SECURITY SYSTEM BASED ON VOICE SENSORS

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ABSTRACT

As our project we are going to present "Security System based on Voice Sensors". Our project measure sound pressure level and display it on 16*2 LCD. So our project continuously measure sound pressure of three sound sensors, and compare to each other using microcontroller programming. The microcontroller is programmed to rotate motor in the direction of maximum sound using a geared DC motor, Thus camera places connected to the motor moves in the direction of sensor.

Keywords : ***Automatic Security System, Rotating Camera Based On Sound Sensors,***

I INTRODUCTION

The sound pressure level of three sound sensors are measured and compared to each other using microcontroller programming. The microcontroller is programmed such that motor rotates in the direction of maximum sound using a geared DC motor, Thus camera connected to the motor moves in the direction of speaker.

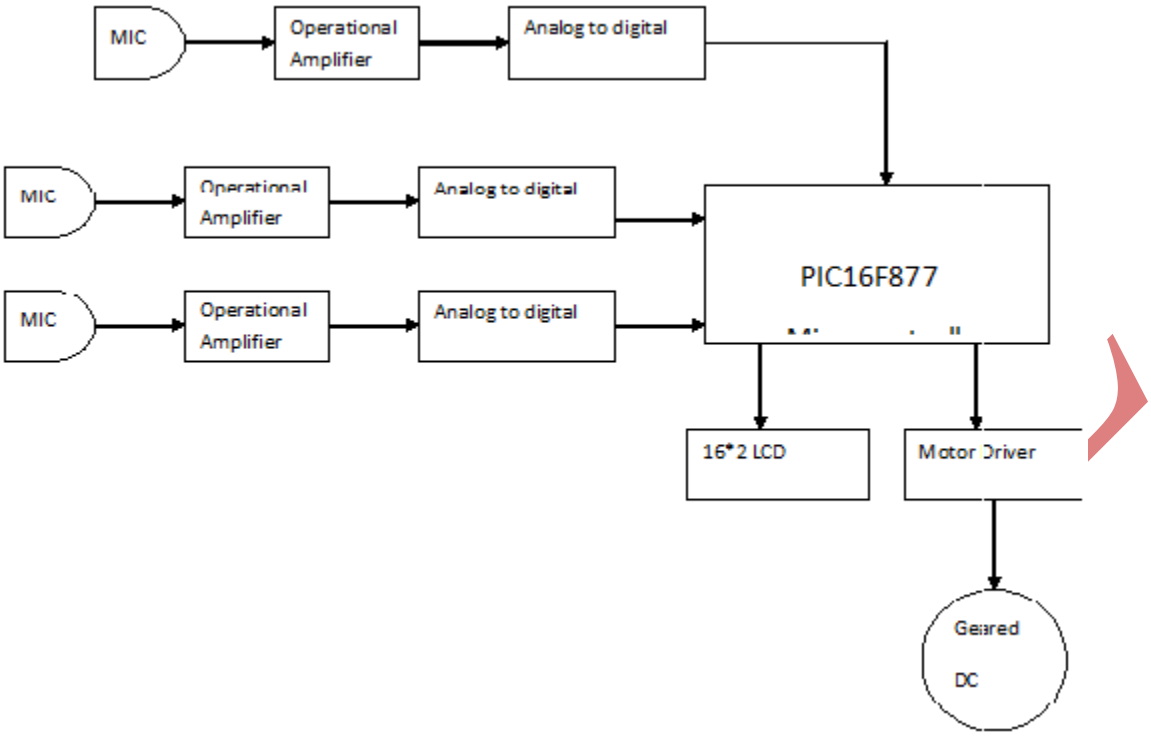
A basic sound level meter shows the sound pressure level with different frequency weighting and with different time integration that are used for noise assessment. The current international standard for sound level meter mandates the inclusion of an A-frequency-weighting filter and also describes other frequency weightings of 'C' and 'Z'. In almost all countries, the use of A-frequency-weighting is mandated for protection of workers against noise induced deafness.

II CONSTRUCTION

The components used are:

i. PIC16F877
ii. Diodes
iii. Resistors
iv. Dc Motor
v. LCD Module
vi. Camera
vii. Microphone
viii. Capacitors
ix. LM358
x. Motor Driver

III BLOCK DIAGRAM



Note: Special feature of our project is that we have used PIC 16F877A microcontroller having inbuilt analog to digital converter which is not in case of 8051 microcontroller.

IV WORKING

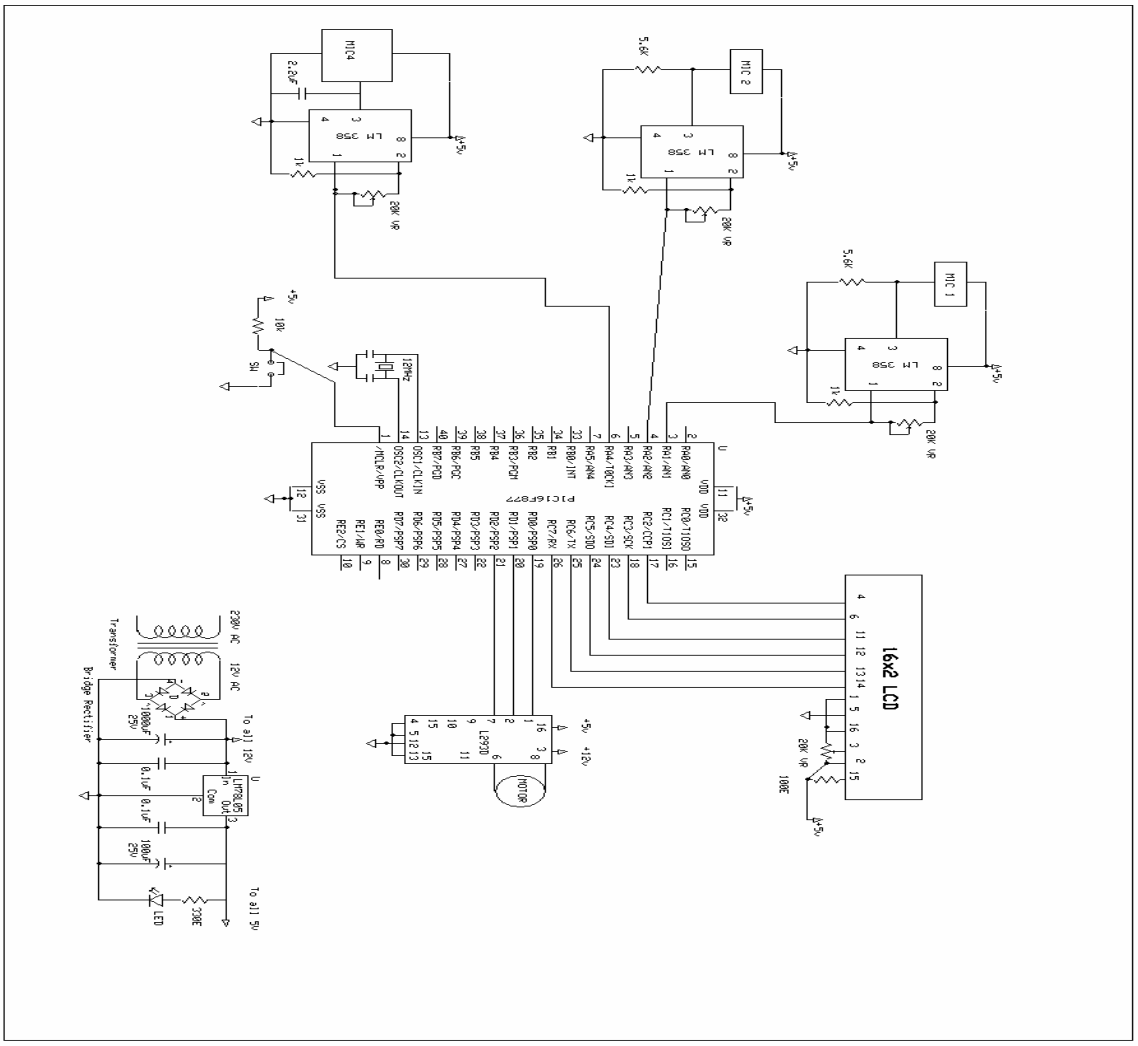
Condenser mic is used as an input device. The sound is converted into electrical signal using condenser mic. This signal is than amplified by using LM358. The audio output is received through pin 2 and feedback is given through VR1. Here VR1 is used to get an output amplitude level between 0 to 4 volts.

LM 358 is dual operational amplifier consisting of two independent, high gain, internally frequency compensated operational amplifier that are design specially to to operate from a single power supply over a wide voltage range. Operation from split supplies also is possible if the difference between the two supplies is 3 V to 32 V and VCC is at least 1.5 V more positive than the input common-mode voltage. The low supply-current drain is independent of the magnitude of the supply voltage.

Applications include transducer amplifiers, dc amplification blocks, and all the conventional operational amplifier circuits that now can be implemented more easily in single-supply-voltage systems. For example, these devices can be operated directly from the standard 5-V supply used in digital systems and easily can provide the required interface electronics without additional +-5-V supplies.

This analog output is fed to the analog input of PIC microcontroller. The PIC microcontroller is used because it has internal analog to digital converter. PIC16F877 belongs to a class of 8-bit microcontrollers of RISC architecture. It has 8kb flash memory for storing a written program. Since memory made in FLASH technology can be programmed and cleared more than once, it makes this microcontroller suitable for device development. IT has data memory that needs to be saved when there is no supply. It is usually used for storing important data that must not be lost if power supply suddenly stops. For instance, one such data is an assigned temperature in temperature regulators. If during a loss of power supply this data was lost, we would have to make the adjustment once again upon return of supply.

V CIRCUIT DIAGRAM



VI PIN DESCRIPTION

Pins	Description
1	Ground
2	Vcc
3	Contrast Voltage
4	"R/S" _Instruction/Register Select
5	"R/W" _Read/Write LCD Registers
6	"E" Clock
7 - 14	Data I/O Pins
15-16	LED+ LED-

The LCD interface is a parallel bus, allowing simple and fast reading/writing of data to and from the LCD. This waveform will write an ASCII Byte out to the LCD's screen. The ASCII code to be displayed is eight bits long and is sent to the LCD either four or eight bits at a time. If four bit mode is used, two "nybbles" of data (Sent high four bits and then low four bits with an "E" Clock pulse with each nybble) are sent to make up a full eight bit transfer. The "E" Clock is used to initiate the data transfer within the LCD.

Sending parallel data as either four or eight bits are the two primary modes of operation. While there are secondary considerations and modes, deciding how to send the data to the LCD is most critical decision to be made for an LCD interface application.

Eight bit mode is best used when speed is required in an application and at least ten I/O pins are available. Four bit mode requires a minimum of six bits. To wire a microcontroller to an LCD in four bit mode, just the top four bits (DB4-7) are written to.

The "R/S" bit is used to select whether data or an instruction is being transferred between the microcontroller and the LCD. If the Bit is set, then the byte at the current LCD "Cursor" Position can be read or written. When the Bit is reset, either an instruction is being sent to the LCD or the execution status of the last instruction is read back (whether or not it has completed). The different instructions available for use with the 44780 are shown in the table below:

R/S	R/W	D7	D6	D5	D4	D3	D2	D1	D0	Instruction/Description
4	5	14	13	12	11	10	9	8	7	Pins
0	0	0	0	0	0	0	0	0	1	Clear Display
0	0	0	0	0	0	0	0	1	*	Return Cursor and LCD to Home Position
0	0	0	0	0	0	0	1	ID	S	Set Cursor Move Direction
0	0	0	0	0	0	1	D	C	B	Enable Display/Cursor
0	0	0	0	0	1	SC	RL	*	*	Move Cursor/Shift Display
0	0	0	0	1	DL	N	F	*	*	Set Interface Length
0	0	0	1	A	A	A	A	A	A	Move Cursor into CGRAM
0	0	1	A	A	A	A	A	A	A	Move Cursor to Display
0	1	BF	*	*	*	*	*	*	*	Poll the "Busy Flag"
1	0	D	D	D	D	D	D	D	D	Write a Character to the Display at the Current Cursor Position
1	1	D	D	D	D	D	D	D	D	Read the Character on the Display at the Current Cursor Position

VII CONCLUSION

We have presented “Security System based on Voice Sensors” as our project. So our project continuously measured sound pressure of three sound sensors, and compare to each other using microcontroller programming and displayed it on 16*2 LCD. Thus camera connected to the motor hence moved in the direction of the speaker.

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