DOCUMENTATION

Project Name: **Automation v3**
Description: Control 8-channel USB relay board from raspberry PI

Hardware Requirements

1. Denkovi 8-Channel USB Relay http://denkovi.com/usb-relay-boards
2. Raspberry Pi 3 or recent model https://www.raspberrypi.org/products/

Software Requirements

1. Raspbian https://www.raspbian.org/
2. Java 8 or latest https://www.java.com/en/download/
3. Termux https://play.google.com/store/apps/details?id=com.termux&hl=en   (Mobile)

Install Instruction

1. Click this link to download the installer
2. Ensure that you have connected your raspberry PI on the network, you can then check the IP address assigned to the device
        command: **ifconfig -a | grep 192.168**
                => Router IP configuration have common starting IP of 192.168
2. Copy the downloaded file but make sure you know the IP assigned to the device
        command: **scp automation_v3.zip** pi@192.168.1.109**:/home/pi**
                => enter the password
2. Connect to your raspberry device
        command: **ssh** pi@192.168.1.109
                => enter the password
3. Extract the installer zip file
        command**: unzip -P password automation_v3.zip -d /home/pi/installation**
        <mark>=> To request for password, I have included contact information below.</mark>
4. Navigate to installation folder
        command: **cd /home/pi/installation/scripts**
5. Login as root:
        command**: sudo su**
                => ensure that you are in scripts folder
6. Execute the script file
                command: **bash starter.sh**
            => It will check for existing java on your machine and previous installation
7. Navigate to desktop directory of the user you specified and locate the folder automation
        command: **cd /home/username/desktop/automation**
        => Once you are in directory, notice that there are two files namely:
        configuration.txt and **masterlist.txt**, those are the files that you can edit to schedule timer on relay board.
        => Follow this pattern for masterlist configuration. **RELAY_POSITION=TIME:TIME-TIME**
        => Default mode for **configuration.txt** is **HOURLY** but you can change it to **MINUTES**
   => Check the file /docs/conversion.pdf for proper time input

Mobile Access (Android)

1. Open PlayStore
2. Install termux
3. Install ssh client, then execute the command below to your phone
   command: **sudo apt-get update**
   command: **sudo apt-get upgrade**
   command: **sudo apt-get install openssh**
4. Find the IPv4 address of your raspberry device
   command: **ifconfig -a | grep 192.168**
     => You can also verify the IPv4 assigned from your router by comparing the mac address
4. Connect to your raspberry device
   command: **ssh pi@192.168.1.109**
     => If your device and your phone is connected on same network you can access it.
     => If you want to connect to actual IP assigned by your ISP (*usually for remote access)*, you must enable forwarding on your router and link your device

Wiring Instruction – WARNING!! LIVE WIRE IS DEADLY REFER TO PROFESSIONALS

1. The relay board consist of SPDT switch, meaning if there is power on the switch it will activate circuit 1 or activate circuit 2
     => Normally Open (NO), Common, and Normally Closed (NC)
2. Connect the first wire to common then the second wire either NO or NC
     => If you want to connect high load appliance like air conditioner, you must use solid state relay (SSR) for additional protection of your board. This is due to the fact that high load appliance generates more heat.

Wiring Diagram 1
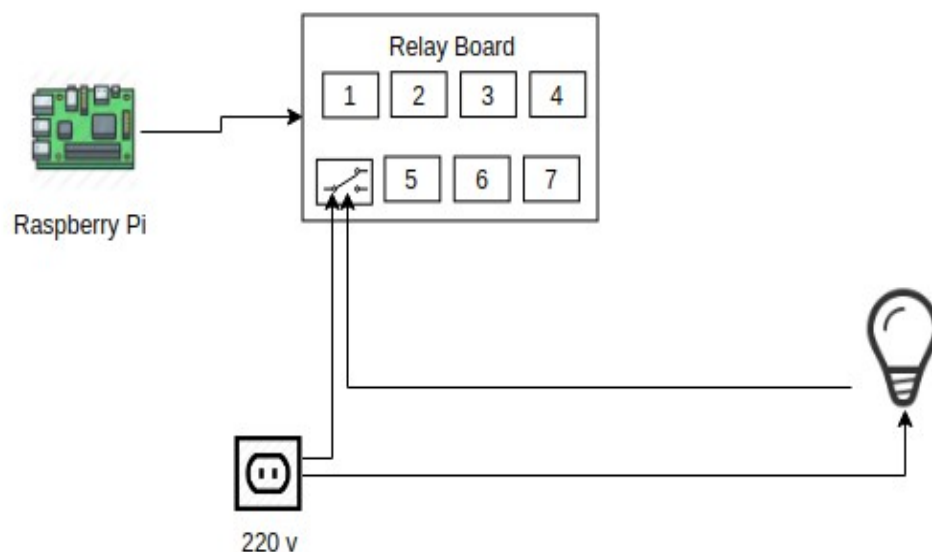
Wiring Diagram 2 – with SSR (for high load appliance)
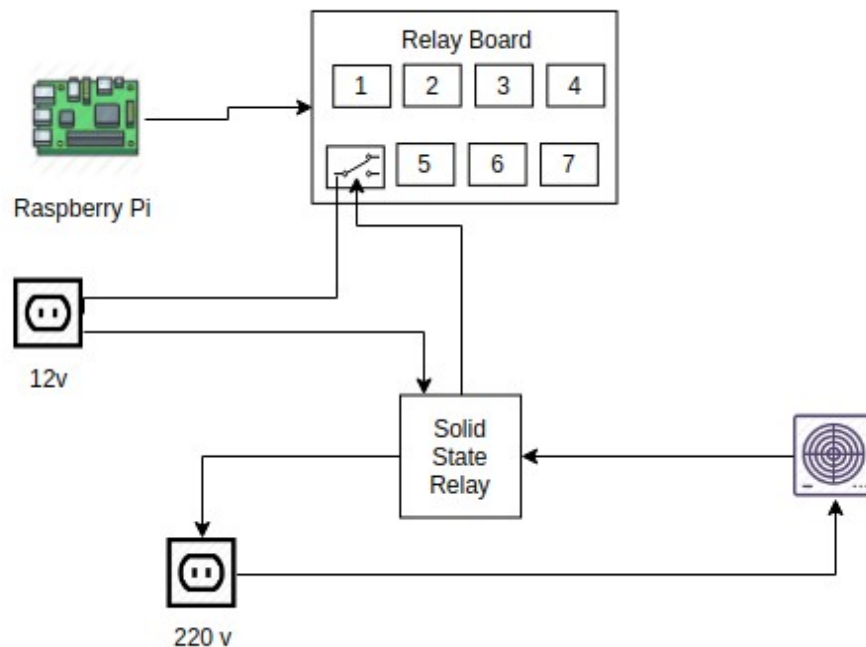
Additional Information

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