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			
у	Turn off yellow light			
r	Turn of red light			
<other character=""></other>	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.

Bluetooth Devices	×
Devices Options COM Ports Hardware	_
Phones and modems	ור
Anders Hedberg Passkey enabled	
Add <u>R</u> emove <u>Properties</u>	
OK Cancel Apply	

Press the "Add..." button.

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Add Bluetooth Device Wize	ard	\mathbf{X}					
®	Welcome to the Add Bluetooth Device Wizard						
	Before proceeding, refer to the "Bluetooth" section of the device documentation. Then set up your device so that your computer can find it:						
	- Turn it on - Make it discoverable (visible) - Give it a name (optional) - Press the button on the bottom of the device (keyboards and mice only)						
	My device is set up and ready to be found.						
	Add only Bluetooth <u>devices that you trust</u> .						
	< <u>B</u> ack <u>N</u> ext > Cancel						

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	Blue	tooth Device Wizard			
Select the Bluetooth device that you want to add.					ڰ
		Anders Hedberg Already connected		P910i New device	
	*	PSD205v2a-164C6E New device		Arman New device	
	1	Hasse New device			
į) If tu ar	you don't see the device that yo rned on. Follow the setup instru- nd then click Search Again.	ou want to a ctions that o	add, make sure that it is came with the device,	earch Again
			(< <u>B</u> ack <u>N</u> ext >	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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Add Bluetoo	th Device Wizard		×		
Select the Bluetooth device that you want to add.					
Ar	nders Hedberg ready connected		P910i New device		
	6D205v2a-164C6E ew device	I	Arman New device		
D Ha	asse ew device				
If you turned and the second secon	don't see the device that you wa d on. Follow the setup instructions hen click Search Again.	nt to a that o	add, make sure that it is came with the device, <u>S</u> earch Again		
		C	< <u>B</u> ack <u>N</u> ext > Cancel		

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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Add Bluetooth Device Wizard						
Do you need a passkey to add your device?		×				
To answer this question, refer to the "Bluetooth" section o your device. If the documentation specifies a passkey, use	f the documentation that ca e that one.	ame with				
O <u>C</u> hoose a passkey for me						
\bigcirc \underline{U} se the passkey found in the documentation:						
⊙ Let me choose my own passkey: 0000						
O Don't use a passkey						
You should always use a <u>passkey</u> , unless your device recommend using a passkey that is 8 to 16 digits long. more secure it will be.	does not support one. We The longer the passkey, th	ie				
< <u>B</u> a	ck <u>N</u> ext>	Cancel				

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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Add Bluetooth Device Wize	ard 🛛 🔀						
®	Completing the Add Bluetooth Device Wizard						
	The Bluetooth device was successfully connected to your computer. Your computer and the device can communicate whenever they are near each other.						
	These are the COM (serial) ports assigned to your device. Outgoing COM port: COM7 Incoming COM port: COM8						
	Learn more about <u>Bluetooth COM ports</u> .						
	To close this wizard, click Finish.						
	< Back Finish Cancel						

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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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Standard Serial over Bluetooth link (COM7) Properties	? 🗙
General Port Settings Driver Details	
Bits per second: 9600	~
Data bits: 8	~
Parity: None	~
Stop bite: 1	
Elow control: None	*
	afaulte
	CIQUIUS
ОК	Cancel

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 FIFD buffers (requires 16550 compatible UART) Select lower settings to correct connection problems. Select higher settings for faster performance. <u>R</u> eceive Buffer: Low (1)	P	High (14) High (16)	(14) (16)	OK Cancel Defaults
COM Port Number: COM7				-

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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.

Connect To	? 🔀					
Naffic light test						
Enter details for I	the phone number that you want to dial:					
Country/region:	United Kingdom (44) 🛛 🗸 🗸					
Ar <u>e</u> a code:						
Phone number:						
Co <u>n</u> nect using:	HDAUDIO SoftV92 Data Fax Mode HDAUDIO SoftV92 Data Fax Modem w COM3 COM4 COM2					

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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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Traffic light test - HyperTermin	al						
File Edit View Call Transfer Help							
└☞ ▨炎 ▫齿							
cRYG							
	2422 Q M 4	ISCROLL	I NEM	Capture	Print echo	 	

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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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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