Traffic Light Manual

Version 1.0

Introduction

The traffic light has three separate lights that can be remotely controlled over a serial connection. The serial connection is tunneled through a Bluetooth radio link so the device can be placed clearly visible on the wall up to 100 meters from the computer controlling it.

Specification

Light bulbs	3 x 25 Watt with E14 socket
Bluetooth	Serial Port Profile
	Power Class 1 (~100 meters)
CPU	Philips LPC2106 ARM7 60 MHz
Size	47 x 23 x 12 cm
Power	230 Volts AC

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Commands

Commands to the traffic light are one single character. The received character will be echoed back to the sender as an indication that it was received.

Command character	Description
G	Turn on green light
Y	Turn on yellow light
R	Turn on red light
g	Turn off green light
y	Turn off yellow light
r	Turn of red light
<Other character>	Invalid command, will blink yellow light.
C or c[*]	Turn off blinking of yellow light

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[*] When power is connected to the traffic light, it always start blinking the yellow light. Once a connection has been established, the 'c' command character should be sent to the device to stop this.
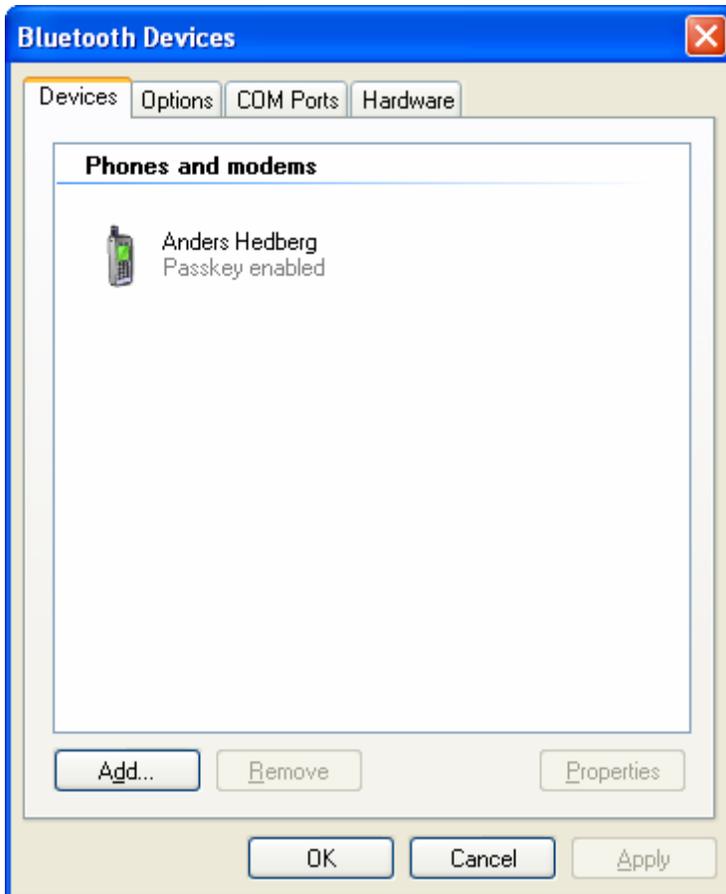
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Bluetooth setup

We assume that you have just plugged the traffic light into the power connector, and it is blinking with a yellow light.

Open the Bluetooth device manager by double clicking on the Bluetooth icon in the taskbar. Here we are using the Windows XP original Bluetooth support. If you installed other drivers the windows or setup procedure should be similar.

Press the "Add…" button.

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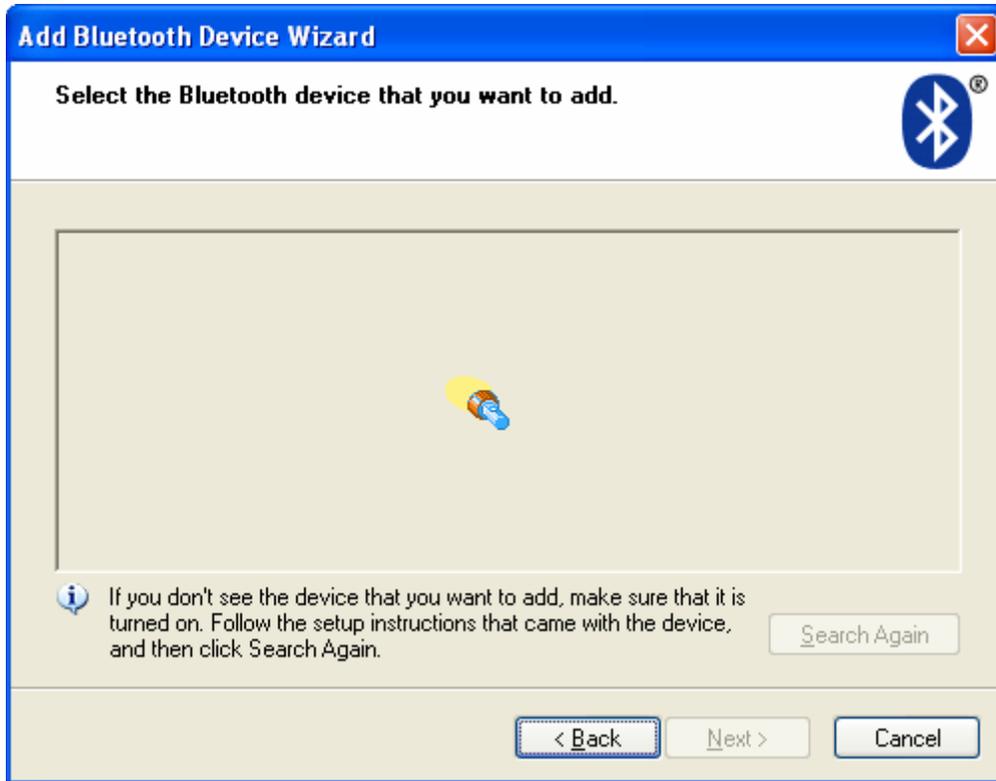
Mark the "My device is set up and ready to be found", this will enable the "Next >" button. Press the "Next>" button. The search window will show up.

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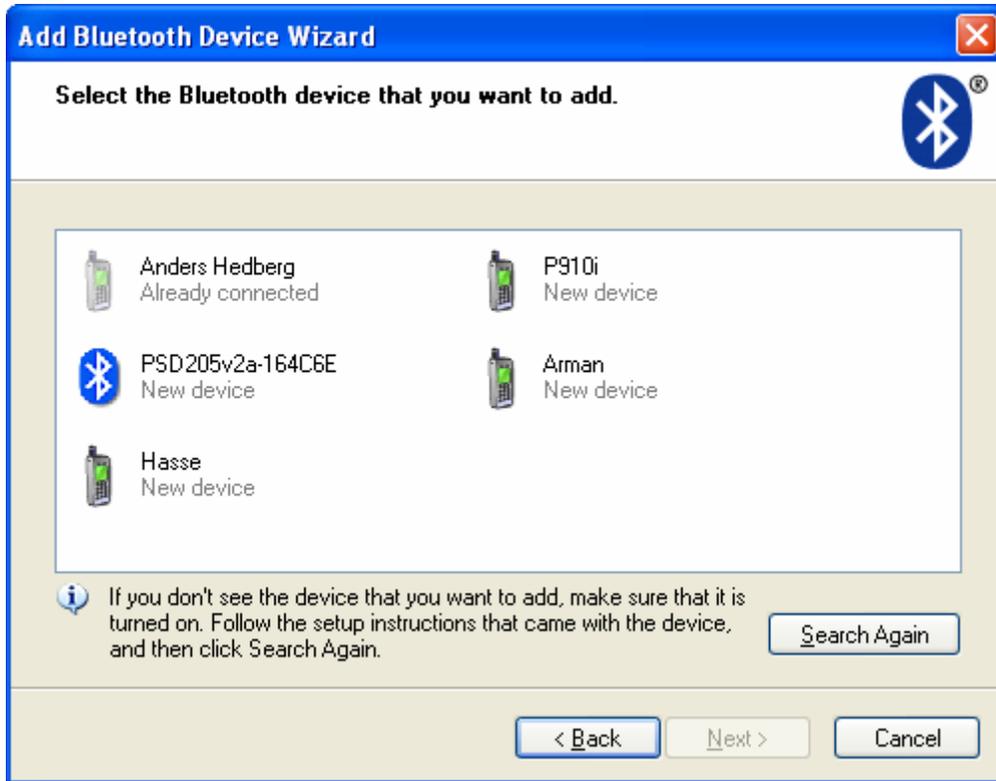
After a minute or so, the discovered devices can be seen…

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Add Bluetooth Device Wizard

Select the Bluetooth device that you want to add.

Anders Hedberg	P910i
Already connected	New device
PSD205v2a-164C6E	Arman
New device	New device
Hasse	
New device	

If you don't see the device that you want to add, make sure that it is turned on. Follow the setup instructions that came with the device, and then click Search Again.

Search Again
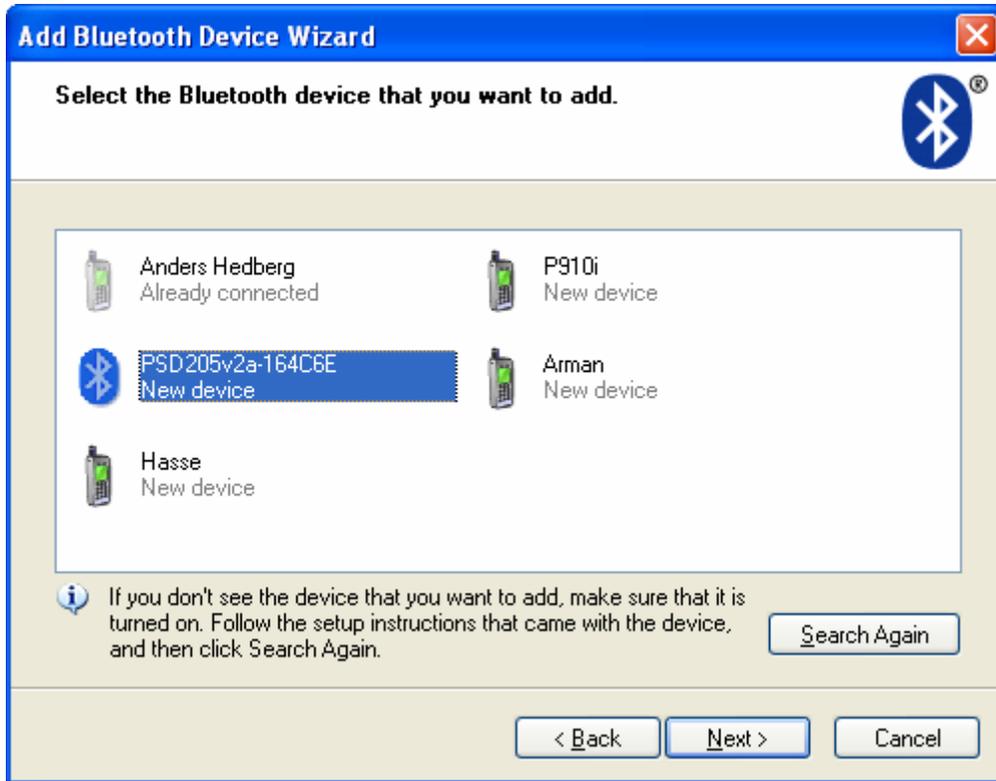
< Back   Next >   Cancel

Mark the device called "PSD205v2a-164C6E" (original name) or the device marked "Factorycode Traffic Light" whichever shows up, by clicking on it. Then press "Next>".

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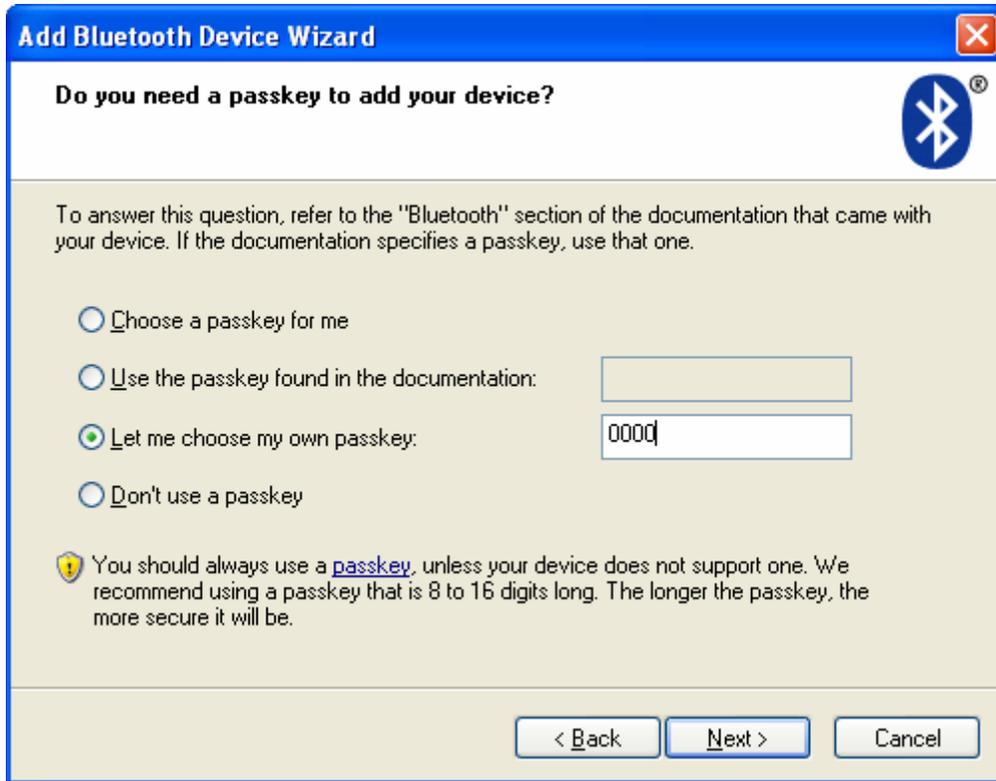
Select "Let me choose my own passkey: " and enter four zero's i.e. "0000" as the passkey. Then press "Next>".

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You will now see some messages related to the new device being configured, it's serial ports being discovered, etc. Everything should finally end up with the below message telling you which com ports have been added. We just care about the Outgoing Com port as we will always initiate the connection from the PC.

Before you click on the "Finish" button, note the Outgoing COM port setting as you will use it later. In our case it is COM7. Then click "Finish".

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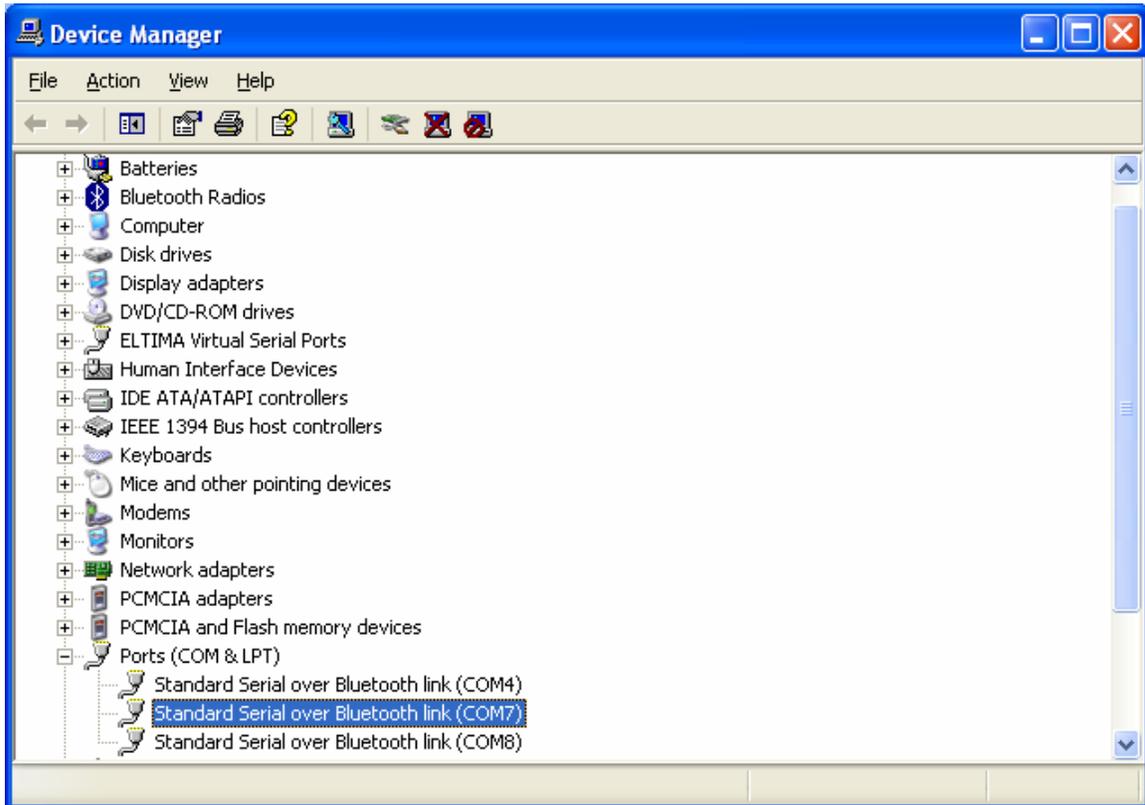
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Advanced users - Changing Bluetooth com ports

For the advanced user, there is the possibility to change the COM port number. This might be needed if you are running old programs that can only handle COM ports with number 1, 2, 3 or 4. Open the Hardware device manager from the Control Panel and "System". Find and double click on the new COM port.
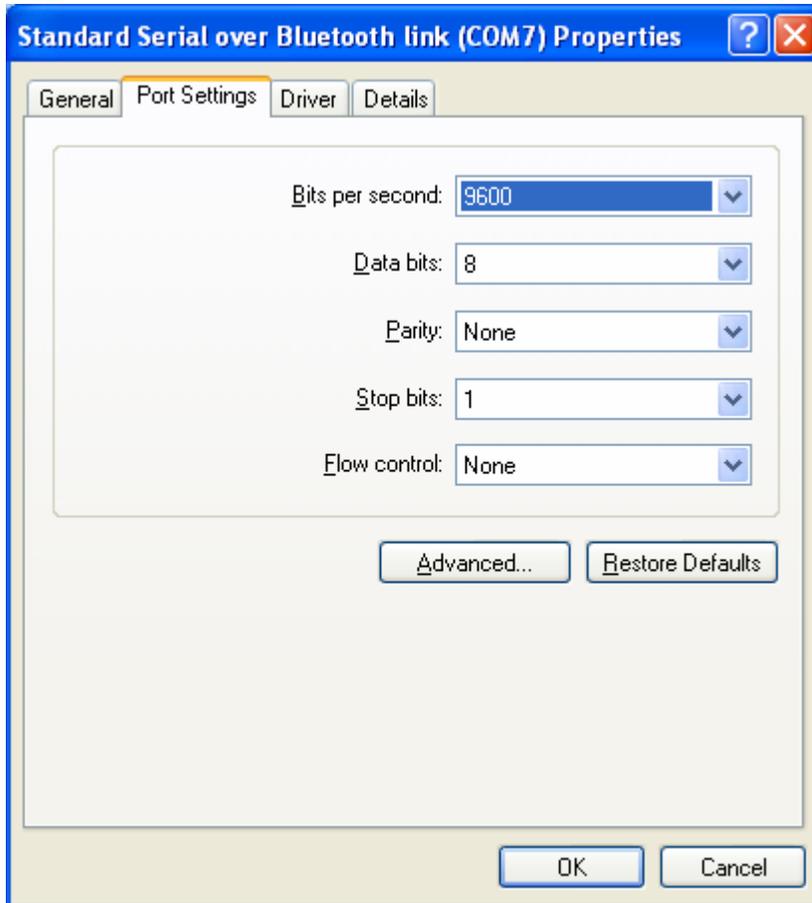
Select the "Port Settings" tab, and click on advanced.

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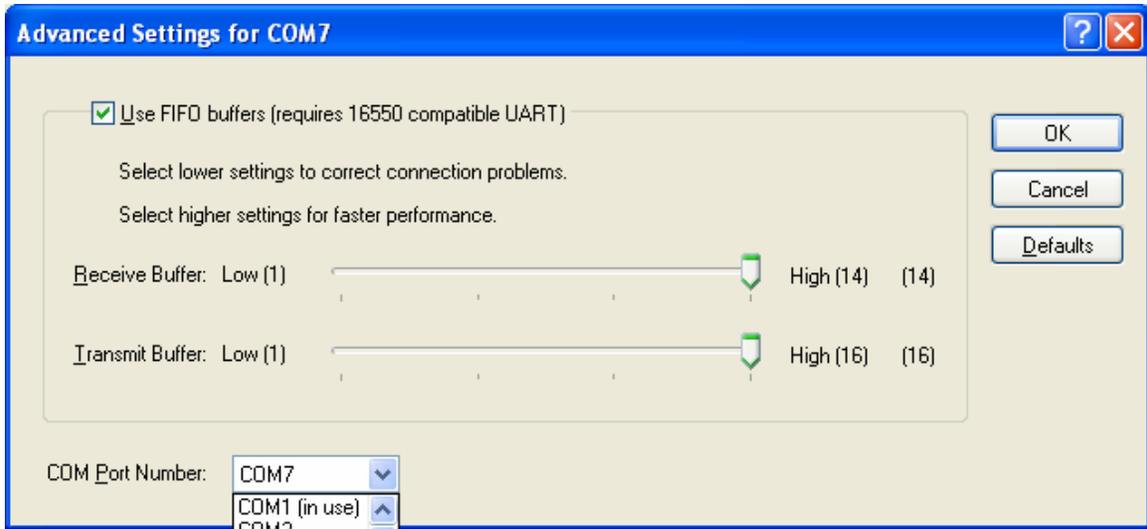
Select the new COM port number you wish to use and press OK.
If you have other hardware that uses that COM port number you might end up with unwanted conflicts so we only recommend changing the COM port number for the advanced user.

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Advanced Settings for COM7

☑ Use FIFO buffers (requires 16550 compatible UART)

Select lower settings to correct connection problems.

Select higher settings for faster performance.

Receive Buffer: Low (1) ———————————————▽—— High (14)   (14)

Transmit Buffer: Low (1) ———————————————▽—— High (16)   (16)

COM Port Number: COM7 ▾

COM1 (in use)
COM2

OK

Cancel

Defaults

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Testing the traffic light

Open HyperTerminal (Start->All Programs->Accessories->Communications->HyperTerminal) and enter a new name for the connection. Press Ok.
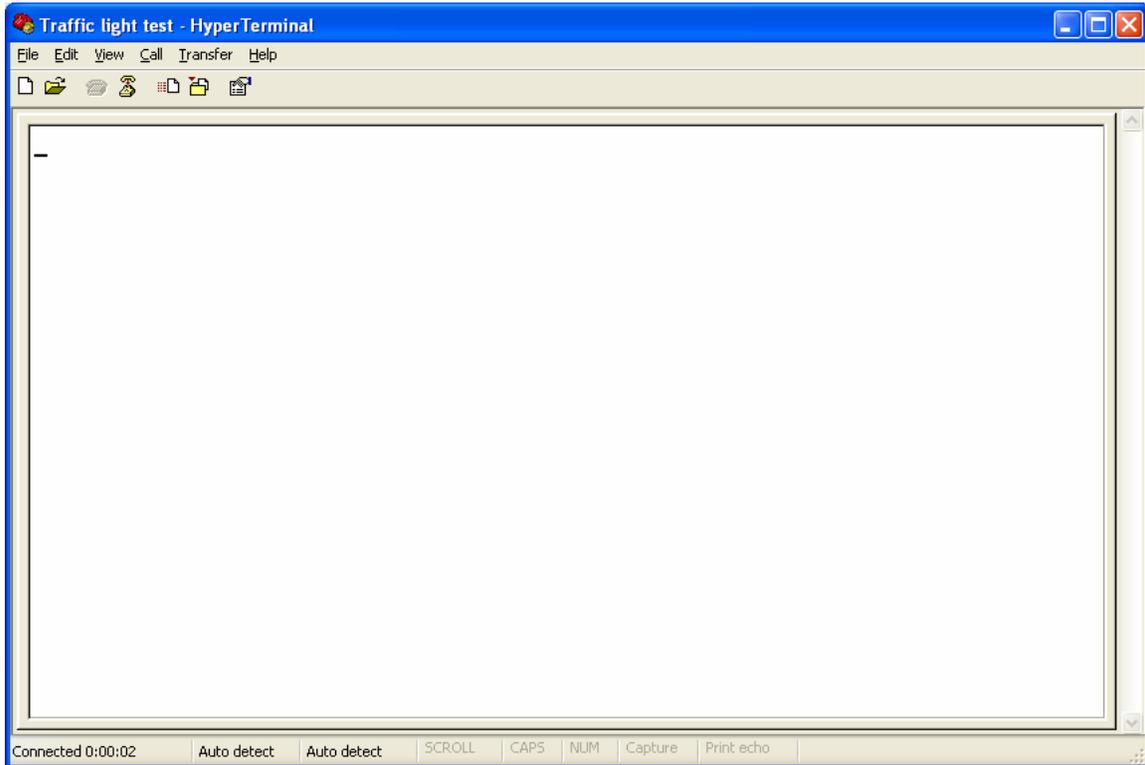
Select the new COM port. In our example it is COM7 as we noted above when we set up the Bluetooth connection. Press OK.

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The HyperTerminal window should appear as below, after a few seconds it should say "Connected" on the bottom status line.
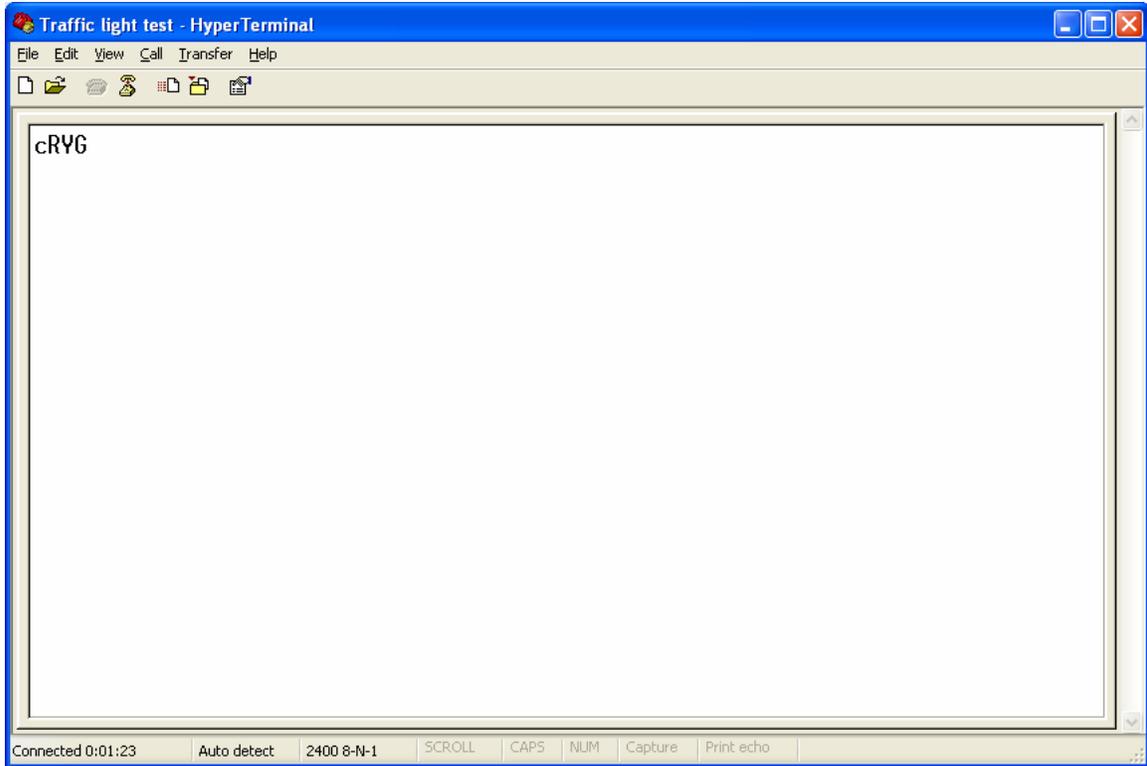

Press the 'c' key to turn off the blinking. Press shift+'r', i.e. the character 'R' will be sent. Press shift + 'y' to send the 'Y' character. Press shift+'g' to send the 'G' character. Now all the lights in the traffic light should be lit.

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Note: If power is removed from the traffic light while HyperTerminal is connected, the HyperTerminal program should be closed before another connection attempt is made to the traffic light. The Bluetooth protocol stack on the PC might not be able to connect again if the connection has been lost and not closed correctly.

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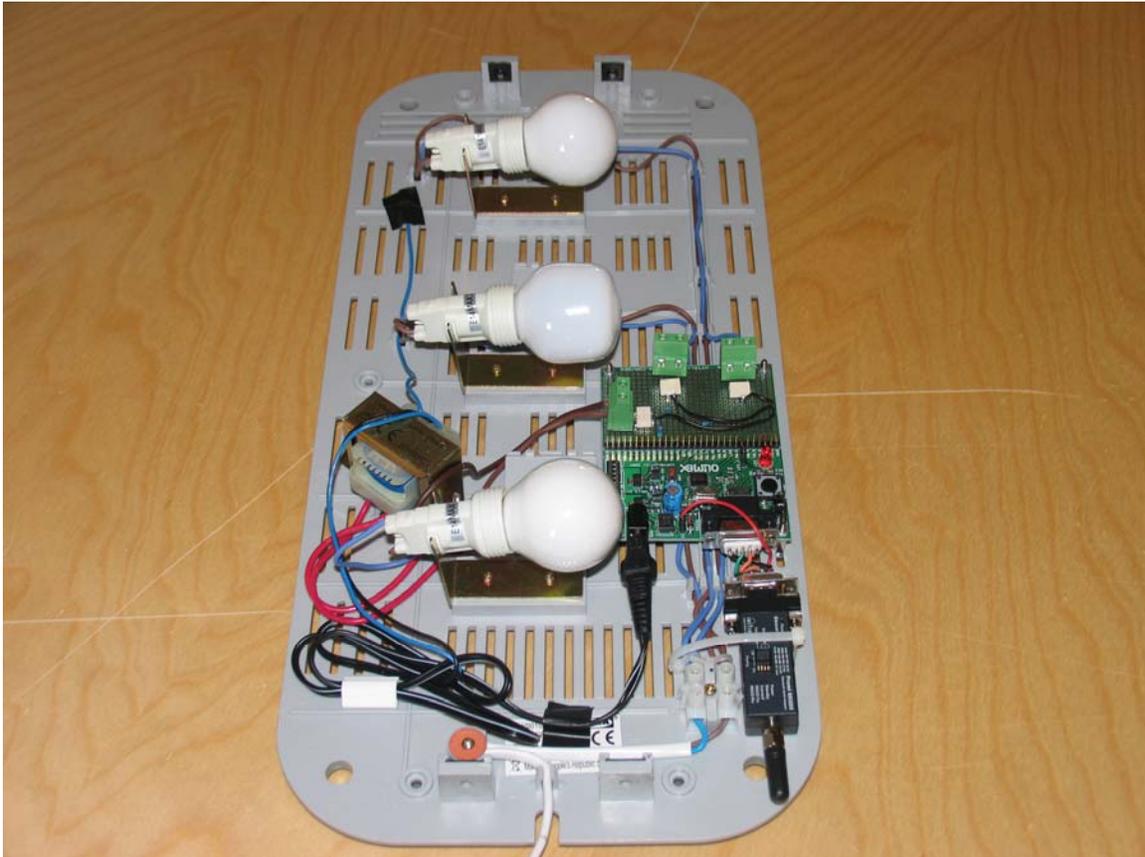Factorycode is located at the Ideon Research Park, in Lund, Sweden, Europe.

Changing light bulbs

Unplug the power connector from the wall outlet. Remove the two screws from the top and the two screws from the bottom. Remove the top cover by lifting it gently.

The light bulbs can now be replaced with similar 25 Watts bulbs with an E14 socket.

Do not plug in the power to the traffic light without the cover fastened. The 230 volt power is partly unprotected on the circuit board.

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eXtreme Feedback Devices

The traffic light is originally intended as an *extreme feedback device* for continuous build systems. Here is an example of how it is used at our own premises. We have mapped the yellow light to indicate that a build and test cycle is ongoing.

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