between 0 and 255 that’s not 124 and send it from one computer to the other. That’s all, folks.

WARNING: DO NOT SEND 124. 124, OTHERWISE KNOWN AS ‘|’ IS AN ESCAPE CHARACTER FOR THE MODEM. YOU WILL REPROGRAM THE EPROM IF YOU SEND “||<ENTER>” FOLLOWED BY ANY COMMANDS MEANINGFUL TO THE MODEM. PLEASE DON’T DO THAT. PRETTY PLEASE.