

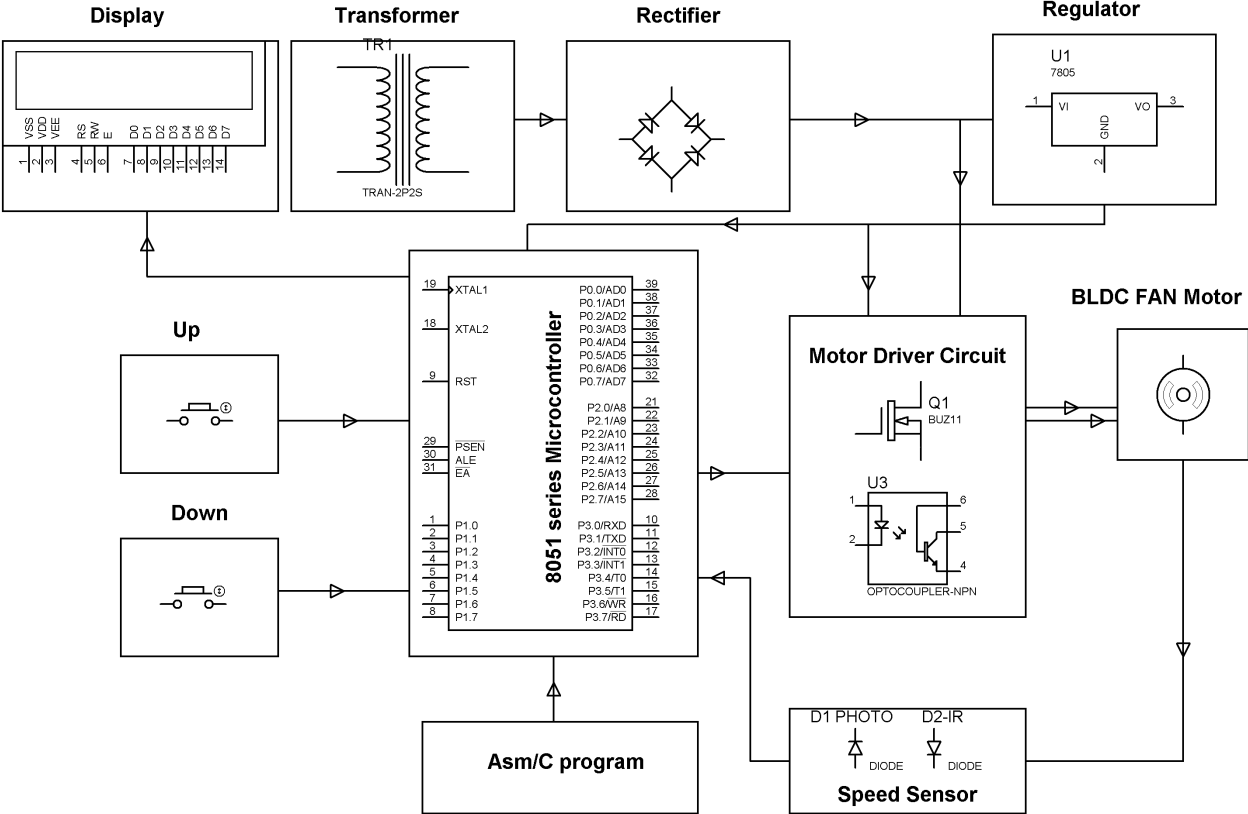
BLDC MOTOR SPEED CONTROL WITH RPM DISPLAY

ABSTRACT

The main objective of this project is controlling speed of BLDC motor and displays its speed using an IR method of speed sensor mechanism. The DC motor has various application used in industries like in drilling, lathes, spinning, elevators and etc. The speed control of the DC motors is very essential. This proposed system provides a very precise and effective speed control system. The user can increase or decrease the speed as per the requirement and the motor will run at that exact speed.

The project is divided into three stages: input, processing and output stage. The input stage consists of entering the required speed through switches. The processing stage provides RPM reference of the motor, by a shaft mounted IR sensor interfaced to the microcontroller in the circuit. The microcontroller develops PWM pulses which are varied with switches to regulate the DC power to the motor such that the desired speed is achieved. The output stage uses a MOSFET being driven by the microcontroller output. An 8051 family microcontroller is used with a set of switches to increase or decrease the speed of the BLDC motor. This speed is sensed by the sensors and is given to microcontroller which in turn displays it on a LCD display. The above operation is carried out by using one opto-isolator and a MOSFET for driving the BLDC motor. IR sensing is used for getting the speed reference to the microcontroller.

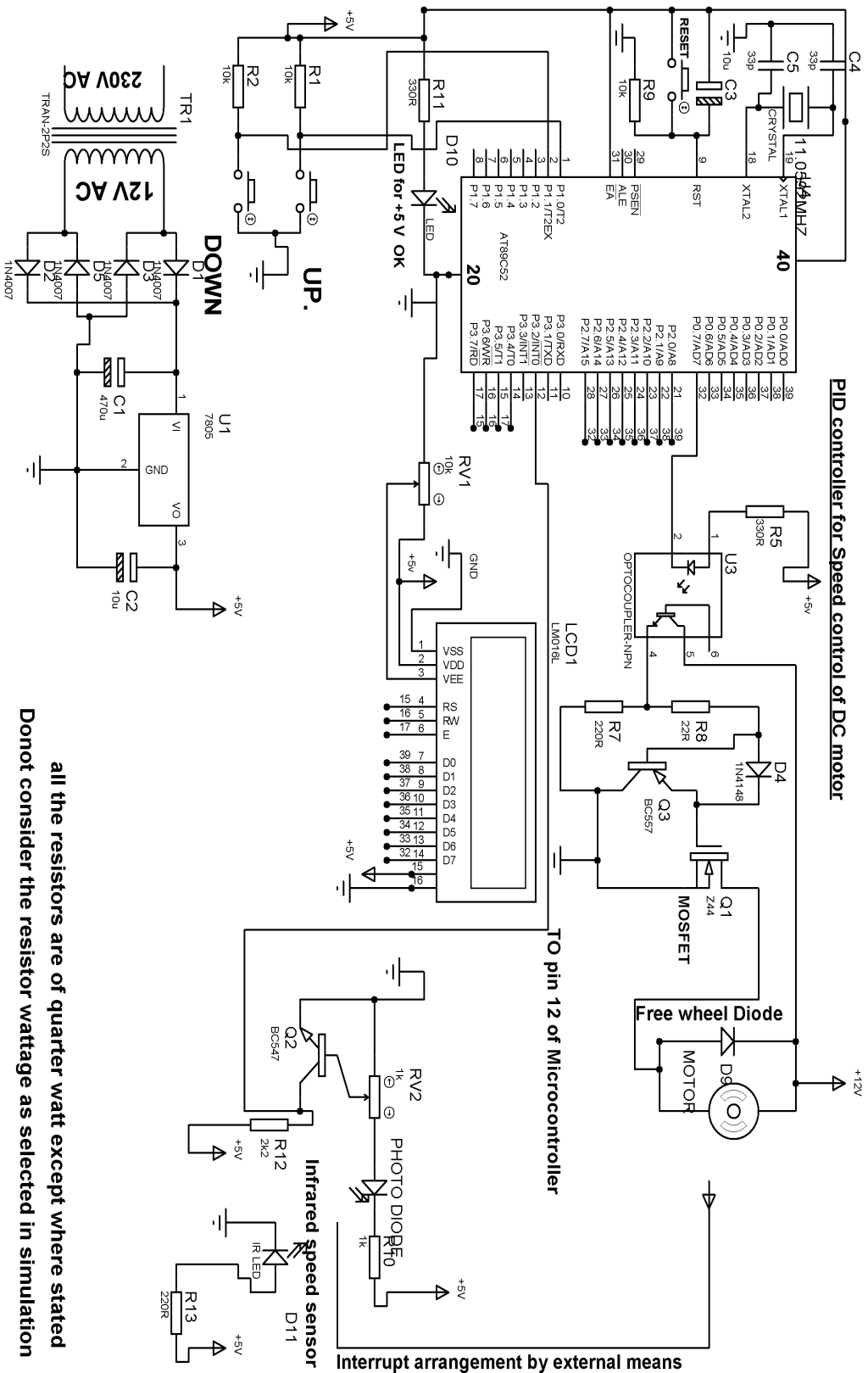
BLOCK DIAGRAM



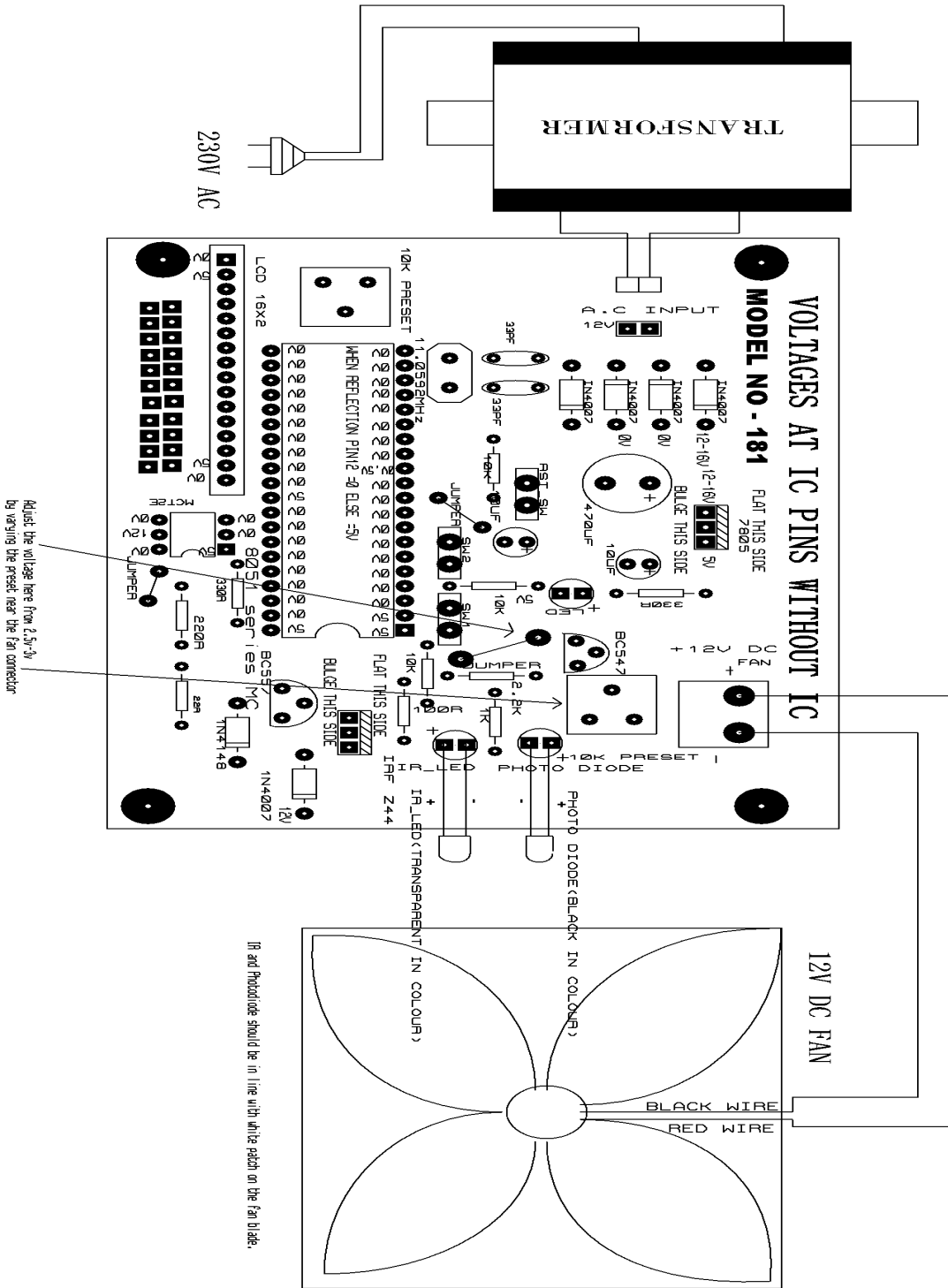
HARDWARE REQUIREMENTS:
 8051 series Microcontroller, Crystal, BLDC Motor, LED, Resistors, Capacitors, Diodes, IR led and Photo diode, Voltage Regulator, Push Buttons.

SOFTWARE REQUIREMENTS:
 Keil compiler
 Language: Embedded C or Assembly

Circuit diagram



PCB artwork



<u>Component list</u>	<u>Quantity</u>	<u>Checked</u>
<u>RESISTORS</u>		
22R	1	
220R	1	
330R	2	
1K	1	
2.2K	1	
10K	3	
10K PRESET	2	
100R	1	
<u>CAPACITORS</u>		
470uF/35V	1	
10uF/63V	2	
33pF Ceramic	2	
<u>Integrated Circuit</u>		
AT89S52	1	
MCT2E	1	
<u>IC BASES</u>		
40-PIN BASE	1	
06-PIN BASE	1	
<u>DIODES</u>		
1N4007	5	
1N4148	1	
IR LED	1	
PHOTO DIODE	1	
RED-LED	1	
<u>MISCELLANOUS</u>		
7805	1	
BC557	1	
BC547	1	
CRYSTAL 11.0592MHz	1	
TRANSFORMER 0-12V	1	
2-PIN PUSH BUTTON	3	
LCD 16X2	1	
FEMALE BURGE (16-PIN) FOR LCD	1	
MALE BURGE (16-PIN) FOR LCD (INCLUDED WITH LCD)	1	
MALE BURGE (2-PIN)	2	
PCB CONNECTOR (2-PIN)	1	
POWER CORD	1	
12V DC FAN	1	
IRF Z44 (MOSFET)	1	
HEAT SINK	1	
SCREW NUT FOR HEAT-SINK	1	

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Please mail your complete details on support@makeitortakeit.in
We will mail you within 24hours from the time you mail us.**

Name of the student
PROJECT NAME

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 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