

REMOTE CONTROL USING LAN NETWORK

ABSTRACT:

In many Organizations we will be having many devices which are located in remote places. If we want to control those devices, every time we should go to that place and make certain operations to control that device and get the job done. For example if we want to print a document, for this work we want a printer in our place. If that Printer is placed far away from us, we have to go to that place and get our work done. But this consumes time. To overcome this problem we have developed a software that saves time and we can control remote devices through LAN.

The main seek of this project is to develop a controlling system which will controls embedded devices through LAN network. Visual Basics is used to develop the front end. IN front end we can control many devices as well as we can add devices whichever we want to control through LAN.

COMPONENTS USED:

- ❖ Power Supply - 12V/1A DC
- ❖ Microcontroller - AT89C52
- ❖ Crystal - 11.0592 MHz
- ❖ LCD - Liquid Crystal Display 2x16
- ❖ LAN card
- ❖ max232 - Serial Communication
- ❖ Buzzer -. Freq-1 to 18khz.Volt-5v-12vDC
- ❖ Relay(12v)

SOFTWARES USED:

- ❖ Embedded C.
- ❖ Visual Basics.
- ❖ Pro-load

WORKING PRINCIPLE:

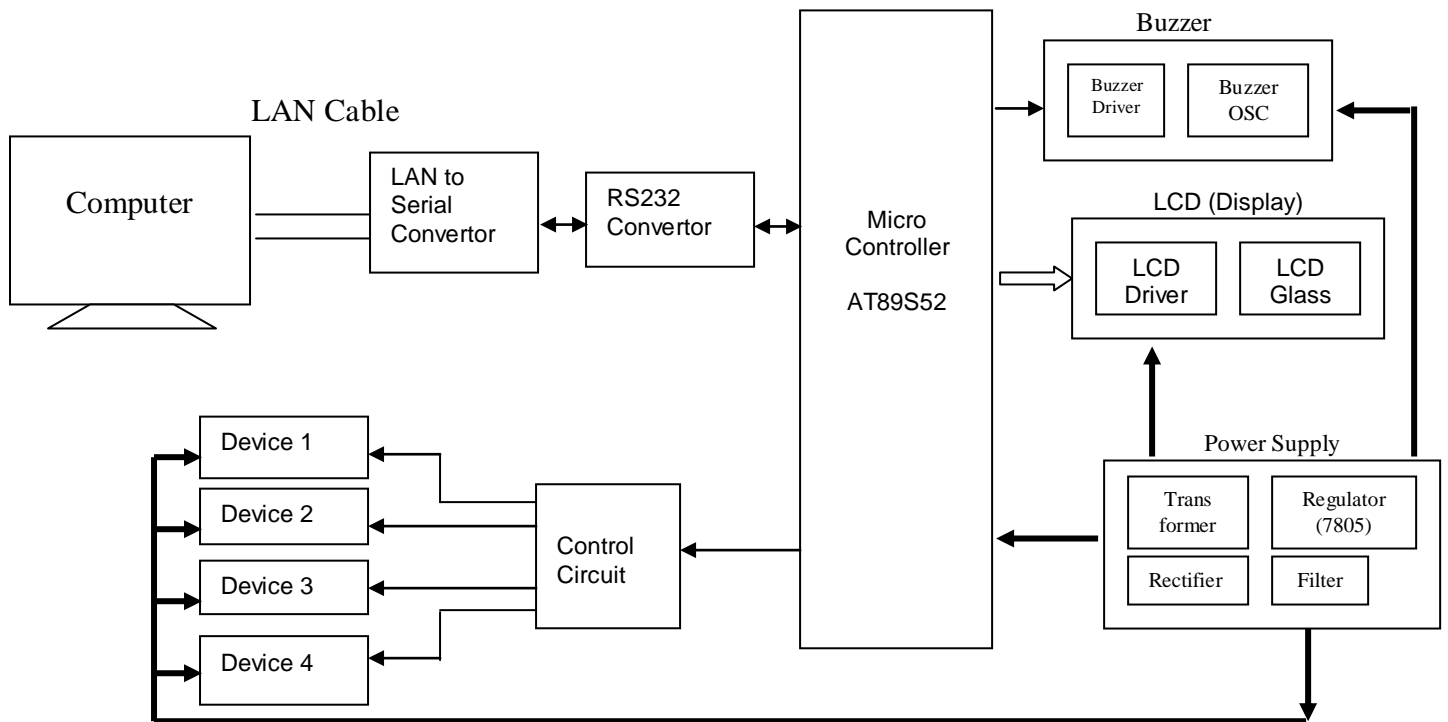
This system uses Visual Basics software, which is deigned as the application platform monitors and co-ordinates with the embedded devices, attached to the LAN network. Using this project we can communicate with any embedded systems or machine connected to the LAN network.

This project is mainly doing an application with the embedded LAN card available. This card mainly has a interface to the LAN network and it has a serial port .The micro controller with different devices will be connected according to the application. The remote through LAN means 4 or 5 relays will be connected and when from a PC if we want to control any of the relays or switch OFF or switch ON the relays we have to send a command telling switch off relay one with the IP address of that network etc .we can also do process control of machine the same way like always update the machine details like temperature, speed of the machine motor, or the productions of the machine etc.in this project we have totally 2 relays to switch on and off any device and also an input device to show the rpm of the motor and also update the computers which require this data.so on the computer screen we can see and also monitor the rpm of for example the fan motor rpm and also see the screen updated every second.

In PC side the following operations are done:

- ❖ First the Ethernet Adopter Must be configured. In configuration mode we will be having serial configuration mode, server configuration mode etc. Ethernet Adopter is also called as LAN Card.
- ❖ In Visual basics, a component called Winsock is used for communication through LAN. We can use User Datagram Protocol or Transmission Control Protocol which depends upon our application.
- ❖ EAD will be having an IP address and port number which is nothing but another machine which converts Ethernet data to serial data or vice versa.
- ❖ In our system we have to know the IP address and port number which is very essential for Winsock communication.
- ❖ We can select the device and we can send machine number through LAN which in turn converts the Ethernet data to serial data and transfers to the microcontroller.
- ❖ The Micro Controller in turn does the operation based on the received data and it also required data through the LAN to the system.

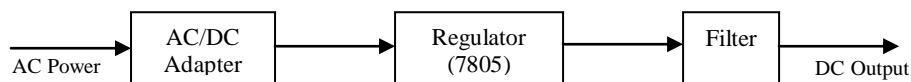
BLOCK DIAGRAM:



COMPONENTS DETAILS:

Power supply:

The microcontroller and other devices get power supply from AC to Dc adapter through voltage regulator. The adapter output voltage will be 12V DC non regulated. The 7805 voltage regulators are used to convert 12 V to 5VDC.



Vital role of power supply in 'REMOTE CONTROL USING LAN NETWORK'

In this project 7805 regulator is used to regulate the unregulated adapter output voltage (9-12v into 5v)

Micro controller-AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pinout.

Features:

- ❖ 8K Bytes of In-System Programmable (ISP) Flash Memory
- ❖ Endurance: 1000 Write/Erase Cycles
- ❖ 4.0V to 5.5V Operating Range
- ❖ 256 x 8-bit Internal RAM
- ❖ 32 Programmable I/O Lines
- ❖ Full Duplex UART Serial Channel
- ❖ Fully Static Operation: 0 Hz to 33 MHz

Vital role of micro controller in 'REMOTE CONTROL USING LAN NETWORK'

- ❖ Micro controller is used to read the data from LAN card through serial port.
- ❖ Used to control devices attached to it.

Buzzer:

The buzzer subsystem produces a 2 KHz audible tone when powered. The buzzer will sound when the signal coming into the driver is high. It must be connected to a transistor, Darlington or transducer driver subsystem.

The buzzer is connected between the supply rail (+ V) and the input signal. This acts as load on the driver. When the input signal coming into the buzzer subsystem is low, a potential difference across the buzzer causes current to flow. It is this flow of current that causes the buzzer to sound.

Vital role of Buzzer in 'REMOTE CONTROL USING LAN NETWORK'

In this project buzzer is used to indicate the normal and abnormal operations.

LCD (LIQUID CRYSTAL DISPLAY)

LCDs can add a lot to your application in terms of providing an useful interface for the user, debugging an application or just giving it a "professional" look. The most common type of LCD controller is the Hitachi 44780 which provides a relatively simple interface between a processor and an LCD. Using this interface is often not attempted by inexperienced designers and programmers because it is difficult to find good documentation on the interface, initializing the interface can be a problem and the displays themselves are expensive.

LCD has single line display, Two-line display, four line display. Every line has 16 characters.

Vital role of LCD in ‘REMOTE CONTROL USING LAN NETWORK’

LCD is used to display the status of the devices attached to the device

RS 232 CONVERTER (MAX 232N)

This is the device, which is used to convert TTL/RS232 vice versa.

RS-232Protocol

RS-232 was created for one purpose, *to interface between Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) employing serial binary data interchange.* So as stated the DTE is the terminal or computer and the DCE is the modem or other communications device.

RS-232 pin-outs for IBM compatible computers are shown below. There are two configurations that are typically used: one for a 9-pin connector and the other for a 25-pin connector.

9-pin RS-232 Pin-out

PIN	DESIGNATION
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

Voltage range

The standard voltage range on RS-232 pins is $-15V$ to $+15V$. This voltage range applies to all RS-232 signal pins. The total voltage swing during signal transmission can be as large as $30V$. In many cases, RS-232 ports will operate with voltages as low as $-5V$ to $+5V$. This wide range of voltages allows for better compatibility between different types of equipment and allows greater noise margin to avoid interference.

Because the voltage swing on RS-232 lines is so large, the RS-232 signal lines generate a significant amount of electrical noise. It is important that this signal does not run close to high impedance microphone lines or audio lines in a system. In cases where you must run these types of signals nearby one another, it is important to make sure that all audio wires are properly shielded.

The main role of the RS232 chip is to convert the data coming for the 12-volt logic to 5 volt logic and from 5 volt logic to 12 volt logic

Vital role of RS232 Converter (Max 232n) in ‘REMOTE CONTROL USING LAN NETWORK’

The main role of the RS232 chip is to convert the data coming for the 12-volt logic to 5 volt logic and from 5 volt logic to 12 volt logic

Relay:

The relay subsystem is an electrically-operated switch. The relay switches when the signal coming into the driver is high. It must be connected to a Darlington or transducer driver subsystem.

The relay **coil** is connected between the supply rail (+V) and the input signal. This acts as load on the driver. When the input signal coming into the relay subsystem is low, a potential difference across the relay coil causes current to flow. It is this flow of current that causes contacts to switch.

Vital role of RELAY (Max 232n) in 'REMOTE CONTROL USING LAN NETWORK'

Relay is used as electrical switch to control the devices attached to device.

EAD CARD:

EAD card is a serial /Ethernet and Ethernet/serial converter module. EAD is a device that converts RS-232 protocol into TCP/IP protocol. It enables remote gauging, managing and control of a Serial device through the network based on Ethernet and TCP/IP by connecting to the existing equipment with RS-232 serial interface. In other words, EAD is a protocol converter that transmits the data sent by serial equipment as TCP/IP data type and converts back the TCP/IP data received through the network into serial data to transmit back to the equipment. EAD also supports UDP protocol for Broadcast kind of application.

Vital role of LAN card in 'REMOTE CONTROL USING LAN NETWORK'

Card is used to capture the user commands and convert the data into Ethernet packets..

APPLICATIONS OF REMOTE CONTROL USING LAN NETWORK

- ❖ Offices
- ❖ Industrial purposes
- ❖ Space station