

# Bluetooth I2C

## ADDING BLUETOOTH TO THE I2C2PC ADAPTOR

### Summary

It is very easy to add a Bluetooth module to the I2C2PC adaptor to make a wireless I2C adaptor that can datalog and control up to 100m from a PC. With the parts and tools to hand it is a 15min job.

To software the interface remains the same as RS232 and USB: It is still a comport interface.

We used the BlueSMiRF Extended module from [www.sparkfun.com](http://www.sparkfun.com). This is a simple module based on the Blueradios bluetooth module. As it has a 6 pin header and regulator built in it is very easy to use. This module has a built-in antenna.



Figure 1.:

### 1 You will need:

- BlueSMiRF Extended module from [www.sparkfun.com](http://www.sparkfun.com)
- 2pin and 3 pin 0.1" headers and 3 shunts.
- Micromatch 6 female, same as used for I2C.
- 6 way ribbon cable and micromatch 6 way male.
- A Bluetooth capable PC or USB bluetooth stick.

### 2 How

- Add micromatch CN9 to the I2C2PC adaptor.
- Add pin headers J1 and J2 to the I2C2PC, and jumper as shown.

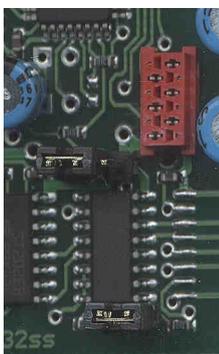


Figure 2.2.:



Figure 2.1.:

- Make up a cable with micromatch male one end and 0.1" socket for the BlueSMiRF the other end. If you use two 3 way housing it will be easy to separate the power from the RX/TX to do a loopback test with a jumper later.

# Bluetooth I2C

## ADDING BLUETOOTH TO THE I2C2PC ADAPTOR

#	<i>I2C2PC CN9</i>	#	<i>Sparkfun Blue SMI RF Extended</i>
1	VCC (+5)	2	PWR
2	CTS (out)	1	CTS-I
3	RXD (out)	5	RX-I
4	TXD (in)	4	TX-O
5	RTS (in)	6	RTS-O
6	GND	3	GND



Figure 2.3.:

- Before powering up the adaptor, using a continuity meter to check that the +5 and GND pins go to the correct positions on the BlueSMiRF
- Power up the I2C2PC adaptor with the Bluetooth module plugged in.
- Now you should be able to detect it and connect to it from your PC. Fit a shunt as shown below so you can do a loopback test.



Figure 2.4.:

- Either using the Blueradios config utility, or by using the AT command set from Realterm, you need to change the Bluetooth modules baud rate to 57600. Realterm has controls for this on the “misc” tab.
- Now it should be working! Type “?” and the adaptor should reply eg with “18”
- Stick the module inside the lid of I2C2PC case with double sided foam tape, and reassemble once it is all working.

**Warning: Do not accidentally plug the module into an I2C port.** The AUX interface CN9 has totally different pinout. If someone else might do this unintentionally, glue the connector down or attach a note in the unit.

# Bluetooth I2C

## ADDING BLUETOOTH TO THE I2C2PC ADAPTOR

### 3 Software

No software changes are needed as the Bluetooth is still another comport as far as software is concerned. Just be aware of the potential for an RF connection to vanish.

#### 3.1 Latency:

One drawback of the Bluetooth is increased latency. So it is important to write your code so that this is not going to be an issue.

Latency is only a problem if you write blocking code that requires a return value before it will issue the next command. If your code sends a series of commands, and processes the results as they return, there will be no problem.

For example a data logging program can simply issue a command to read data every second, and capture all returning data to a file. This arrangement works regardless of the latency.

To test the latency, you can turn on Log files from Realterms capture tab. The log file (realterm.log) has timing information in it.

### 4 Selecting Interfaces

*Make sure the jumper by the DB9 is not fitted*



**Figure 4.1.:**

With the jumper fitted as shown in the picture the AUX bluetooth interface is selected.

The jumper only selects the source of signals *from* the PC. Data returning *from* the adaptor always comes out all three ports (RS232,USB,Bluetooth). This is useful for debugging.

<i>J1</i>	<i>J2,J3</i>	<i>Mode</i>
none	none	Autoselect USB/RS232 Selects USB when it is enumerated
none	USB (left)	USB only
none	RS232 (right)	RS232 only
fitted	none	invalid
fitted	USB (left)	AUX (Bluetooth) Only

# Bluetooth I2C

---

## ADDING BLUETOOTH TO THE I2C2PC ADAPTOR

---

<i>J1</i>	<i>J2,J3</i>	<i>Mode</i>
fitted	RS232	invalid

### 5 Baud Rate

At the PC end the baud rate setting does not matter as it is going to a virtual comport anyway.

The Baud rate at the Bluetooth module can be set by using the Blueradios utility, or sending the AT commands from a terminal.

# Bluetooth I2C

---

## ADDING BLUETOOTH TO THE I2C2PC ADAPTOR

---