

How to make I R Remote Controlled Robot-iKnowBot1



iKnowBot1

Infrared Remote controlled Robot.



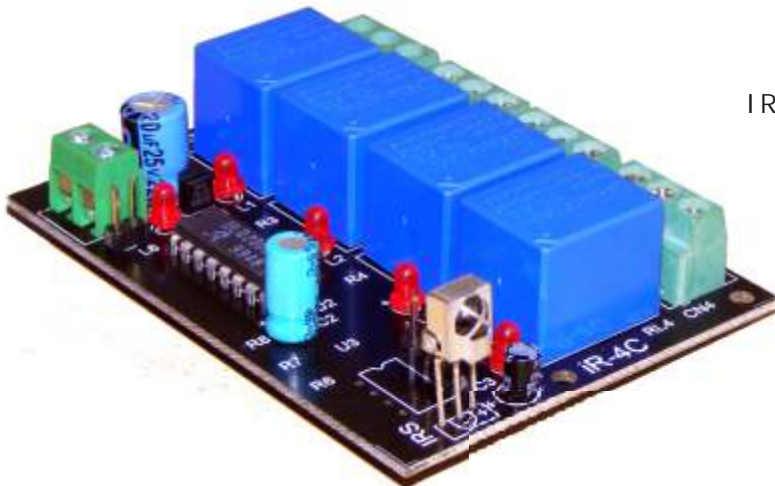
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Robotics is a very interesting hobby. You get knowledge of so many subjects like Mechanics, Electronics, Physics, Biology etc.

Today we will see how we can make a small Robot which can be controlled by Infrared Remote.

You will need mainly following 2 main components along with other usual tools like Multimeter, Screwdriver, Soldering Iron, Cutter and some wires etc.

1. IR-4C-M board from iKnowvations.in
2. Robot base from iKnowvations.in or any similar Robot plate form having inbuilt 2 dc motors and wheels.



IR-4C-M board.

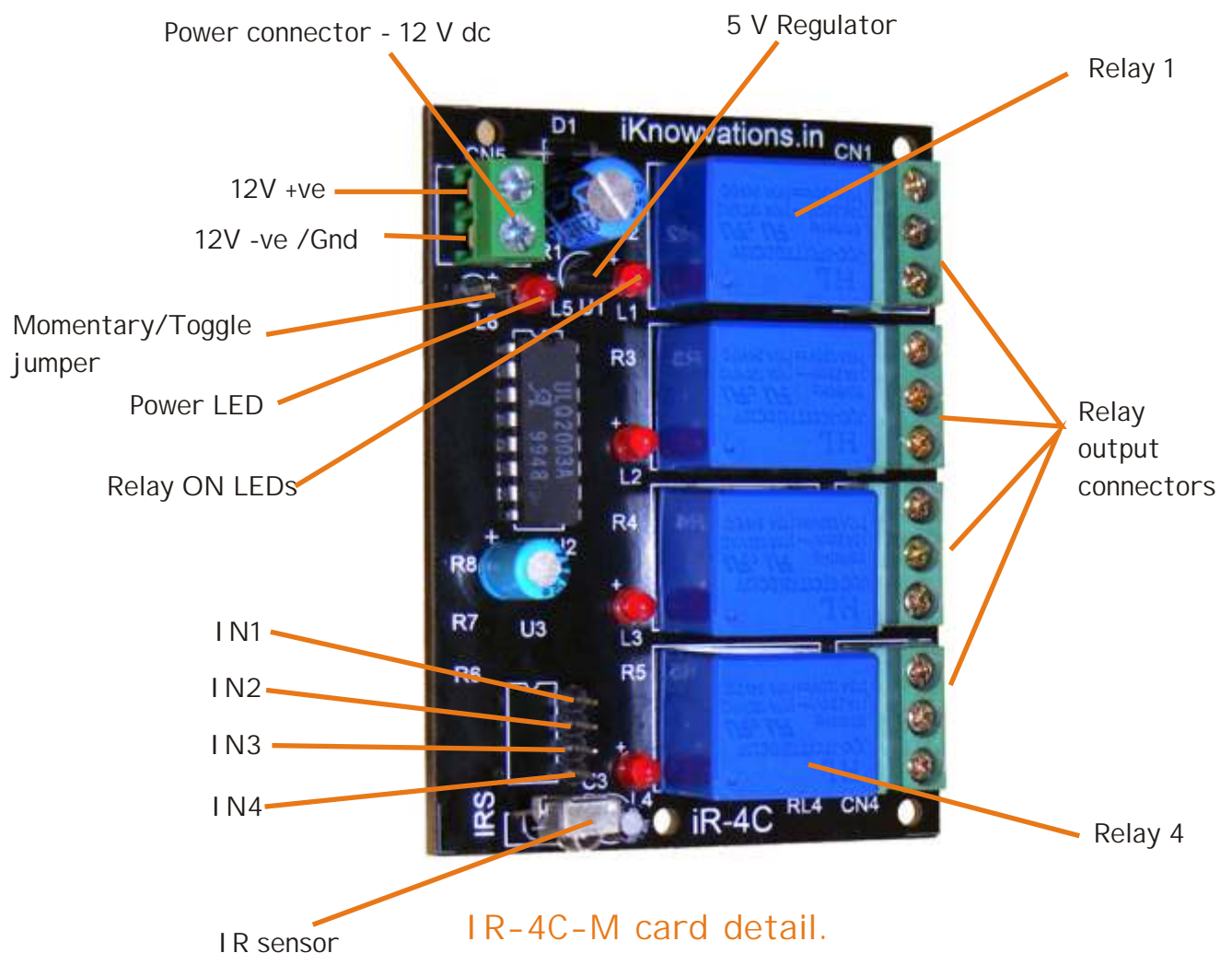


Robot Base

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User manual

IR-4C-M is a special board tailor made for Robotics and DC motor applications. Let us first understand features of this card. This will help us to take advantage of all features of the card for our Robotics project.



On the upper left hand side you can see the power connector where you have to supply power (12 V DC) to the board. On right hand side there are connectors for relay outputs. These connectors are used to connect your DC motors for the robot.

On lower left part you can see the IR sensor, which receives the Infrared signals and provides output to main IC of the board. Also seen are 4 input pins that can be used to connect limit switches or stop switches. These switches are used for obstacle detection for the robot.

For more technical information please download iR-4C-M User manual from download section at <http://iknowvations.in/downloads/>.



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Now let us see how Remote handset is used to control various movements of the robot. Refer to below figure to understand the detail of buttons to be used with robot.



Other options are available when you want to operate two or more 4 channel boards in same room and you want to operate them with same remote at a time. **You have to specify at the time of placing order if you want to have more than one option.**

Please note that Remote handset design may change from time to time but functions will remain same.

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This is the connection diagram of how 2 dc motors can be connected to the iR-4C-M board for the robot.

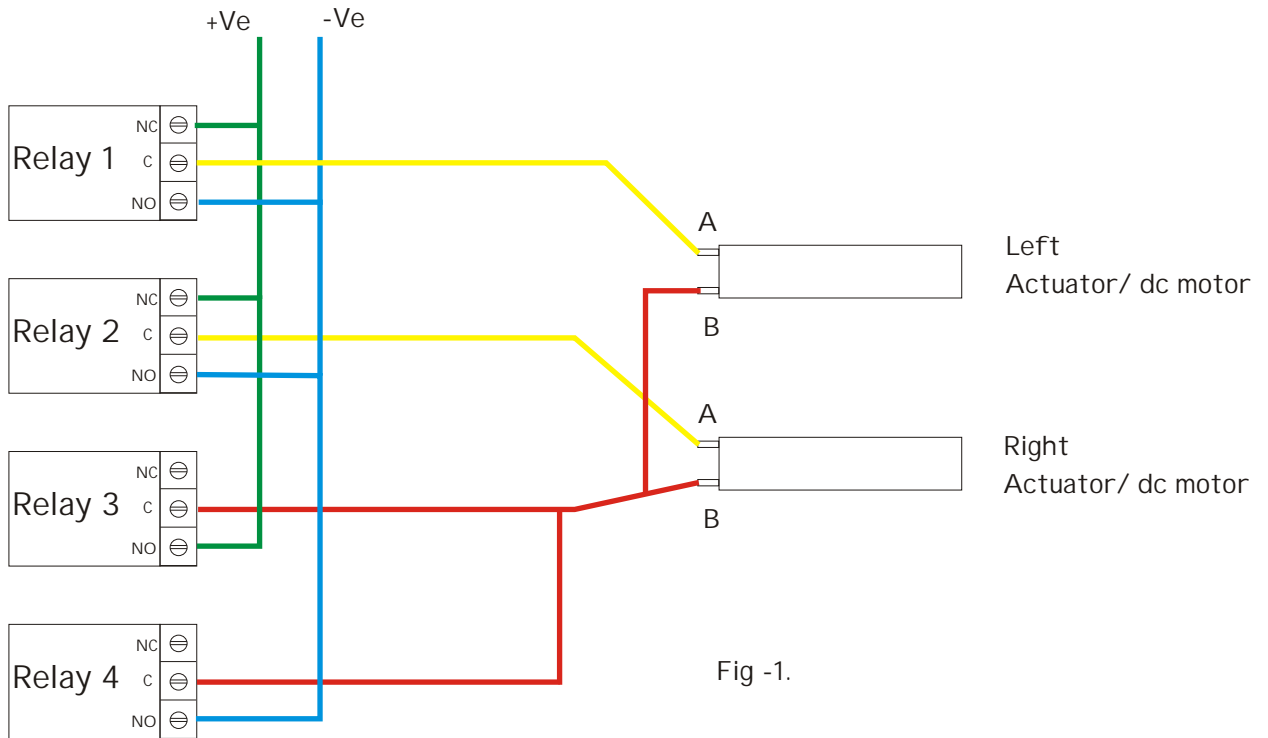


Fig -1.

We here assume that when A & C terminals are +ve and B & D terminals are -Ve the respective motors/actuators will move Forward or Clock wise. The Voltage applied will be as per motor/actuator's specifications.

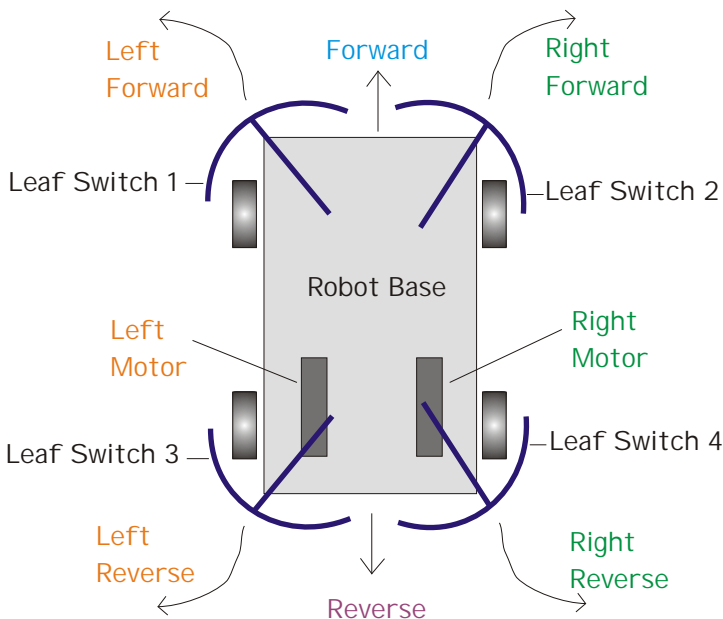


Fig -2.

<u>Robot direction</u>	<u>Left Motor</u>	<u>Right Motor</u>
Forward	Forward	Forward
Reverse	Reverse	Reverse
Right Forward	Forward	Off
Left Forward	Off	Forward
Right Reverse	Reverse	Off
Left Reverse	Off	Reverse

Table-1



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Following table shows Relay Status of respective Robot direction movement.

Robot direction	Relay 1	Relay 2	Relay 3	Relay 4
Forward	OFF	OFF	OFF	ON
Reverse	ON	ON	ON	OFF
Right Forward	OFF	ON	OFF	ON
Left Forward	ON	OFF	OFF	ON
Right Reverse	ON	OFF	ON	OFF
Left Reverse	OFF	ON	ON	OFF

Table-2

Input Pins :-

There are 4 input pins on the card. I N1 to I N4. These inputs can be used to connect leaf switches on Robot board. Closing of these switches will prevent further movement in that direction but it will be possible to move to other directions. These inputs can also be used as limit switches for Forward or Reverse movement in case of actuators.

Following table shows effect of each switch closer. Switch closer makes the respective input pin 0 or low. You can use any Push to ON switches.

Input Pin	Effect
Switch closure on I N1	Stops Forward & Forward Left movement
Switch closure on I N2	Stops Forward & Forward Right movement
Switch closure on I N3	Stops Reverse & Reverse Left movement
Switch closure on I N4	Stops Reverse & Reverse Right movement

Table-3.

Toggle or Momentary action.

This action is selected by closing or keeping open the respective Jumper Pins. Please refer to the figure on page 2. Toggle action (pressing button once will start that operation and pressing again the same button will stop that operation) can be selected by keeping jumper open. While connecting the jumper pins will make it for Momentary. Momentary means the action will be performed till any particular button is kept pressed.



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Construction details-

Now let us see how we can build this robot. It is very easy.

1. Provide interlink connections to relay output connectors as shown in Fig-1 on page 5.
2. If your DC motor operates on 12 Vdc then you have to provide 12Vdc to both - board as well as to DC motors. Please check rotating direction as described below Fig-1.
3. If DC motors are using different power say 5 or 6 V dc then you have to connect 5 or 6 V regulator along with large capacitor to make power supply for the motors.
4. Provide connections to DC motors and place the card on robot platform. Secure it will screws or double sided tape.
5. Also place power source (12 V battery) on robot platform if you have one or you can also supply power from your bench power supply using long cords.
6. For initial testing, place the whole assembly on some base which supports the middle portion of the robot and does not obstruct the movement of wheels.
7. Apply power and test the rotating of the wheels as shown in Table-2 on page 7 when operated with I R remote.
8. If everything is ok, place the robot on floor & test its operation.
9. Working ok ? Fine. Congratulations !!
You have just made I R remote controlled Robot yourself ! Enjoy !

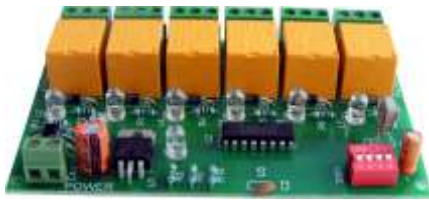
If the robot is not functioning properly, check your all steps again. Try to find out the problems. You can do it.

If you need any technical help, we are there to short out your problems. Do write to us at support@iknowvations.in .

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If you have any questions, want any assistance, want us to develop any special products for you just contact us at support@iknowvations.in.

We have other products also that might interest you like -



6 channel I R Remote control Board - AZ6CR-03

12 channel I R Remote control Board - iR-12C



U452 is an USB based Relay Card having 4 relays, up to 16 I/O channels & 8 ADC channels. The ADC resolution is 8/10/12 bits user selectable.

R242 is an RS232 based Relay Card having 4 relays, up to 9 I/O channels & 4 ADC channels. The ADC resolution is 10 bits.



Ethernet based DAQ & I/O card.

6 digit 7 segment Multipurpose LED Counter



For more information visit - www.iknowvations.in



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