DIPROM

www.diprom.es

Raspberry (v2) inputs/outputs
and
video remote control
project

(This software is free and comes with absolutely no warranty)

This server, based on websocket protocol and installed on a Raspberry Pi (rev 2), allows :

A/ a remote video monitoring with an ip camera
B/ a remote control of relays to put on or put off any electrical device (8 max)
C/ a display of the status of 4 inputs
from any browser which support this protocol.

Table of contents

Send your coments to: *info@diprom.es*   *2013/12/20 ver 1.0*

1. Webpage to display and control the remote system. (http://www.diprom.es/myCam1.html)

Connection status

Camera motion control

Video Ip Cam

Display the captured image 320x240 of the camera (ip cam) connected to the raspberry (RJ45 or WIFI)

Output push buttons

Push button green: To set 3,3V at the pin.
Push button red: to set 0V at the pin.

Inputs LED

Green: 3,3V at the pin.
Gray: 0V at the pin.

Last command executed

Request indicator

Your browser must support websocket.

2. Raspberry connectors
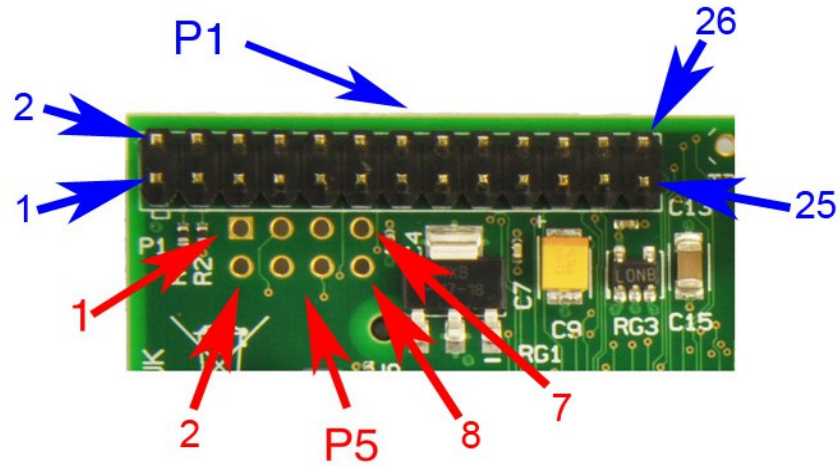
Raspberry Pi Rev2 - P1 Connector

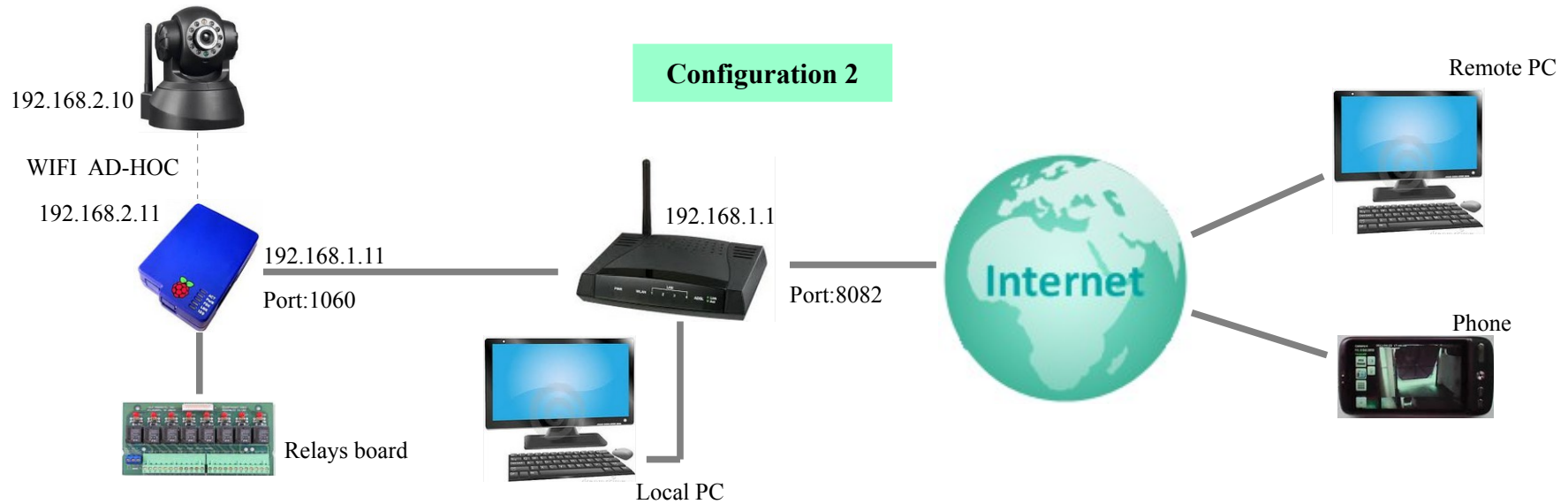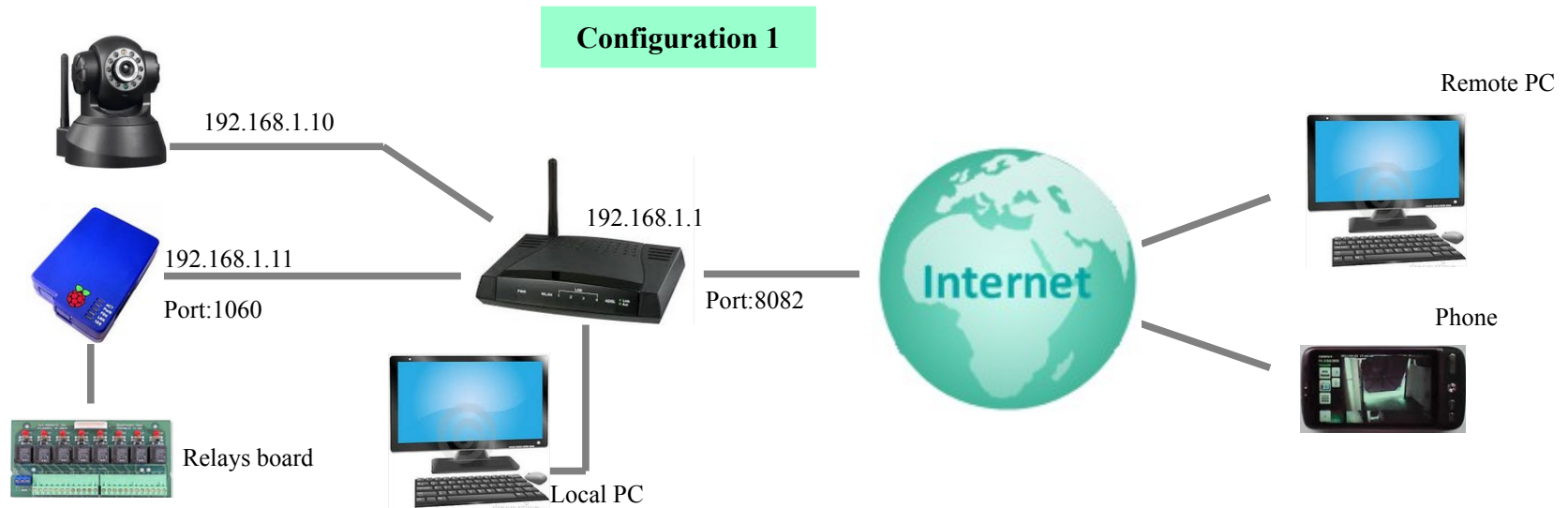|			
3V3 / 3.3V Power	1 · 2	5V Power / 5V	
GPIO 2 / SDA	3 · 4	5V Power / 5V	
GPIO 3 / SCL	5 · 6	Ground / GND	
GPIO 4 / GPCLK0	7 · 8	TXD / GPIO 14	
GND / Ground	9 · 10	RXD / GPIO 15	
GPIO 17	11 · 12	PCM_CLK / GPIO 18	
GPIO 27 / PCM_DOUT	13 · 14	Ground / GND	
GPIO 22	15 · 16	GPIO 23	
3V3 / 3.3V Power	17 · 18	GPIO 24	
GPIO 10 / MOSI	19 · 20	Ground / GND	
GPIO 9 / MISO	21 · 22	GPIO 25	
GPIO 11 / SCLK	23 · 24	CE0 / GPIO 8	
GND / Ground	25 · 26	CE1 / GPIO 7	
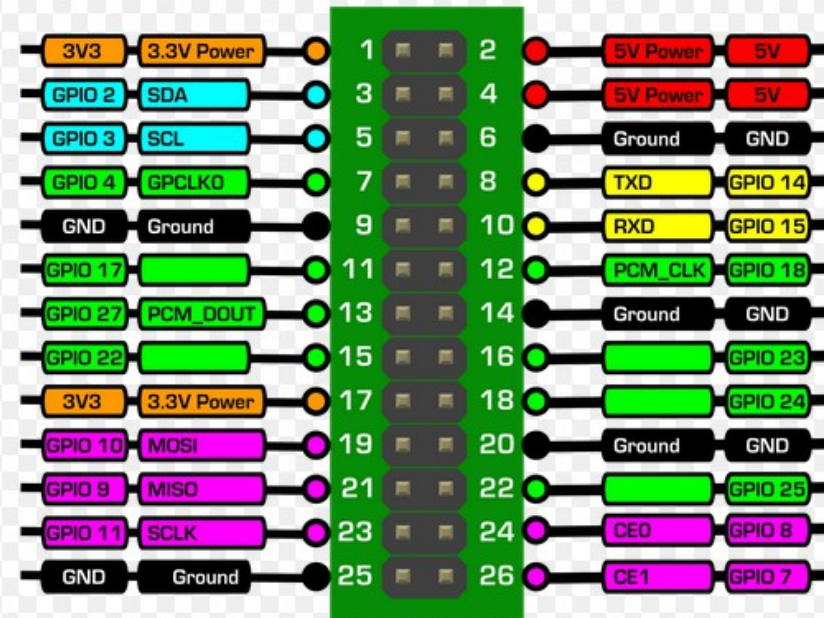
○ Power 3.3V maximum current draw 50mA
● Power 5V maximum current draw Model A - 500mA, Model B - 300mA
● Ground
○ UART
○ I2C pulled-up with 1K8 resistor to 3.3V
○ GPIO
● SPI

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http://combinatorialdesign.com/boards/Raspberry_Pi/P1

Rev 1.1 - 4/19/2013

Raspberry Pi P5 Header

PIN #	NAME	1	3	5	7
	PIN #	5.0 VDC Power	GPIO17 / 17	GPIO19 / 19	0V (Ground)
		■	●	●	○
		●	●	●	○
PIN #		2	4	6	8
18	3.3 VDC Power		GPIO18	GPIO20 / 20	0V (Ground)
PIN #	NAME				

http://www.pi4j.com

3. Connection example

Configuration 1

Remote PC

192.168.1.10

192.168.1.1

Port:8082

192.168.1.11

Port:1060

Internet

Phone

Relays board

Local PC

Configuration 2

Remote PC

192.168.2.10

WIFI AD-HOC

192.168.2.11

192.168.1.1

192.168.1.11

Port:8082

Port:1060

Internet

Phone

Relays board

Local PC

4. Configuration raspberry (network interfaces)

Edit the network interface configuration file: **sudo nano /etc/network/interfaces**
Modify the file as showed below:

| FOR A WIFI connection (Ip cam – Raspberry) without security access	FOR A WIRED connection

auto lo
iface lo inet loopback
 	
auto eth0
iface eth0 inet static
    address 192.168.1.11
    netmask 255.255.255.0
    gateway 192.168.1.1
    broadcast 192.168.1.255
 	
auto wlan0
allow-hotplug wlan0
iface wlan0 inet static
    address 192.168.2.11 ← Raspberry wireless module address
    netmask 255.255.255.0
    gateway 0.0.0.0
    broadcast 192.168.2.255
    wireless-mode ad-hoc
    wireless-channel 1
    wireless-essid NetCam
	auto lo
	iface lo inet loopback
	
	auto eth0
	iface eth0 inet static
	    address 192.168.1.11 ← Raspberry IP address
	    netmask 255.255.255.0
	    gateway 192.168.1.1 ← Router IP address
	    broadcast 192.168.1.255

5. Raspberry configuration (server parameters)

Edit the configuration file : **sudo nano /home/pi/Documents/Server/login.txt**
Modify the file as showed below:

File content	Comments
user=demo	**user: user name provided**
pwd=demo	**pwd: password provided**
videoCtrl=1	videoCtrl: (0 if no control video, 1 else)
nbCam=1	**nbCam: (1 by default)**
ipCam=192.168.2.10	ipCam: Camera IP adress
userIpCam=admin	userIpCam: user name configured as administrator in the camera
passwordIpCam=888888	passwordIpCam: password configured as administrator in the camera
host=192.168.1.10	host: raspberry IP address
port=1060	**port: raspberry listen port (1060 by default)**

6. Router configuration (NAT table)

Configure the router to forward the external access.

Raspberry IP address
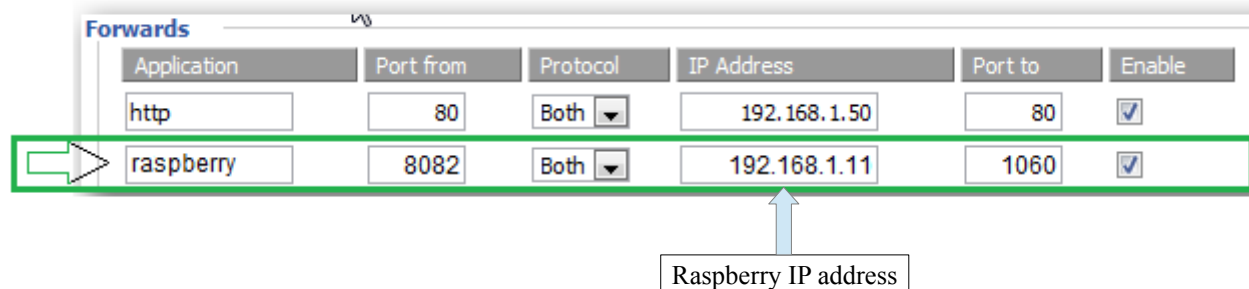
7. Start server application

Change the current directory to server directory: **sudo cd /home/pi/Documents/Server**
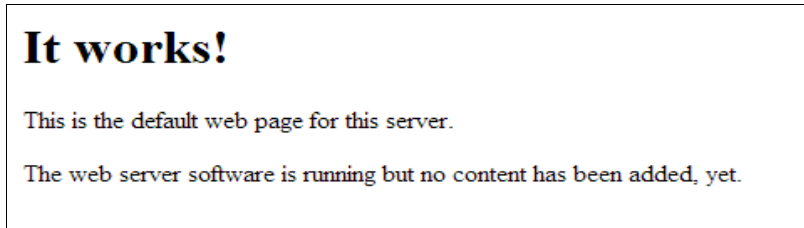Execute the command: **sudo ./serverIO**

8. Start webpage

In your browser, enter **http://www.diprom.es/myCam1.html**
Enter your user name and your password to login to the server.

9. **Apache2, mySQL, phpmyadmin and Python**
You can test the installation with the command: http://IP_Raspberry (ex: http://192.168.1.11). In your browser, you must see:

It works!

This is the default web page for this server.

The web server software is running but no content has been added, yet.

You can access to phpmyadmin with the commande: http://IP_Raspberry/phpmyadmin/index.php (ex: http://192.168.1.11/phpmyadmin/index.php).
In your browser, you must see:

phpMyAdmin

Bienvenido a phpMyAdmin

Idioma - *Language*

Español - Spanish

Iniciar sesión

Usuario:
root

Contraseña:

Continuar

If you enter the username **root** and the password **raspberry**, you can see in your browser:

Instaled on your SD card, **Python** is a remarkably powerful dynamic programming language that is used in a wide variety of application domains.

See http://www.python.org/about/

You can test the installation with the command: http://IP_Raspberry/cgi-bin/testpython.py (ex: http://192.168.1.11/cgi-bin/testpython.py). In your browser, you must see: **HELLO WORLD.**

The source code of testpython.py is in the directory **/usr/lib/cgi-bin.**

You can access it entering the command: **sudo nano /usr/lib/cgi-bin/testpython.py**

10. User name and passord for login to the webpage http://www.diprom.es/myCam1.html

User name: uv54J87a5

Password: pw87U28r

11. Tools

winscp (for windows): WinSCP is an open source free **SFTP client**, **SCP** client, **FTPS** client and **FTP client** for Windows. Its main function is file transfer between a local and a remote computer. Beyond this, WinSCP offers scripting and basic file manager functionality. WinSCP es una aplicación de Software Libre.

WinSCP es un cliente SFTP gráfico para Windows que emplea SSH. También se puede seguir usando la versión anterior del protocolo. Su función principal es facilitar la transferencia segura de archivos entre dos sistemas informáticos, el local y uno remoto que ofrezca servicios SSH.
 See http://winscp.net/eng/index.php

Putty (for windows): PuTTY is an SSH and telnet client, developed originally by Simon Tatham for the Windows platform. PuTTY is open source software that is available with source code and is developed and supported by a group of volunteers.
 See http://www.putty.org

WiringPI (for raspberry): **Installed in your SD card (/home/pi/wiringPi),** *WiringPi* is a GPIO access library written in C for the BCM2835 used in the **Raspberry Pi**.
 See http://wiringpi.com/

12. SD card 8Gb preinstalled (20 €)

We sell SD card pre-installed ready to use:

- **Operating system Debian Weezy Raspbian.**

- **Server Apache2.**

- **Base de datos MySQL.**

- **PHP and phpmyadmin.**

+

- **Free server websocket (remote control inputs/outputs and control video ipcam) for Raspberry rev 2.**

- **WiringPi installed.**

If you are interested, contact us por e-mail (info@diprom.es)