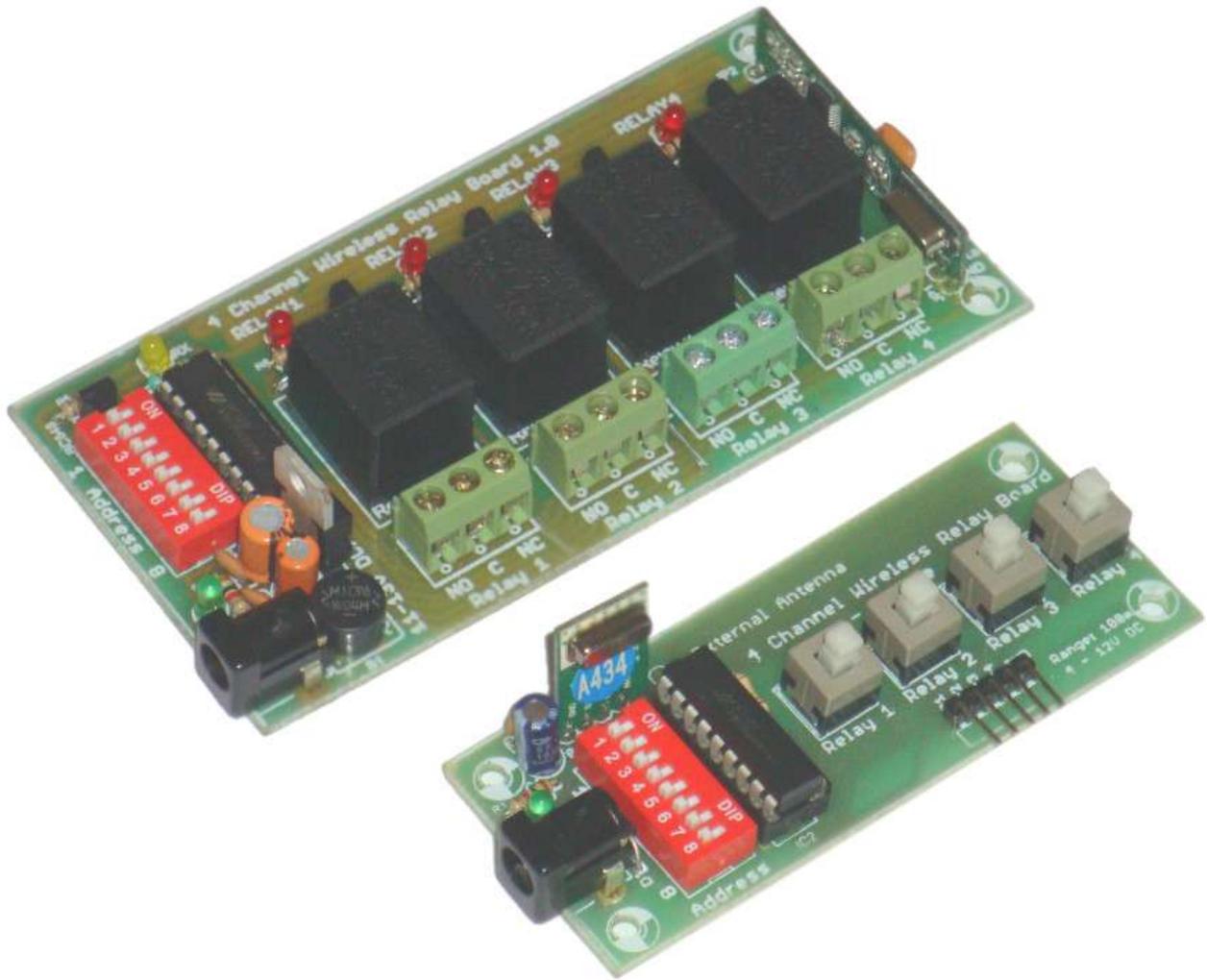


4 Channel Wireless Relay Board

Starter Guide



Contents

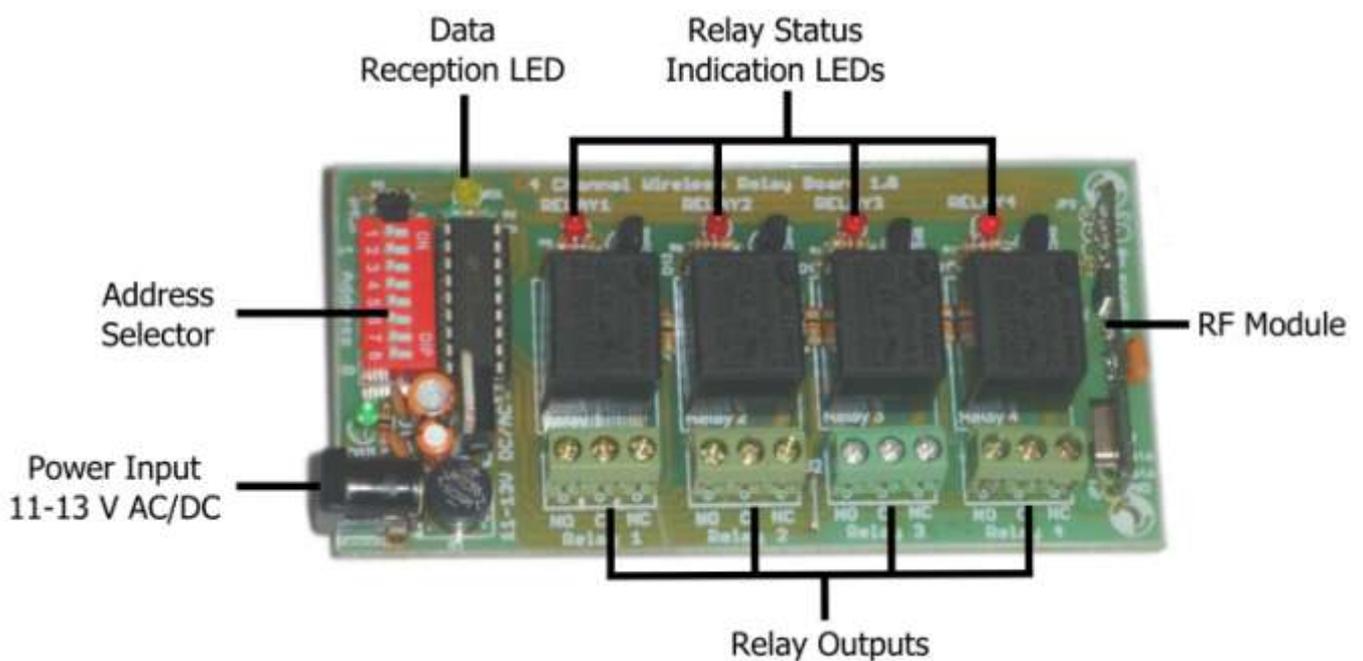
1. Overview
2. Features
3. Using the board
4. Troubleshooting and Getting Help

Overview

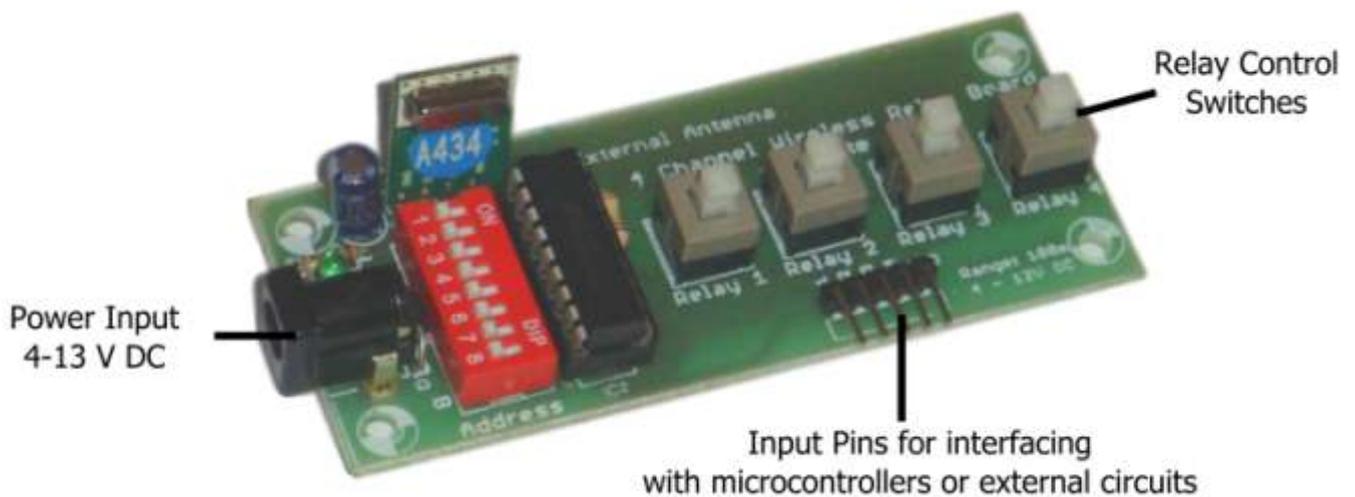
This is a four channel relay board which can be controlled by a wireless remote which is connected to the receiver through a wireless RF link. The relays can be used to control 240 V appliances, motors, other electronic circuits, etc. The board can operate within a range of 100m when the remote is in line of sight and around 50m when indoors.

Each relay board comes with an adjustable address option which can be used to operate multiple relay boards in the same area by assigning different addresses to each relay board. The remote provides 4 push switches which can be manually operated to control the relays. The input pins are also brought out to a row of header pins, which can be used to connect the remote to a microcontroller or an external circuit and control the relays through logic signals.

The RF link on this board works on the 433 MHz frequency. Both the transmitter and the receiver come with an onboard antenna and offer a compact and simple design. The boards also support an external antenna for better range and reception.



Relay Board Overview



Remote Overview

2. Features

- The board is built on a high quality FR-4(1.6 mm) board with a green solder mask and a clear and legible white legend
- High power relays which can be used to switch 240 V appliances, motors, other electronic circuits, etc
- Each relay is provided with a status indicating LED for easy debugging
- Remote can be used to manually control switches through switches or through a microcontroller or an external circuit
- Multiple boards can be used in the same area
- Long range both indoors and outdoors
- Comes with an onboard antenna, which offers a clean and compact design, an external antenna can be added for better range and reception
- Works on a RF link operating at 433 MHz frequency
- Both the receiver and the transmitter offer protection against reverse polarity
- Excellent after-sales support and service

3. Using the board

This section explains the steps to be followed to use the board –

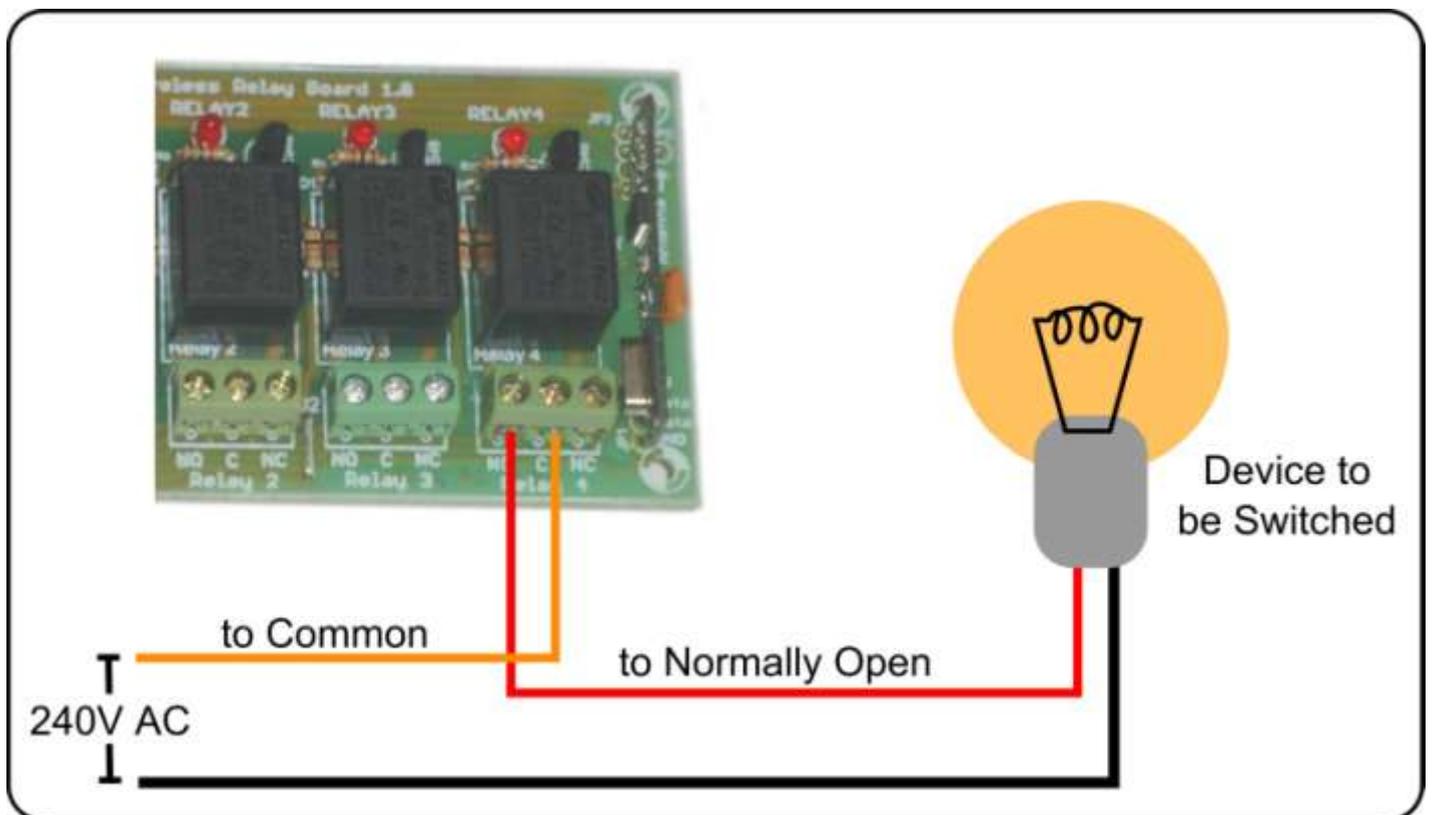
Power Supply

The relay board needs to be powered with an input voltage of around 11-13V DC or AC. Power supply should be applied to the power input connector, which is a standard 2.1 mm DC Jack. The remote can operate within a wide range of input voltage ranging from 4V to

13V DC only (no AC). Care should be taken to ensure that the center pin of the remote's power connector is connected to the positive potential. The remote has an onboard reverse polarity protection circuit, which will prevent damage to the board when power is applied with the wrong polarity. The higher the input voltage of the remote, greater will be the operating range of the board. When powered correctly the green Power LED on the boards will glow indicating a correct power supply.

Connecting devices to the Relay

Each relay offers three pins at its output – Normally Open (NO), Common (C) and the Normally Closed (NC) pin. The Common pin is connected to the NC pin when the relay is off and to the NO when the relay is on. Hence you will have to wire the device to be switched to the relay as shown below



Connections to switch a 240V Appliance

The relay board can also be used to switch other devices like motors, coils, and even other external circuits, whose maximum power consumption is within the maximum rating of the board. To connect these devices, just use same connections as above, and apply the power you want to drive the device at in place of 240V AC.

The maximum power rating the board can handle is 10A/250V DC, 10A/30V DC, 15A/120V AC or 7A/250VAC.

Relay Status Indicating LEDs

The relay board features an onboard relay status indication LED next to each relay. When these LEDs are on, the relay is off and vice-versa.

Data Reception LED (Rx)

The relay board also features a yellow Data Reception LED that indicates data reception. In the presence of a remote within the range of the relay board, the LED will light up and flicker during data transmission.

The above two LEDs can be effectively used during debugging the relay board in case of any problem or for plain general purpose indication.

Antenna

Both the boards (the relay board and the receiver) feature an onboard antenna. It offers a clean and compact design. If you would like better range from the boards, you will have to solder an external antenna to the External Antenna pad. You may use a wire of length exactly equal to 30 - 35 cm as the external antenna. If you are unsure of the length, just use a wire of length 60 cm and go on cutting the wire from one end, until you get the best range and reception. When you use the external antenna be sure to cut the PCB trace going to the onboard antenna.

Controlling the Relays through switches

The remote offers 4 high quality push switches to control the relays. When a switch is pressed, the corresponding relay is activated, and when the switch is pressed again, the relay is deactivated.

Controlling the Relays through a microcontroller

The relays can also be controlled through a microcontroller or an external circuit. To control the relays of a microcontroller or an external circuit, you may use the input pins that are brought out to a row of header pins on the remote. It consists of 4 input pins, one each for a relay and one GND pin. To switch the relays off, you will have to connect the corresponding header pin to GND and to switch them on you will have to leave them open.

Configuring the board Address

Each relay board has a user configurable address. This will enable the user to use multiple boards in the same area without interference between individual boards. When using multiple boards in the same area, assign a unique address to each relay board. You may

then control the boards, by setting the same addresses on the remote. The remote will only transmit signals to the board, which has the same address as its own address. The use may set the address a 8 bit binary address to each relay board using the onboard DIP switches.

4. Troubleshooting and Getting Help

We are committed to ensure that our customers' projects, designs and research go as efficiently and as smoothly as possible. And for this we promise and provide an excellent after-sales support service.

Due to the nature of the products we sell, we are sure to receive a lot of request for support. In anticipation of this, we have created a separate section, "Resources", where we have many tutorials covering how to use our products. Your first step to seek support from us would be to surf through the "Resources" section for answers to your query. We also have our very own forum, which you can use to post your queries and get replies directly from us and our other customers who have used our products and probably faced the same doubts when they first got started. You may access our forum at www.probots.co.in/forum. If our Resources and Forum sections don't address your query, mail us directly at info@probots.co.in for further support.

When you contact us for support, please keep the following things in mind -

- you will have to provide us with the invoice information(order no., date of purchase, etc.)
- provide us with all the required details(operating system being used, compiler being used, etc)
- do not ask us questions or doubts about products we do not sell
- do not contact us 2 days before a project deadline for any sort of immediate or urgent support
- do not mail us a rephrased version of your project
- contact us only if you know what you are doing, do not expect any sort of help from our side otherwise