A REPORT

ON

"**TREE ENCROACHMENT DETECTOR**"

(INFORMATIVE REPORT)

2016-2017

SUBMITTED BY:

STUDENTS OF FINAL YEAR **ELECTRICAL**

UNDER THE GUIDANCE OF

Prof. RIZWAN
FARADAY

Anjuman-I-Islam
KALSEKAR TECHNICAL CAMPUS
School of Engineering and Technology
New Panvel

A REPORT ON

"TREE ENCROACHMENT DETECTOR"

(INFORMATIVE REPORT)

2016-2017

New panvel

Submitted to:

Prof. RIZWAN FARADAY

Submitted By:

NAME	ROLL NO.
KHAN MUNAWWAR ALI	13EE27
SHAIKH MOHD FARHAN	12EE51
IDRISI SHEHZAD	13EE17
ANSARI AFSAR HUSSAIN	13EE08

Prof. R.FARADAY	Prof. S.KALEEM	Dr.A.R.HONNUTAGI
(GUIDE)	(H.O.D)	(DIRECTOR)

Acknowledgement

We would like to acknowledge the contributions of those who assisted in the preparation of this report.

We are particularly grateful for the work done by members of my group. Before we get into this report we would like to thanks to the members of the group who are a part of this report and have given their unending contribution from start to end of this report.

We would like to our **Prof. RIZWAN FARADAY** for providing as the required guidance in process of preparing the report. We would also like to express our deep regards and gratitude to the director **Dr. ABDUL RAZZAK HONNUTAGI**.

Finally, I would also like to thanks GOOGLE and WIKIPEDIA for the same.

Preface

We take the opportunity to present this report "**TREE ENCROACHMENT DETECTOR".** The object of this report is to reduce the accident of falling trees on transmission lines.

The report is supported by graphs and images to bring out the purpose and message. We have made sincere attempts and taken every care to present this report in precise and compact form, the language being as simple as possible.

The task of completion of the project though being difficulty was made quite simple, interesting and successful due to deep involvement and complete dedication of our group members.

CERTIFICATE

This is to certify that the report entitled "**TREE ENCROACHMENT DETECTOR**" submitted by in partial fulfillment of the requirement for the award of Bachelor of engineering in "**ELECTRICAL ENGINEERING**" is an authentic word carried by them under my supervision and guidance.

Date: _____

Examiner _____

Prof.
R.FARADAY _____
(Guide)

Prof. S. Kaleem _____
(HOD)

Dr. Abdul Razzak Honnutagi
(Director)

ABSTRACT

Trees and other vegetation have adversely affected the operation of electric power transmission and distribution systems since the construction of the first electric lines. Vegetation intrusion causes loss of reliability and creates safety hazards. Failure to perform vegetation management has been identified as a contributing factor in wide-spread local outages, and, particularly during extreme weather conditions, to system-wide outages. Trees in direct contact with energized overhead conductors can cause interruptions by providing a pathway for the flow of fault current. When fault current is detected and interrupted by protection devices, such as fuses and re closers, an outage occurs. This electrical mode of failure and the fault pathway provided by trees has been the focus of this investigation. This research effort investigate vegetation induced fault on the Auchi -Agene bode 33kv transmission line for period of 2 years to identify the causes, the mostly affected section of that transmission line and suggest the necessary vegetation management practice to be adopted by the management to reduces the menace.

DECLARATION

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

DATE …….

PLACE ……

(NAME OF THE STUDENT)

KHAN MUNAWWAR ALI ……..

SHAIKH MOHD FARHAN ……..

IDRISI SHEHZAD ……..

ANSARI AFSAR HUSSAIN …….

TABLE OF CONTENTS

CHAPTER 1

1.1 INTRODUCTION…….....1

1.2 VEGETATION AND POWER LINE……2

1.3 ROBOT……....3

CHAPTER 2

2.1 BLOCK DIAGRAM OF ULTRSONIC SENSOR……..4

2.2 ULTRASONIC SENSOR……...5

2.3 PIC CONTROLLER……..7

2.4 POWER RELAY……..10

2.5 LCD……12

2.6 POWER SUPPLY CIRCUIT……15

2.7 GSM MODEM……16

2.8 BUZZER…….17

CHAPTER 3

3.1 PRINCIPLE OF ULTRASONIC SENSOR……..19

3.2 WORKING OF TREE ENCROACHMENT DETECTOR CICUIT….21

CHAPTER 4

4.1 FOREST AND ENVIORNMENTAL CLEARENCES FOR …… 22
TRANSMISSION LINE

4.2 PLANTING OF TREES……26

CHAPTER 5

5.1 PROGRAM…….28

CHAPTER 6

6.1 CONLUSION ……31

6.2 REFERENCES…….32

1.1 INTRODUCTION

An electrical power system consists of many components such as generators, transformers, transmission and distribution lines etc. However, the component with the highest fault incidence rate is transmission line due to their exposure to the environment i.e. it is the most susceptible element to experience faults. The main task of a transmission line is to maintain continuity of power supply from the generating station to the load centre, but this cannot be achieved because of line faults due lightning, storms, fog, and vegetation fall etc. The challenge trees pose to the reliability of overhead distribution systems is well recognized, as vegetation is a dominant cause of service interruptions at many utilities. The electric utility industry spends millions of naira every year performing line clearance tree pruning on both a preventive and corrective maintenance basis. High winds, especially when combined with precipitation from seasonal storms, can cause damage to electricity utility systems, resulting in service interruptions to large numbers of electricity customers. While most such power outages1 are caused by damage from trees and tree limbs falling on local electricity distribution lines and poles, major power outages tend to be caused by damage to electricity transmission lines, which carry bulk power long distances(Richard , 2009).The damage caused to overhead energy-delivery infrastructure by the structural failure of branches and whole trees is obvious, particularly during adverse weather events. Assumptions and beliefs regarding the interaction between trees and distribution lines, largely based on anecdotal observations, have guided decisions made by utility operations and engineering staff over the years. This research effort was initiated to better understand the ways in which a tree in contact with overhead con ductors may cause an interruption. All tree contact with energized conductors can result in a fault; the branch provides a pathway for the flow of current. The contact begins as a high-impedance (resistance), very low current event. The vast majority of tree contacts remain this way. Only under the “right” combination of conditions does the fault pathway become more conductive. In these cases, the fault pathway evolves from high to low resistance, resulting in high levels of fault current and ultimately an interruption. The potential for a tree in contact with an energized conductor(s) is influenced by key characteristics of the distribution line involved and by the fault pathway provided by the tree.

1.2 Vegetation and power line

The industry's approach to tree-related maintenance of overhead distribution lines has come a long way from the days of “tree trimming,” where trees were thought of as structures, and the goal was simply to establish and maintain fixed clearances and corrective response (or hot spotting) was the norm. Trees and other vegetation cause power system faults, outages, interruptions and other power quality problems. There are a variety of mechanisms through which this happens. Tree contacts can be abrupt and result in conductors contacting each other, either directly or indirectly, or even in line sections being torn down. Tree limbs “can fall over ont o conductors, can drop branches onto conductors, can push conductors together, and can serve as gateway for animals” (Alison,2011),. Vegetation can also cause slowly developing problems due to continuous growth. This phenomenon is not well documented but is believed to occur as follows:“When a tree branch bridges two conductors, a fault does not occur immediately. This is because a moist tree branch has a substantial resistance. A small current begins to flow and starts to dry out the wood fibres. After several minutes, the cellulose will carbonize, resistance will be greatly reduced, and a short circuit will occur.” (Grigsby, 2001).

1.3 ROBOT

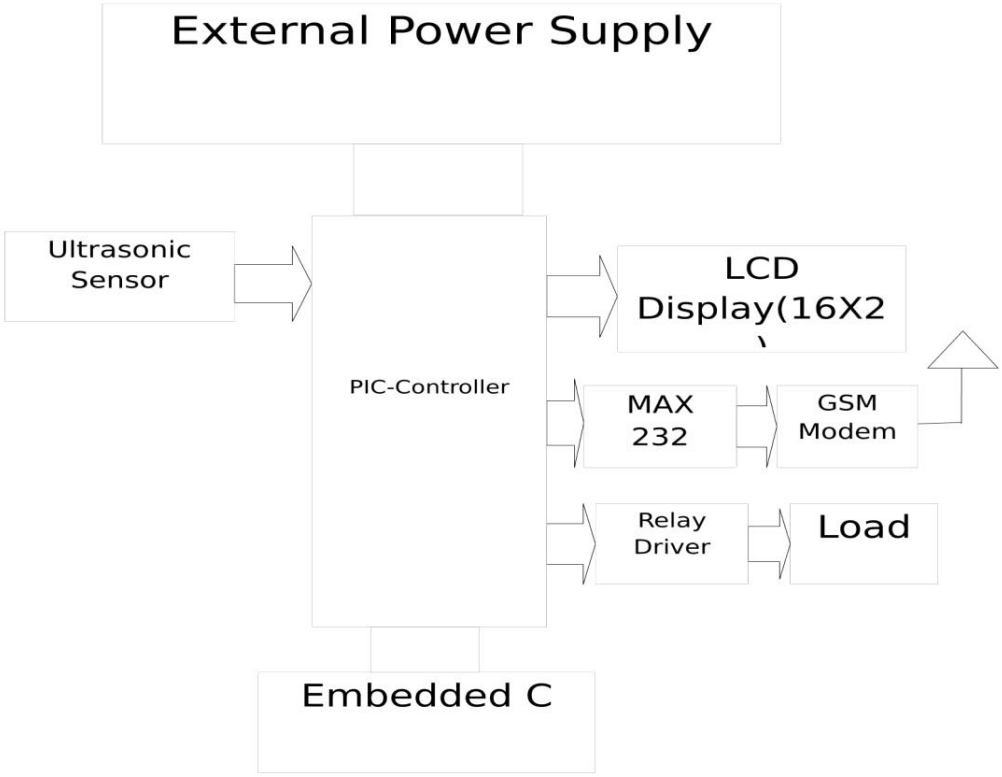
The inspection robot with wheel-driven can crawl along the overhead ground wires.The subsidiary equipments of the overhead ground wires will act as obstacles to block its way. A navigation system is needed to recognize and locate the obstacles with its sensors.

The control system of inspection robot will plan its motions according to the obstacle information to negotiate these obstacles autonomously. There are three typical obstacles attached to the overhead ground wires and 550KV power tower. The first type of obstacle is called counterweight which is the greatest quantity among the obstacle. The second type obstacle is anchor tower which is easy for the inspection rotor to cross. The third type of obstacle is called torsion tower which is difficult for the inspection rotor to cross. The robot's mechanical structure is designed as a cable car .

The cable car has a ultrasonic sensor which detects tree near tree transmission line upto the programmed distance.

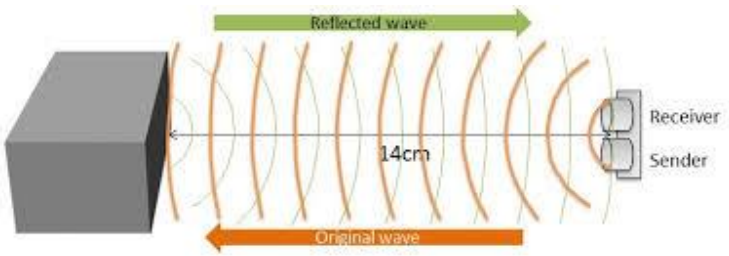
2.1 BLOCK DIAGRAM OF ULTRASONIC SENSOR

Block Diagram:-



2.2 ULTRASONIC SENSOR

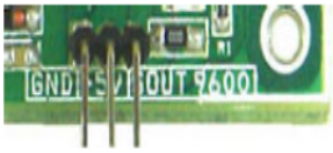
Ultrasonic means of **distance measurement** is a convenient method compared to traditional one using **measurement** scales. ... Then the **distance** is calculated by a program running on the microcontroller and displayed on an LCD screen interfaced to the microcontroller. The **ultrasonic sensor** produces 40 kHz sound waves.



Specification

Parameter	Value	Unit
Supply Voltage	5	V
Supply Current	15	mA
Output Data speed	9600	Bps
Output Data Format	8-N-1	8 data bytes, no parity, 1 stop bit

Pin Details



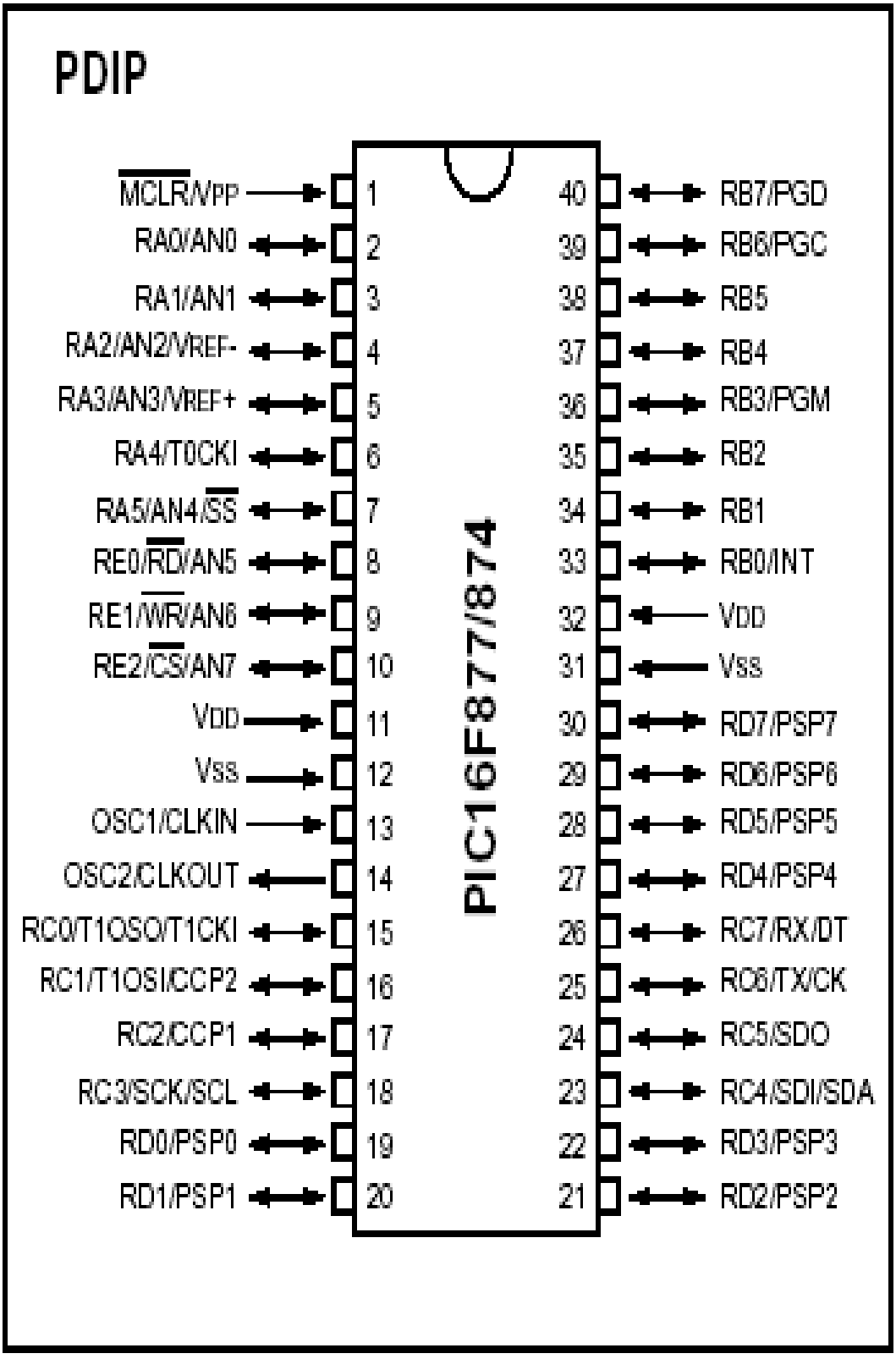
1 2 3

Pin	Value
1 – GND	Supply Ground
2 - +5V	Supply +5V
3 – Serial Out 9600	Serial output data (TTL 5V level) at 9600 baud rate

Ultrasonic Distance Sensor
Its compact size, higher range and easy usability make it a handy sensor for distance measurement and mapping

Features
Minimum range 10 centimeters
Maximum range 400 centimeters (4 Meters)
Accuracy of +-1 cm
Resolution 0.1 cm
5V DC Supply voltage
Compact sized SMD design
Modulated at 40 kHz
Serial data of 9600 bps TTL level output for easy interface to anything

2.3 PIC- CONTROLLER



Micro controller:

PIC 16F877:

PIC16F877 is one of the most commonly used microcontroller especially in automotive, industrial, appliances and consumer applications.

High-Performance RISC CPU:

• Only 35 single-word instructions to learn
• All single-cycle instructions except for program branches, which are two-cycle
• Operating speed: DC – 20 MHz clock input DC – 200 ns instruction cycle
• Up to 8K x 14 words of Flash Program Memory, Up to 368 x 8 bytes of Data Memory (RAM), Up to 256 x 8 bytes of EEPROM Data Memory.
• Pinout compatible to other 28-pin or 40/44-pin PIC16CXXX and PIC16FXXX microcontrollers.

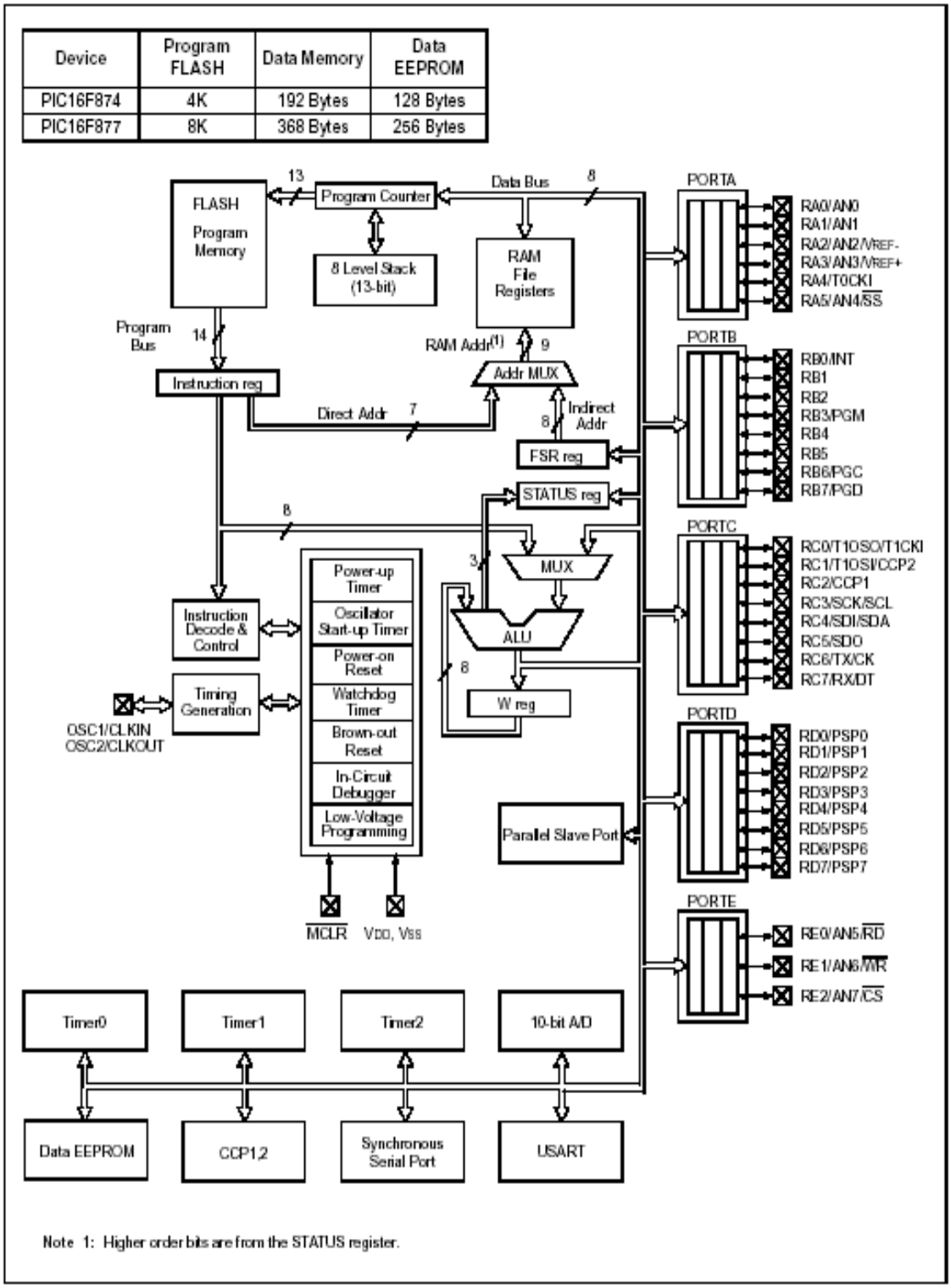
Peripheral Features:

• Timer0: 8-bit timer/counter with 8-bit prescaler.
• Timer1: 16-bit timer/counter with prescaler, can be incremented during Sleep via external crystal/clock.
• Timer2: 8-bit timer/counter with 8-bit period register, prescaler and postscaler.
• Two Capture, Compare, PWM modules - Capture is 16-bit, max. resolution is 12.5 ns.
- Compare is 16-bit, max. resolution is 200 ns - PWM max. resolution is 10-bit
• Synchronous Serial Port (SSP) with SP (Master mode) and I2C™ (Master/Slave)
• Universal Synchronous Asynchronous Receiver Transmitter (USART/SCI) with 9-bit address
Detection • Parallel Slave Port (PSP) – 8 bits wide with external RD, WR and CS controls (40/44-pin only)
• Brown-out detection circuitry for Brown-out Reset (BOR)

Analog Features:

• 10-bit, up to 8-channel Analog-to-Digital Converter (A/D)
• Brown-out Reset (BOR)
• Analog Comparator module with:
- Two analog comparators
- Programmable on-chip voltage reference (VREF) module
- Programmable input multiplexing from device inputs and internal voltage reference
- Comparator outputs are externally accessible

Device	Program FLASH	Data Memory	Data EEPROM
PIC16F874	4K	192 Bytes	128 Bytes
PIC16F877	8K	368 Bytes	256 Bytes



Note 1: Higher order bits are from the STATUS register.

2.4 Power Relay

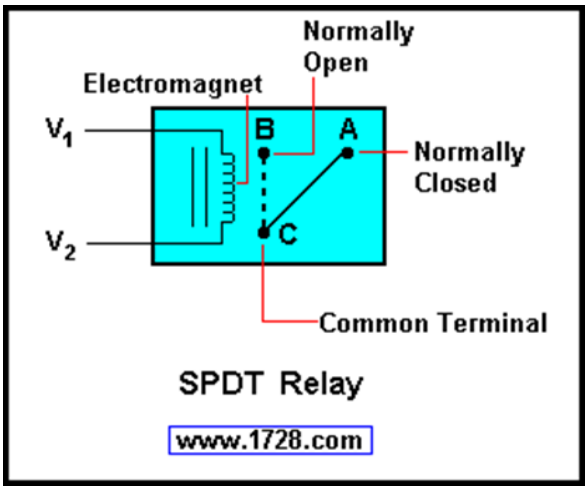
Type: Miniature Power PCB Relay T7N/T7N-WG SPDT TYPE

Specification:12v/7amp

Working :

Notice in the above diagram that a relay uses an electromagnet. This is a device consisting of a coil of wire wrapped around an iron core. When electricity is applied to the coil of wire it becomes magnetic, hence the term electromagnet. The A B and C terminals are an SPDT switch controlled by the electromagnet. When electricity is applied to V1 and V2, the electromagnet acts upon the SPDT switch so that the B and C terminals are connected. When the electricity is disconnected, then the A and C terminals are connected. It is important to note that the electromagnet is magnetically linked to the switch but the two are NOT linked electrically.

Relay Contact Types.



As well as the standard descriptions of Normally Open, (NO) and Normally Closed, (NC) used to describe how the relays contacts are connected, relay contact arrangements can also be classed by their actions. Electrical relays can be made up of one or more individual switch contacts with each "contact" being

referred to as a "pole". Each one of these contacts or poles can be connected or "thrown" together by energizing the relays coil and this gives rise to the description of the contact types as being:

SPST - Single Pole Single Throw
SPDT - Single Pole Double Throw
DPST - Double Pole Single Throw
DPDT - Double Pole Double Throw

with the action of the contacts being described as "Make" (M) or "Break" (B). Then a simple relay with one set of contacts as shown above can have a contact description of:

"Single Pole Double Throw - (Break before Make)", or SPDT - (B-M).

Examples of just some of the more common contact types for relays in circuit or schematic diagrams is given below but there are many more possible configurations.

Relay Contact Configurations

Where:

- C is the Common terminal
- NO is the Normally Open contact
- NC is the Normally Closed contact

One final point to remember, it is not advisable to connect relay contacts in parallel to handle higher load currents. For example, never attempt to supply a 10A load with two relays in parallel that have 5A contact ratings each as the relay contacts never close or open at exactly the same instant of time, so one relay contact is always overloaded.

While relays can be used to allow low power electronic or computer type circuits to switch a relatively high currents or voltages both "ON" or "OFF". Never mix different load voltages through adjacent contacts within the same relay such as for example, high voltage AC (240v) and low voltage DC (12v), always use sperate relays for safety.

One of the more important parts of any relay is the coil. This converts electrical current into an electromagnetic flux which is used to operate the relays contacts. The main problem with relay coils is that they are "highly inductive loads" as they are made from coils of wire. Any coil of wire has an impedance value made up of resistance (R) and inductance (L) in series (RL Series Circuit).

As the current flows through the coil a self induced magnetic field is generated around it. When the current in the coil is turned "OFF", a large back emf (electromotive force) voltage is produced as the magnetic flux collapses within the coil (transformer theory). This induced reverse voltage value may be very high in comparison to the switching voltage, and may damage any semiconductor device such as a transistor, FET or microcontroller used to operate the relay coil.

2.5 LCD DISPLAY

Various display device such as seven segment display. LCD display, etc can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.

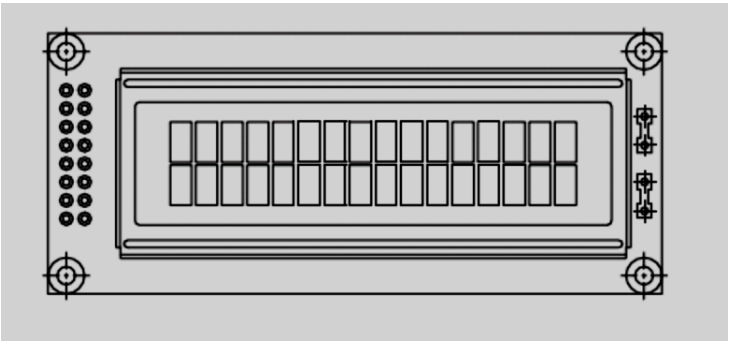


Fig:11.1 LCD Display

FEATURES

- 16X2 dots with cursor
- Built-in controller (KS 0066 or Equivalent)
- + 5V power supply
- 1/16 duty cycle
- B/L to be driven by pin 1, pin 2 or pin 15, pin 16 or A.K (LED)
- N.V. optional for + 3V power supply
- RS232 compatible serial interface (2400 & 9600 baud selectable)
- Externally selectable serial polarities (Inverted & Non-Inverted)
- Serially controllable contrast and backlight levels
- 8 user programmable custom characters
- 16 Byte serial receive buffer

PIN DIAGRAM:

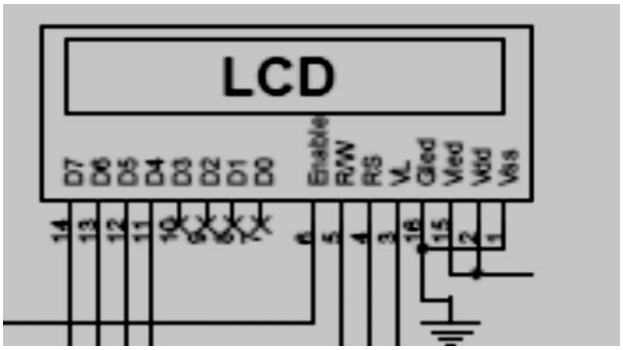


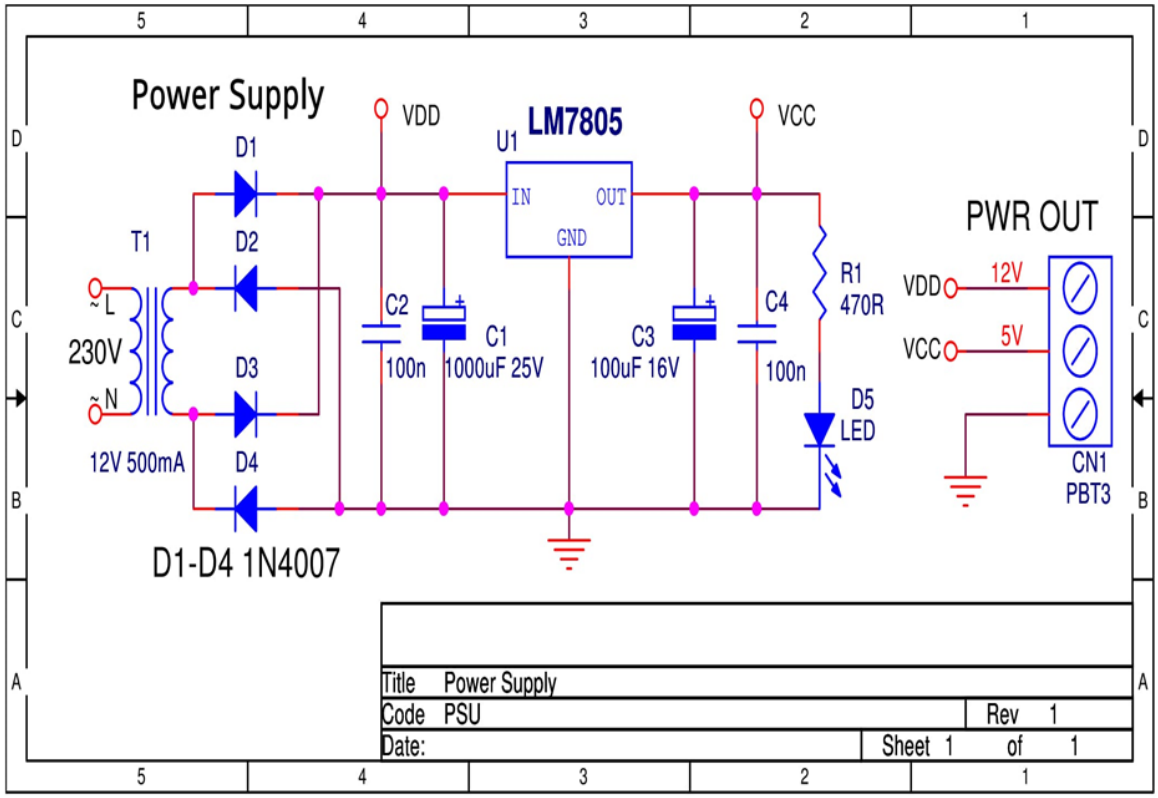
Fig:11.2. LCD pin diagram

PIN DIAGRAM DESCRIPTION:

PIN NAME	PIN NO	DESCRIPTION
VSS	1	Gnd
VDD	2	+3V – +5V
V0	3	Contrast adjustment
RS	4	Register select signal
R/W	5	Read write signal
E	6	Enable signal
DB0	7	Data bus line
DB1	8	Data bus line
DB2	9	Data bus line
DB3	10	Data bus line
DB4	11	Data bus line
DB5	12	Data bus line
DB6	13	Data bus line
DB7	14	Data bus line
A/VEE	15	Negative voltage output
K	16	Power supply for B/L

Table LCD pin diag description

2.7 POWER SUPPLY CIRCUIT



In this circuit we have use a step down transformer ,this transformer takes 230 v ac input and gives out 12 v ac output.
12 v ac is given to the bridge rectifier which converts 12 v ac into 12 v dc,
Bridge rectifier consisit of four diodes namely 1N4007,specification of this diode is that it is pn junction.

12 v dc has a lots of noise which has to be filtered,this noise is filtered by capacitor,there are two capacitor electrolytic and ceramic which gives pure 12 v dc.

2.8 Buzzer

Early devices were based on an electromechanical system identical to an electric bell without the metal gong. Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often these units were anchored to a wall or ceiling to use it as a sounding board. The word "buzzer" comes from the rasping noise that electromechanical buzzers made.

2.9 GSM MODEM

GSM is a mobile communication modem; it is stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands.

GSM system was developed as a digital system using time division multiple access (TDMA) technique for communication purpose. A GSM digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates.

Features of GSM Module:

- Improved spectrum efficiency
- International roaming
- Compatibility with integrated services digital network (ISDN)
- Support for new services.
- SIM phonebook management
- Fixed dialing number (FDN)
- Real time clock with alarm management
- High-quality speech
- Uses encryption to make phone calls more secure
- Short message service (SMS)

The security strategies standardized for the GSM system make it the most secure telecommunications standard currently accessible. Although the confidentiality of a call and secrecy of the GSM subscriber is just ensured on the radio channel, this is a major step in achieving end-to- end security.

A GSM modem is a device which can be either a mobile phone or a modem device which can be used to make a computer or any other processor communicate over a network. A GSM modem requires a SIM card to be operated and operates over a network range subscribed by the network operator. It can be connected to a computer through serial, USB or Bluetooth connection.

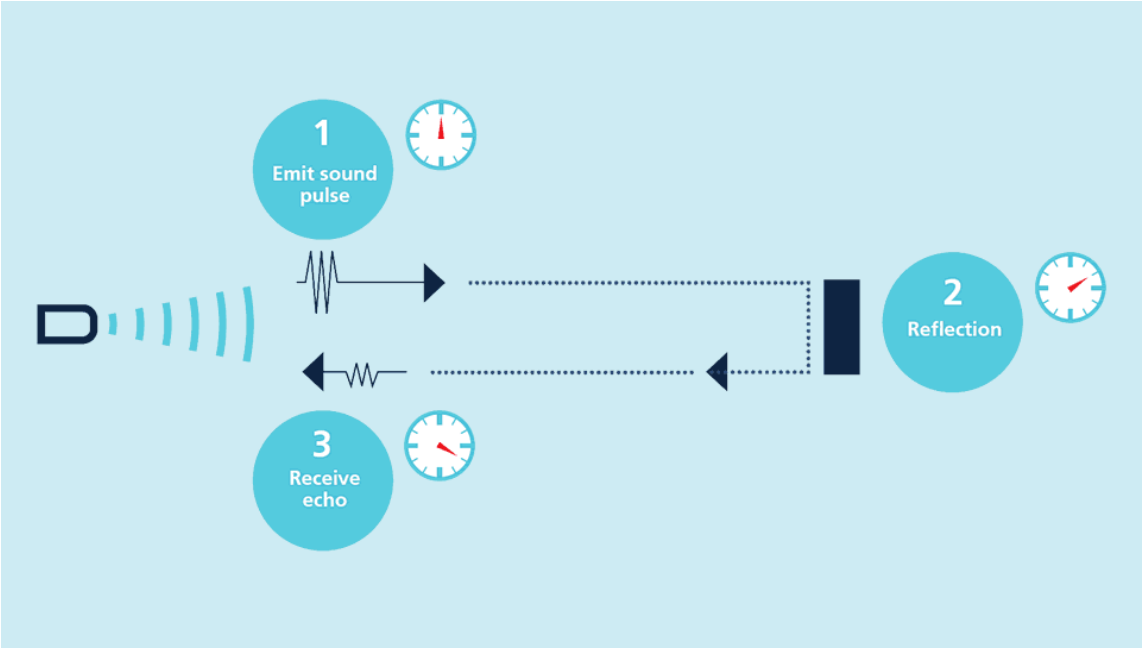
A GSM modem can also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port or USB port on your computer. GSM modem is usually preferable to a GSM mobile phone. The GSM modem has wide range of applications in transaction terminals, supply chain management, security applications, weather stations and GPRS mode remote data logging.

Working of GSM Module:

A GSM modem duly interfaced to the MC through the level shifter IC Max232. The SIM card mounted GSM modem upon receiving digit command by SMS from any cell phone send that data to the MC through serial communication. While the program is executed, the GSM modem receives command 'STOP' to develop an output at the MC, the contact point of which are used to disable the ignition switch. The command so sent by the user is based on an intimation received by him through the GSM modem 'ALERT' a programmed message only if the input is driven low. The complete operation is displayed over 16×2 LCD display.

3.1 Principle of ultrasonic sensor

Ultrasonic sensors emit short, high-frequency sound pulses at regular intervals. These propagate in the air at the velocity of sound. If they strike an object, then they are reflected back as echo signals to the sensor, which itself computes the distance to the target based on the time-span between emitting the signal and receiving the echo.

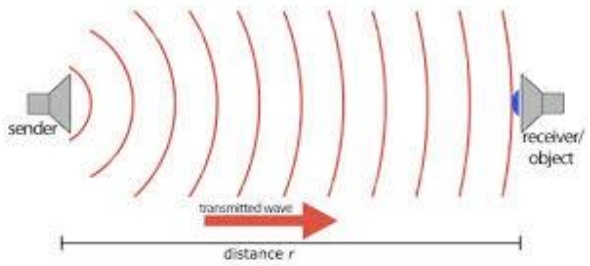


As the distance to an object is determined by measuring the time of flight and not by the intensity of the sound, ultrasonic sensors are excellent at suppressing background interference.

Virtually all materials which reflect sound can be detected, regardless of their colour. Even transparent materials or thin foils represent no problem for an ultrasonic sensor. microsonic ultrasonic sensors are suitable for target distances from 20 mm to 10 m and as they measure the time of flight they can ascertain a measurement with pinpoint accuracy. Some of our sensors can even resolve the signal to an accuracy of 0.025 mm.

Ultrasonic sensors can see through dust-laden air and ink mists. Even thin deposits on the sensor membrane do not impair its function.

Sensors with a blind zone of only 20 mm and an extremely thin beam spread are making entirely new applications possible today: Fill level measurement in wells of microtiter plates and test tubes, as well as the detection of small bottles in the packaging industry, can be implemented with ease. Even thin wires are reliably detected.



3.2 Working of tree encroachment detector circuit

In this circuit we have use a step down transformer ,this transformer takes 230 v ac input and gives out 12 v ac output.

12 v ac is given to the bridge rectifier which converts 12 v ac into 12 v dc,
Bridge rectifier consisit of four diodes namely 1N4007,specification of this diode is that it is pn junction.

12 v dc has a lots of noise which has to be filtered,this noise is filtered by capacitor,there are two capacitor electrolytic and ceramic which gives pure 12 v dc.

The 12 v dc power supply is given to the microcontroller PIC16F8778.

The PIC16F8778 has five ports.

Ultrasonic sensor is connected at port B , when ultra sonic detects object at given distance which is programmed transmitter transmits the data to microcontroller .

GSM and serial port is connected to the port C,which receives the data from microcontroller and gsm circuit sends message to the number which is programmed.

Microcontroller and gsm and understands different languages so serial port is use to communicate

LCD is connected to the port A which displays the distance detected that is programmed,

Relay is connected to the port D ,when the nearest distance is detected

Relay disconnects the circuit it has single pole double throw switch
.
There is reset button button which is push to on which can reset the microcontroller

There is a microcontroller indication red led which indicates that microcontroller is on or off.

There is a buzzer indication green led ,when all three distance is detected buzzer is on

There is a crystal oscillator 20mhz

There is transisitor bjt npn transistor for amplification

There is preset button which is used to change the contrast of lcd

4.1 FOREST & ENVIORNMENTAL CLEARENCES FOR TRANSMISSION LINES

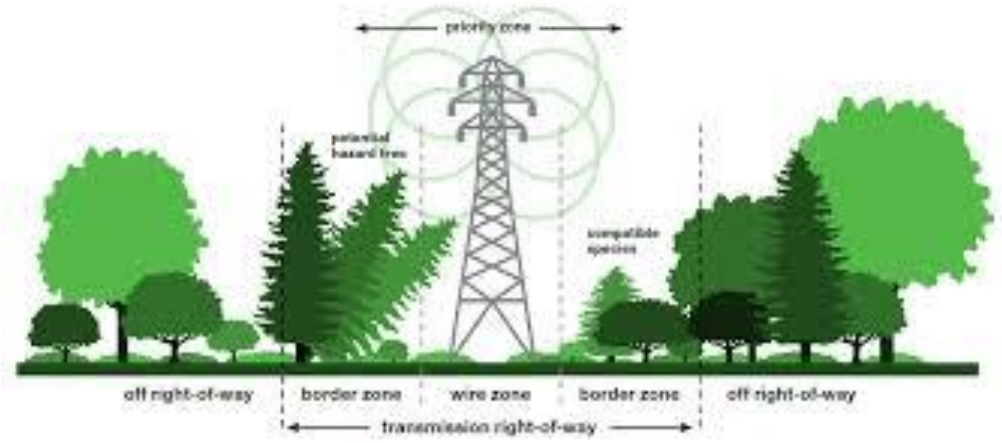
GENERAL

Before taking-up construction of any Transmission Line, 'Plan Investment Clearance' is required from Planning Commission, Govt., of India after Technical clearances from CEA and Planning Commission etc. The 'Plan Investment Clearance' in respect of any transmission line is not issued by the Planning Commission unless Forest & Environmental Clearance is obtained from Ministry of Environment & Forest, Govt., of India. Therefore, 'Forest & Environmental clearances' is a basic & important pre-requisite for taking-up actual execution of work of a transmission line.

As per Guide lines of' 'FOREST CONSERVATION ACT-1980' issued by Ministry of Environment & Forest, Govt., of India, wherever the lines are required to be laid in forest areas, the efforts should be made to avoid forest as far as possible. However, where it is absolutely unavoidable, the efforts should be made to adopt such a route of transmission line which involves minimum felling of trees and use of such land is allowed only after clearance from Govt., of India as per Section 2 of the Forest Conservation Act-1980.

No subsequent change or modification should be done in the transmission lines laid in 'Forest' areas as far as possible.

No proposal seeking Ex-post-facto approval of the Govt., of India under the Act is entertained from any State Govt./SEB.



CORRIDOR REQUIRED FOR TRANSMISSION LINES

As per Indian Safety Rules, the corridor required for transmission lines of different voltage class, is given in the table given below.
For the purpose of transportation of stringing equipment a 3 meter wide strip under each phase is allowed to be kept clear from trees so that proper maintenance and overhauling of line could *he* carried out.
However, natural growth of trees is allowed after stringing, subject to minimum safety clearances between the phase conductors and the trees as per details given in the following table—

System Voltage of Transmission Line	Corridor Prescribed	Minimum safety clearance required between trees and Phase Conductor
66 KV	18M	3.4 M
132 KV	27 M	4.0 M
220 KV	35 M	4.6 M
400 KV	52 M	5.5 M
800 KV	85 M	Not Specified

APPLICABILITY OF FOREST CONSERVATION ACT 1980

Investigation and Surveys carried out in connection with the laying of transmission lines in Forest areas will not attract the provision of the Forest Conservation Act 1980, if no felling of tree is involved.

The work of construction and laying of transmission line, however, fully attracts the provisions of the aforesaid Act and the prior permission of the Govt., of India must be obtained before it is allowed in forest area.

OFFICER

The whole time senior officer not below the rank of Conservator of Forest heads the cell at the Forest Deptt. level, who is designated as the Nodal Officer. The Nodal Officer shall receive cases from the departments and entertain all correspondence from them.

SUBMISSION OF PROPOSAL FOR FOREST CLEARANCE

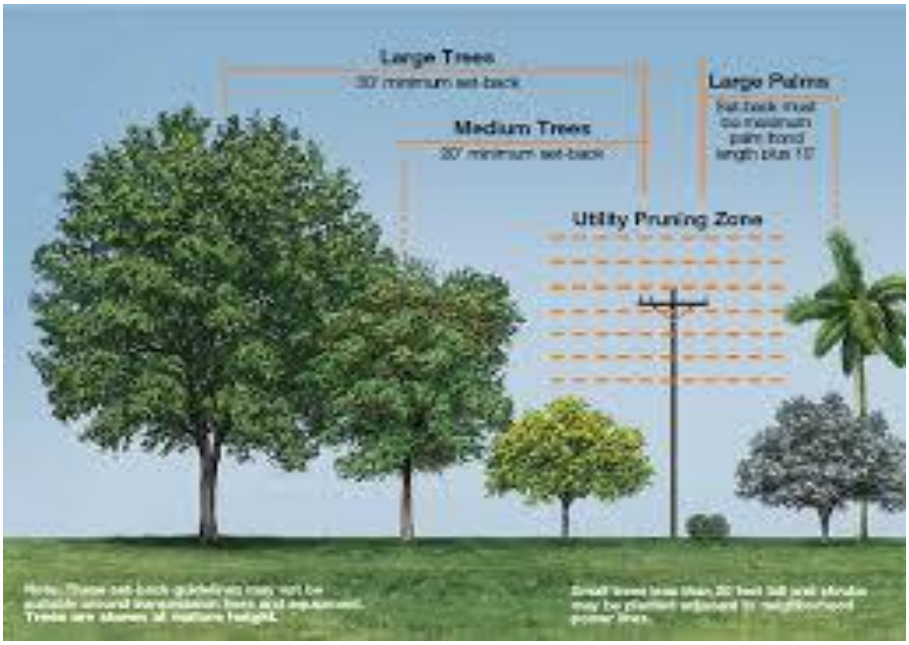
The proposal for obtaining environmental and forest clearance shall be submitted in the prescribed format as at **Annexure-1.**

Submission of proposals and the powers vested with various authorities of Forest Deptt. are summarized in the following table.

SI No.	**Area of land involved for a forestation in Hectare**	**Authority to whom the case is to be submitted**	**Processing Authority**	**Final Approval Authority**
1.	Up to 1 Hectare	Nodal Officer	Nodal Officer	Regional Forest Officer
2.	Up to 5 Hectare	-do-	-do-	Chief Conservator of Forest of the Regional Forest Office
3.	Above 5 Hectare but up to 20 Hectare	-do-	Chief Conservator of Regional Forest Office	Ministry of Environment & Forest, Govt., of India.
4.	Above 20 Hectare	Regional Forest Office through Nodal Officer	Ministry of Environment & Forest, Govt., of India.	Ministry of Environment & Forest, Govt., of India.

3.2 PLANTING OF TREES

How much needs to be cut from a tree? Transpower's utility arborists will consider the tree's size, shape and growth rate prior to pruning, however their main priority is maintaining the minimum safe distances between the transmission line and the tree(s). Our utility arborists will attempt to prune branches to redirect future growth away from power lines so that the natural shape and the health of a tree can be preserved. However, if a tree requires such a degree of trimming that it would become unavoidably disfigured or presents a safety risk, it may be more appropriate to remove the tree and replant with a more suitable specimen. Other situations where trees may need to be completely removed include, where trees are diseased or are on unstable ground, and at a distance from the line which would cause damage to the line if they fell. What should I consider when planting near power lines? Trees and shrubs are an important living part of our environment and community. Transpower recognises that in some cases it is desirable to plant trees close to lines for a number of practical reasons however, it is very important to think beforehand about the mature height and spread of the tree to ensure enough space is available for it to grow without impacting the lines. By considering these matters in advance, future conflicts between trees and power lines can be avoided.



If tree branches have grown into lines in an alley, street or backyard utility easement (this includes all major lines except the service lines that go over your property from the pole to the electric meter or weatherhead), you should call the number on your electric bill to report thesituation. To report a tree within 10 feet of Oncor's power lines (not the service line, which is your responsibility to keep clear), call the number on your electric bill to see if an inspection is needed. Additionally, if you see any hazardous conditions, such as sparking, arcing or burning near the line

5.1 PROGRAM

```
DEFINE  OSC 20
   CLEAR

  TRISA=%00001111
   TRISB=%00000001
   TRISC=%10000000
   TRISD=%00000000
   TRISE=%00000000

;----[LCD definitions NEW BOARD]-------
   DEFINE LCD_DREG  PORTD
   DEFINE LCD_DBIT  0
   DEFINE LCD_EREG  PORTD
   DEFINE LCD_EBIT  5
   DEFINE LCD_RSREG PORTD
   DEFINE LCD_RSBIT 4
   DEFINE LCD_BITS  4
   DEFINE LCD_LINES 2
   BUZ        VAR PORTE.0
   RELAY1     VAR PORTB.1          ' MOTOR CONTROL 4
   INDEX      VAR BYTE             ' SMS INDEX NUMBER
   SMS_DATA   VAR BYTE
    serbuff    var byte
```

```
MAIN:
  low RELAY1:
   LOW BUZ
  lcdout $fe,1,"TREE ENCROACHMENT"
   lcdout $fe,$c0,"DETECTOR"
   PAUSE 1000
    lcdout $fe,1,"KALSEKAR COLLEGE"
   lcdout $fe,$c0,"YEAR 2016-17"
   PAUSE 5000
   HIGH  RELAY1: LOW BUZ
CHECK:
  LOW BUZ
  HSerin [wait("cm"), SKIP 1 , str serbuff\5]
   lcdout $fe,1,"DISTANCE:"  , str serbuffer
    IF (D_1 >= 60) AND (D_1<= 90) THE
    lcdout $fe,$c0,"DIST. DETCTED 1"
      HIGH BUZ
      HSEROUT ["AT+CMGS=", 34, "9769106857",34, 13]
       PAUSE 500
      HSEROUT ["DISTANCE HAS REACHED TO HIGHEST LEVEL ..  BY TREE
ENCROACHMENT DETECTOR  ",13]
       HSEROUT [26, 10 , 13]
       PAUSE 1000
        PAUSE 500
   ELSEIF(D_1 >= 30) AND (D_1<= 59) THEN
        lcdout $fe,$c0,"DIST. DETCTED 2"
        HIGH BUZ
        HSEROUT ["AT+CMGS=", 34, "9769106857",34, 13]
       PAUSE 500
      HSEROUT ["DISTANCE HAS REACHED TO MEDIUM LEVEL ..  BY TREE
ENCROACHMENT DETECTOR  ",13]
       HSEROUT [26, 10 , 13]
```

```
        PAUSE 1000

         PAUSE 500


    ELSEIF (D_1 >= 1) AND (D_1<= 29) THEN
      lcdout $fe,$c0,"DIST. DETCTED 3"

       HIGH  BUZ :LOW RELAY1
       HSEROUT ["AT+CMGS=", 34, "9769106857",34, 13]
       PAUSE 500
       HSEROUT ["DISTANCE HAS REACHED TO LOWEST LEVEL ..  BY TREE
ENCROACHMENT DETECTOR  ",13]
       HSEROUT [26, 10 , 13]
       PAUSE 3000
        LOW BUZ
       ENDIF


GOTO CHECK
```

Conclusion

Conflicts between trees and power lines exist because electricity is conveyed through power lines at high voltages. High voltage electric current can arc out beyond the line if grounded by something like a tree, resulting in the possible interruption of service or ignition of fire even without physical contact.so this serious issue can be sloved by making a system which detects the tree upto the clearing distance and vgetetiom team can cut those branches and protect the transmisiion line from conflicts between trees and power lines.

References

Online url

[1] http:/www.wikipedia.org
[2] http:/www.dauniv.ac.in
[3] http:/www.microsonic.de
[4] http:/www.nevonprojects.com
[5] http:/www.austienergy.com
[6] http:/www.google.com

Books

[7] trees trimming around power lines
[8] clearences around power line [ACTEW distribution]