

# **BIDIRECTIONAL ROTATION OF AN INDUCTION MOTOR WITH A REMOTE CONTROL DEVICE**

## **ABSTRACT**

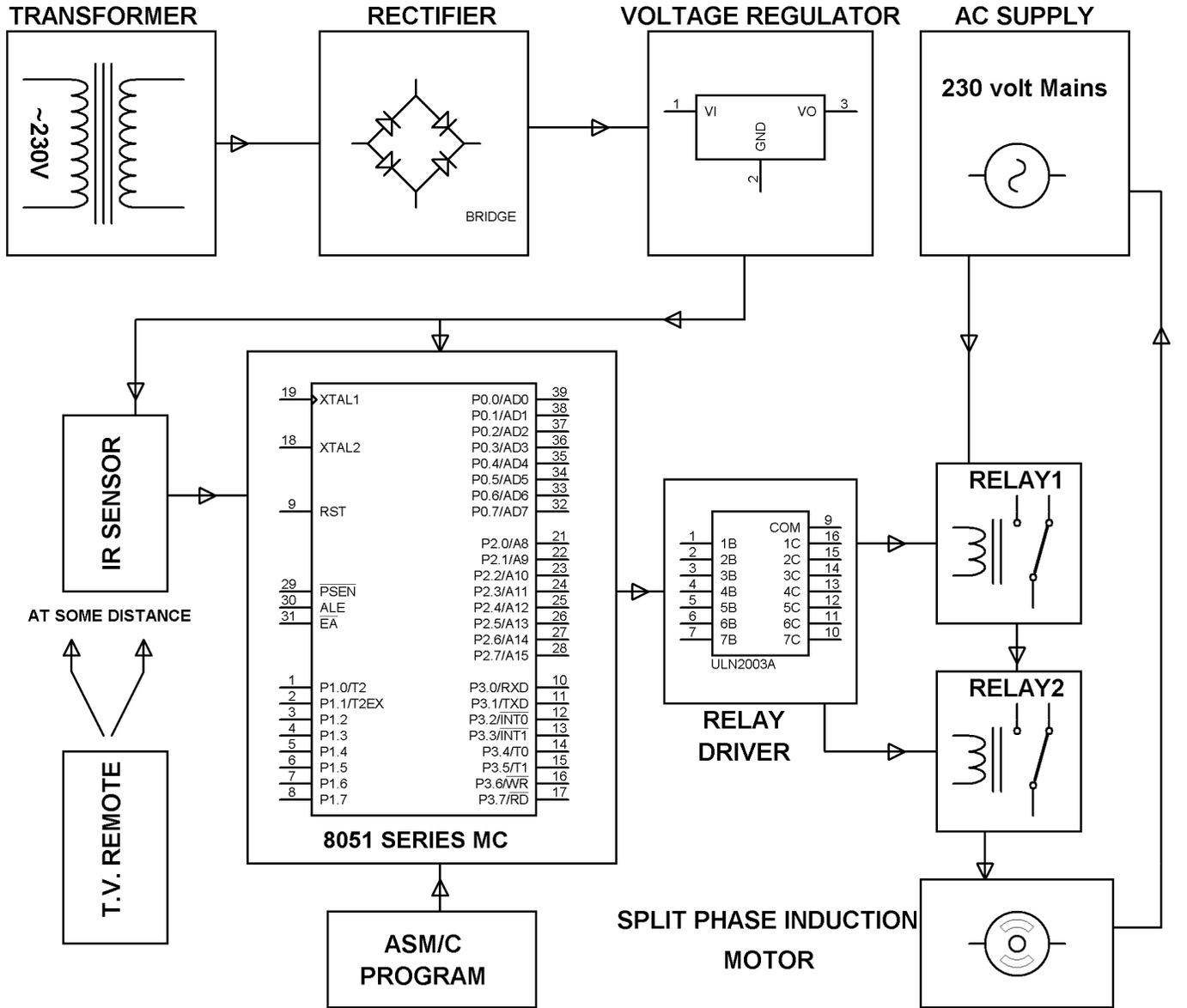
The project is designed to drive an induction motor for the required application in forward and reverse directions using wireless technology. For an example, an exhaust fan can be used in both the directions to fresh air in and throw hot air out. This can be used in case of conventional exhaust a fan that rotates in one direction only.

This proposed system demonstrates a technology to rotate a squirrel cage induction motor in both clockwise and counter clockwise direction. It also has the provision to control the direction of the motor using a TV remote. When a TV remote button is pressed, it sends an IR signal in RC5 code which is received by a IR receiver called TSOP-1738. Output from the TSOP is fed to a microcontroller of 8051 family which is interfaced to a relay driver IC. Thereafter, the relay switching is done in by-stable mode for an split-phase induction motor to rotate in forward and reverse directions.

In future, it can further be enhanced by controlling the operation of induction motor using thyristors in place of relays for noise free operation.

**Note: An induction motor is used to observe the output of the project. Motor is not supplied along with the kit. However, it can be purchased on extra cost.**

# BLOCK DIAGRAM



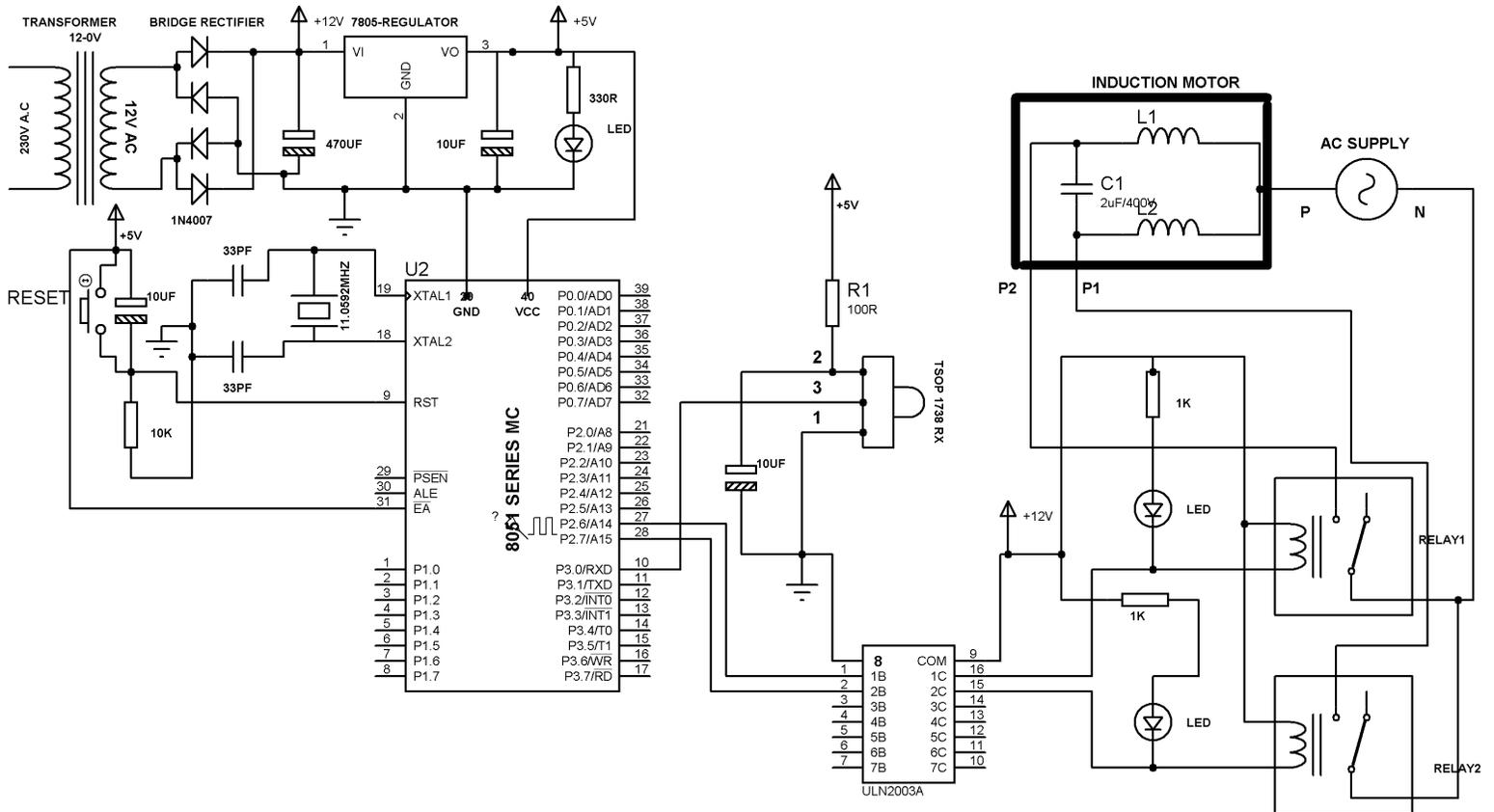
## HARDWARE REQUIREMENTS:

8051 series Microcontroller, Crystal, IR Sensor, Relay Driver IC, Relays, Transformer, Diodes, Voltage Regulator, Capacitors, LED, Resistors, TV Remote.

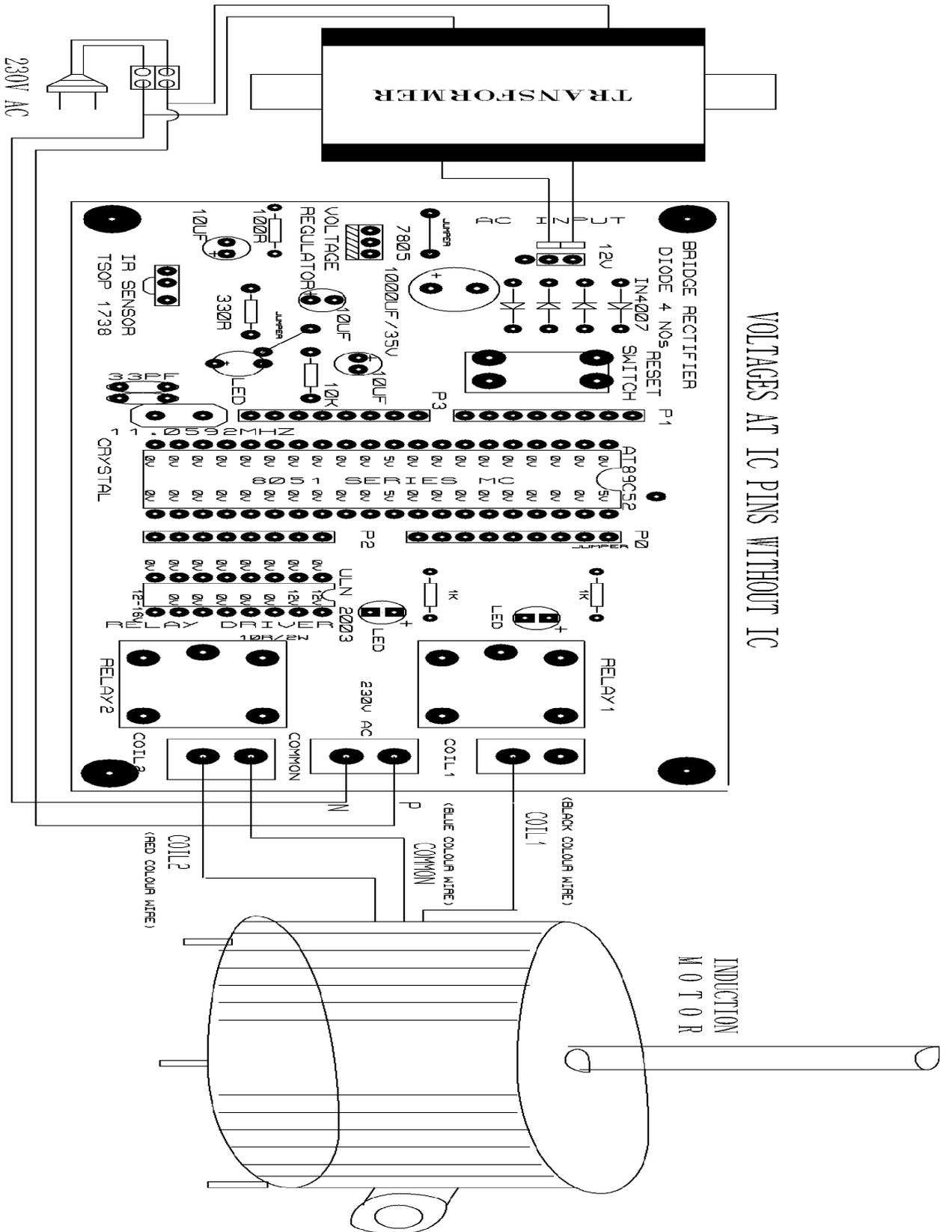
## SOFTWARE REQUIREMENTS:

Keil Compiler  
Language: Embedded 'C' or Assembly.

# Circuit diagram



# Pcb artwork



## list of components

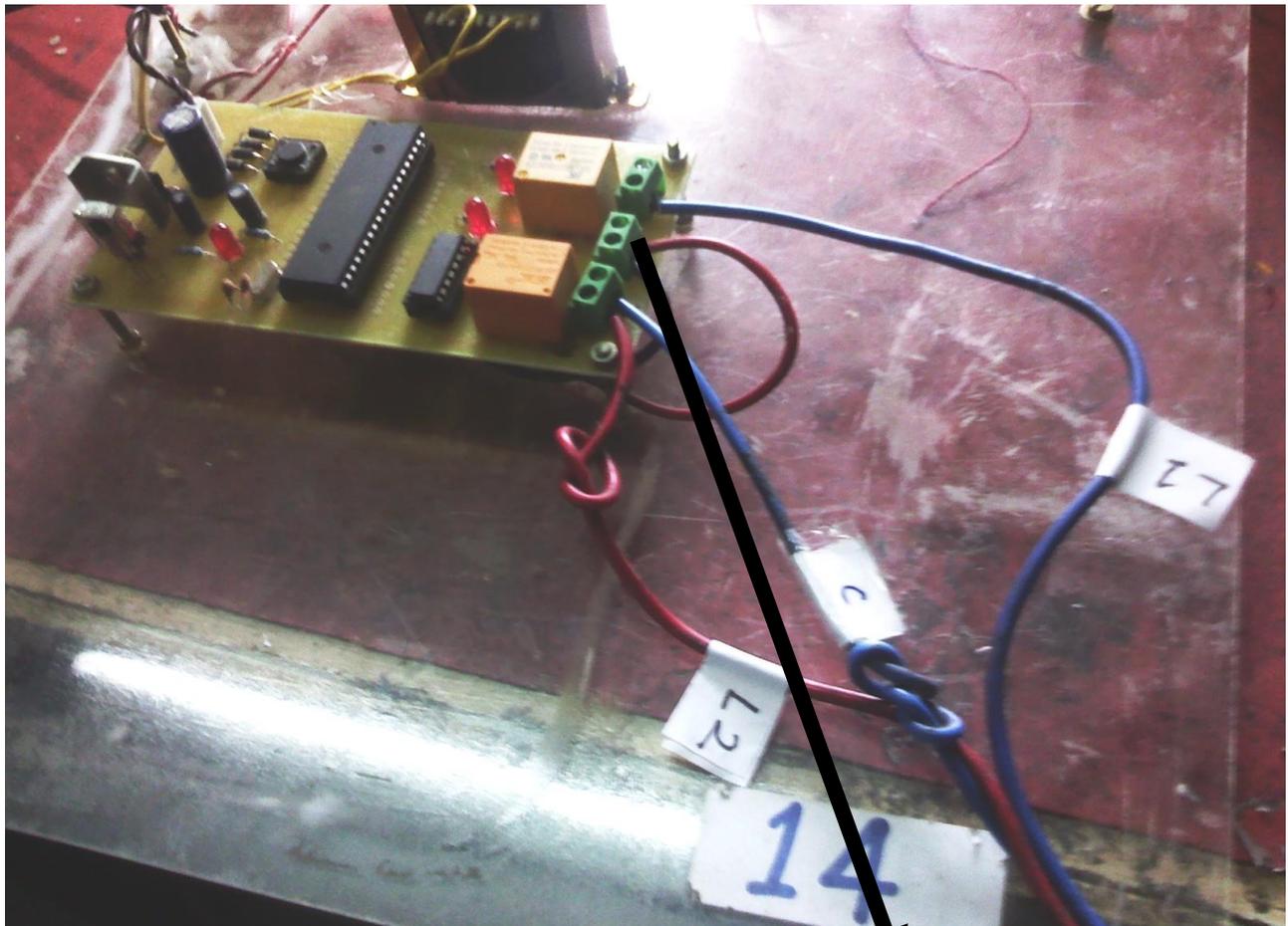
<u>COMPONENT NAME</u>	<u>QUANTITY</u>
<b><u>RESISTORS</u></b>	
330R	1
10K	1
1K	2
100R	1
<b><u>CAPACITORS</u></b>	
1000uF/35V	1
10uF/63V	3
33pF Ceramic	2
<b><u>Integrated Circuits</u></b>	
7805	1
AT89S52	1
ULN2003	1
<b><u>IC BASES</u></b>	
40 PIN BASE	1
16 PIN BASE	1
<b><u>DIODES</u></b>	
1N4007	4
RED LED	3
<b><u>MISCELLANEOUS</u></b>	
4-PIN PUSH BUTTON	1
CRYSTAL            11.0592MHz	1
TSOP 1738	1
PCB CONNECTOR    2-PIN	3
TRANSFORMER      0-12V	1
POWER CORD	1
AC CONNECTOR     2-PIN	1
TV REMOTE PH-17 (WITH CELL)	1
12V RELAY	2
MALE BURGE        2 PIN	1
FEMALE BURGE      2 PIN	1(For Transformer)
INDUCTION MOTOR	1
CONNECTING WIRE	1
COPPER WIRE	
PLAIN PCB	1
SOLDERING LEAD (50gm)	
CD	1
DVD	1

AUTHORIZED SIGNATORY:

MANAGER'S SIGNATURE:

### **Model 14: Induction Motor Wiring Connection:**

1. Any motor has two wires for mains supply and a capacitor, that has two wires connected to its points
2. Take a digital multi-meter, put it in continuity (buzzer) mode and check a continuity between any one of the mains wire and any one of the capacitor point till the buzzer sounds.
3. In one case only , the continuity (buzzer will sound ) will be available.
4. That mains wire is say L1
5. Connected that to L1 point in PCB as shown in below image.
6. Other wire of the mains wire goes to common "C"
7. The other point of the capacitor end ( where no continuity was available) is for L2
8. Take a wire and connect that wire from that capacitor point to L2 point on the PCB as shown in the image.



**230V AC**

**For complete synopsis, weekly reports, source code, black books  
Please mail your complete details on [support@makeitortakeit.in](mailto:support@makeitortakeit.in)  
We will mail you within 24hours from the time you mail us.**

Name of the student

Group member 1

Group member 3

Group member 2

Group member 4

Group member 5

College name

Branch

### **Note to make your kit /project**

You need basic knowledge & logic of components /soldering  
/disordering /breadboard circuiting/PCB designing/etching.

1. You can download the projects from our website [makeitortakeit.in](http://makeitortakeit.in) and get started to build one, we help you with the basics of know & how.
2. You can purchase the complete do it yourself kit & assemble it.
3. At the last moment, If you are short on time /if your project is not giving output!!!!!! Readymade project kit is available.
4. **Training (optional)** available if you want us to help u in your projects, it includes.
  - 7 sessions, (timing mutually decided).
  - hands on training on breadboard circuiting ,soldering,desoldering,pcb making ,how to use instruments
  - Stepwise guidance you build your project right from the scratch \*\*.
  - complete documentation/references(hard & soft copy)
  - Plotting and Implementing Scale Model.
  - Troubleshooting.
  - Programming of Controllers
  - PCB Software tool, Hardware Cutting, Drilling and Etching