

# Talking Energy Meter with Power Intemater

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## Abstract

Greatest Demand Control is an installed based venture which can be actualized in industries where three phase of parameters must be observed and controlled. At show industries are utilizing an individual controller for controlling these individual parameters. The point of this venture is to utilize a single controller for controlling in excess of one parameter in a completely programmed mode. This task is helpful for control administration in industries, universities and enormous buyers. In our state, there is a lack of electrical imperativeness. Because of this, the Electricity Board gives just restricted measure of vitality to the industries, instructive establishments and other enormous customers. On the off chance that they surpass the restricted sum, they need to pay punishment. The principle goal of our undertaking is to keep up the present estimation of each phase. At the point when the esteem is surpassed, the phase will consequently share the heap where the request is required. Here the bell is utilized to give the caution of over-burden or most extreme request to client and after that the parameters will be observed by utilizing Inter-Integrated voice processor Protocol.

**Keywords: Voice alert, Atmega controller, Buzzer indicator, Load control, Power Monitoring**

## I. INTRODUCTION

In our state, there is a shortage of electrical vitality. Because of this, the Electricity Board gives just restricted measure of vitality to the industries, instructive organizations and other huge customers. In the event that they surpass the constrained sum, they need to pay punishment. At exhibit TNEB has defined couple of principles that permit just 80% of the allowable vitality to be devoured. At the point when an industry utilizes the most extreme measure of vitality, the microcontroller will give a sound by utilizing a signal.

HT purchasers need to pay a greatest request charge notwithstanding the standard charge for the quantity of units devoured. It is important to screen control utilize and to kill or decrease unnecessary burdens. Greatest request controller is a gadget intended to address the issue of industries aware of the estimation of load administration. Greatest request controller is a gadget intended to address the issue of industries aware of the estimation of load administration. Caution is sounded when request approaches a preset esteem. In the event that remedial move isn't made, the controller switches off insignificant loads in an intelligent arrangement. This arrangement is foreordained by the client and is modified mutually by the client and the provider of the gadget. The plant supplies chose for the heap administration are halted and restarted according to the coveted load profile. Request control plot is executed by utilizing reasonable control contactors. Sound and visual annunciations could likewise be utilized. This venture can be utilized for stack administration in industries and furthermore to evade the punishments and creation misfortunes. The prior strategy for overseeing most extreme power request was via Automatic power factor control (APFC) unit. Power factor is characterized as the proportion of genuine capacity to the evident power. This definition is regularly scientifically spoken to as KW/KVA, where the numerator is the dynamic (genuine) control and the denominator is the (dynamic + responsive) or clear power. Responsive power is the non working force created by the attractive and inductive burdens, to produce attractive motion. At the point when there is an expansion in receptive power, the obvious power additionally increments with that, so the power factor diminishes steadily. Power factor is conversely corresponding to the clear power. Because of low power factor, the industry pays more to take care of its demand, thus the effectiveness of the framework additionally diminishes. So Power factor revision was utilized for limiting the punishment for the modern units. This task goes for building up an elective technique for most extreme power request administration with generator control instrument. Figure 8 shows the complete circuit diagram of the proposed system and each segment is discussed in coming chapters.

## II. METHODOLOGY

### A. ATmega32

The elite, low-control Microchip 8-bit AVR RISC-based microcontroller joins 32KB ISP streak memory with read-while-compose capacities, 1KB EEPROM, 2KB SRAM, 54/69 broadly useful I/O lines, 32 broadly useful working registers, a JTAG interface for limit examine and on-chip investigating/programming, three adaptable clock/counters with look at modes, inside and outer interrupts, serial programmable USART, an all inclusive serial interface (USI) with begin condition finder, a 8-channel 10-bit A/D converter, programmable guard dog clock with interior oscillator, SPI serial port, and five programming selectable power sparing modes. Figure1 shows the development board interface of Atmega32 microcontroller. The gadget works between 1.8-5.5 volts.

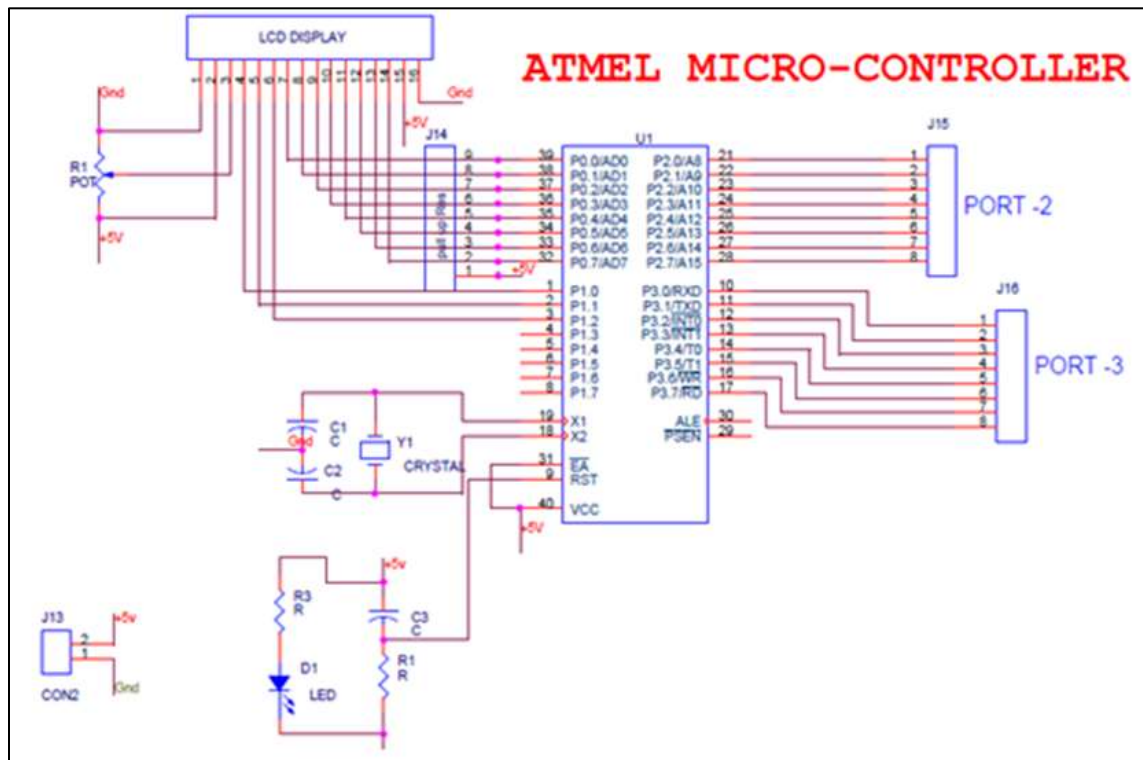


Fig. 1: Circuit for ATME64 microcontroller

Here we have utilized the Darlington sets of transistors. Figure 2 shows the internal circuit of Darlington transistor. The LED will gleam when the hand-off empowered by the Darlington match of transistors. On the off chance that it is de stimulated at that point LED won't sparkle. The diode is utilized to control the EMF prompted in the hand-off loop. Frequently it is called as freewheeling diode. Freewheeling diode is deliberately associated when stack is inductive, for example, solenoid, hand-off, and engine. We realize that, inductor restricts change in current. When we switch off the transistor, the current in the inductor does not reach to zero instantly; it streams for some time. Anyway this current can't move through the transistor, since it is off. Rather, this current builds up a voltage crosswise over inductor with turn around polarities, i.e. - ve at the best and +ve at the base in given circuit. Normally this switch voltage is sufficiently substantial to separate the transistor. The freewheeling diode gives the way to actuated current and braces the switch voltage crosswise over inductor at 0.7v. The Darlington transistor (regularly called a Darlington match) is a compound structure comprising of two bipolar transistors (either coordinated or isolated gadgets) associated such that the current increased by the primary transistor is intensified further constantly one.

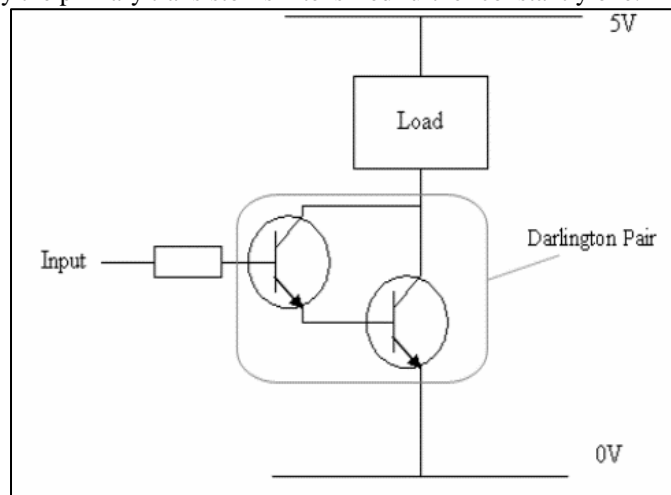


Fig. 2: Darlington Transistors.

- Total current pick up (hFE add up to) = current pick up of transistor 1 (hFE t1) x current pick up of transistor 2 (hFE t2)
- Typically to turn on a transistor the base data voltage of the transistor ought to be more noticeable that 0.7V. As two transistors are utilized as a part of a Darlington Pair this esteem is multiplied. In this manner the base voltage should be more noteworthy than 0.7V x 2 = 1.4V.

## B. Buzzer

This buzzer is a piezo write sound flagging gadget, which has a piezo component and a swaying circuit inside which wavers the piezo metal base plate, which when given voltage contrast produces sound of a predefined frequency. You should know about such hints of buzzer like BEEP sound in numerous machines.

The Piezo speaker was used in this framework to give the required capable of being heard disturbing pointer. A Piezo emanates sound when power from the microcontroller yield streams into a sheet of piezoelectric material, influencing it to twist forward and backward. The discharged sound is made by weight waves noticeable all around, which is deciphered by the human ear as sound. The Piezo speaker has a basic and strong plan however is constrained in its frequency reaction. Figure 3 shows the circuit diagram for buzzer.

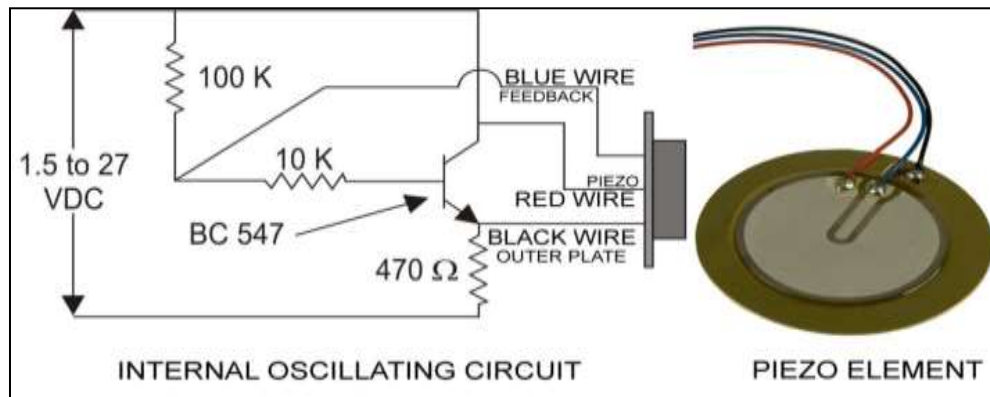


Fig. 3: Internal connection diagram

## C. Uslot Sensor



Fig. 4: USLOT sensor

MOC7811 is an opened Opto isolator module, with an IR transmitter and a photodiode mounted on it. Performs Non-Contact Object Sensing. Figure 4 displays the USLOT sensor. This is ordinarily utilized as positional sensor switch (restrict switch) or as Position Encoder sensors used to discover position of the wheel. It comprises of IR LED and Photodiode mounted confronting each other encased in plastic body

### 1) Specifications

- Size: Refer to the picture underneath
- Mounting gap distance across: 3mm
- Mounting gap dividing: 19mm
- Slot width: 3mm
- Slot profundity: 7mm

### 2) Applications

- DC motor position/speed control
- Position and speed servomechanisms
- Factory computerization robots
- Numerically controlled hardware
- Computer printers and plotters

### 3) Details

At the point when light transmitted by the IR LED is blocked due to exchanging openings of the encoder plate rationale level of the photograph diode changes. This adjustment in the rationale level can be detected by the microcontroller or by discrete

equipment. This sensor is utilized to give position criticism to the robot or as Limit switches. Figure 5 shows the internal connections of USLOT sensor.

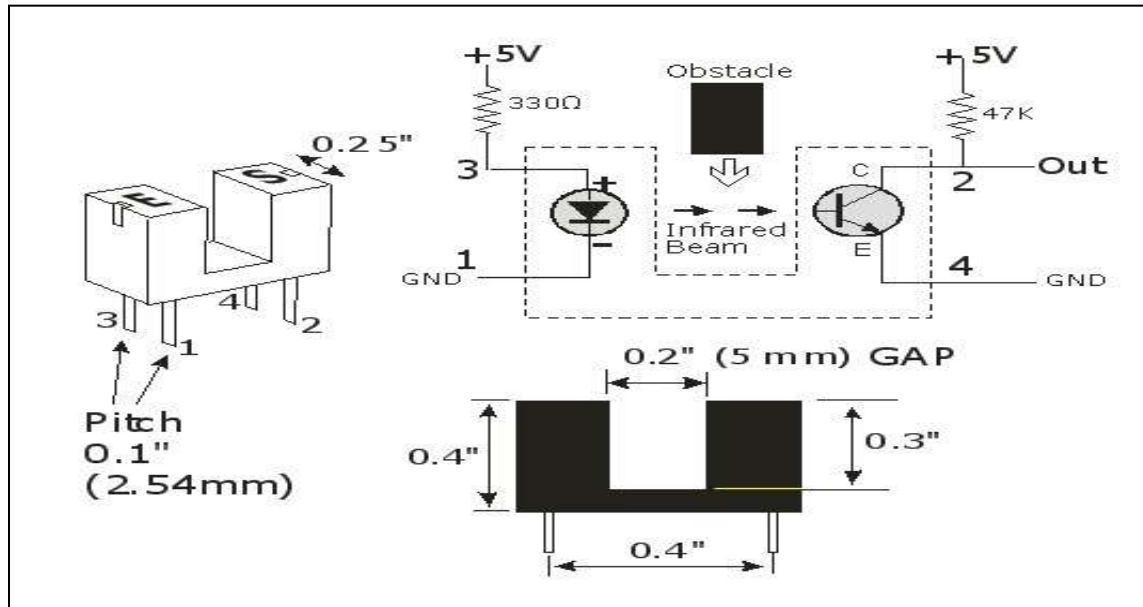


Fig. 5: Internal circuit diagram

### III. VOICE RECORDER IC

#### A. General Description

The APR9600 gadget offers genuine single-chip voice recording, non-unpredictable capacity, and playback ability for 40 to 60 seconds .The gadget underpins both arbitrary and consecutive access of various messages. Test rates are client electable, Allowing planners to modify their outline for exceptional quality and capacity time needs. Coordinated yield intensifier, mouthpiece enhancer, and AGC circuits significantly enhance framework plan. The contraption is ideal for use in flexible voice recorders, toys, and various other client and mechanical applications. Figure 6 represents the pin diagram of APR9600 IC.

APLUS coordinated accomplishes these large amounts of capacity ability by utilizing its exclusive simple/multilevel Storage innovation executed in a propelled Flash non-unstable memory process, where every memory cell can store 256 voltage levels. This innovation empowers the APR9600 gadget to repeat voice motions in their regular frame. It takes out the requirement for encoding and pressure, which regularly present contortion.

#### B. APR9600 Pin Diagram

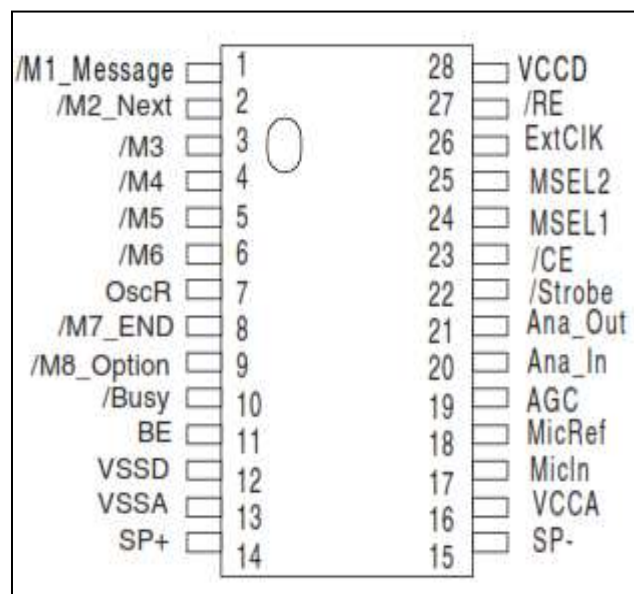


Fig. 6: APR9600 Pin Diagram

Figure 7 demonstrates the gadget arranged in tape mode, ordinary task. This mode is the negligible part tally utilization of the APR9600. Testing rate is dictated by the resistor esteem on stick 7 (OscR). The RC arrange on stick 19 sets the AGC "assault time". A predisposition must be connected to the electrets receiver keeping in mind the end goal to control its inherent hardware. The ground return of this predisposition organize is associated with the typically open side of the record push catch. This arrangement doors capacity to amplifier with the goal that it is one-sided just amid recording. This setup spares control when not recording by stopping capacity to the electrets receiver. The two pins 18 and 19, Mic In and Mic Ref, must be AC couple to the amplifier arrange with a specific end goal to hinder the DC biasing voltage.

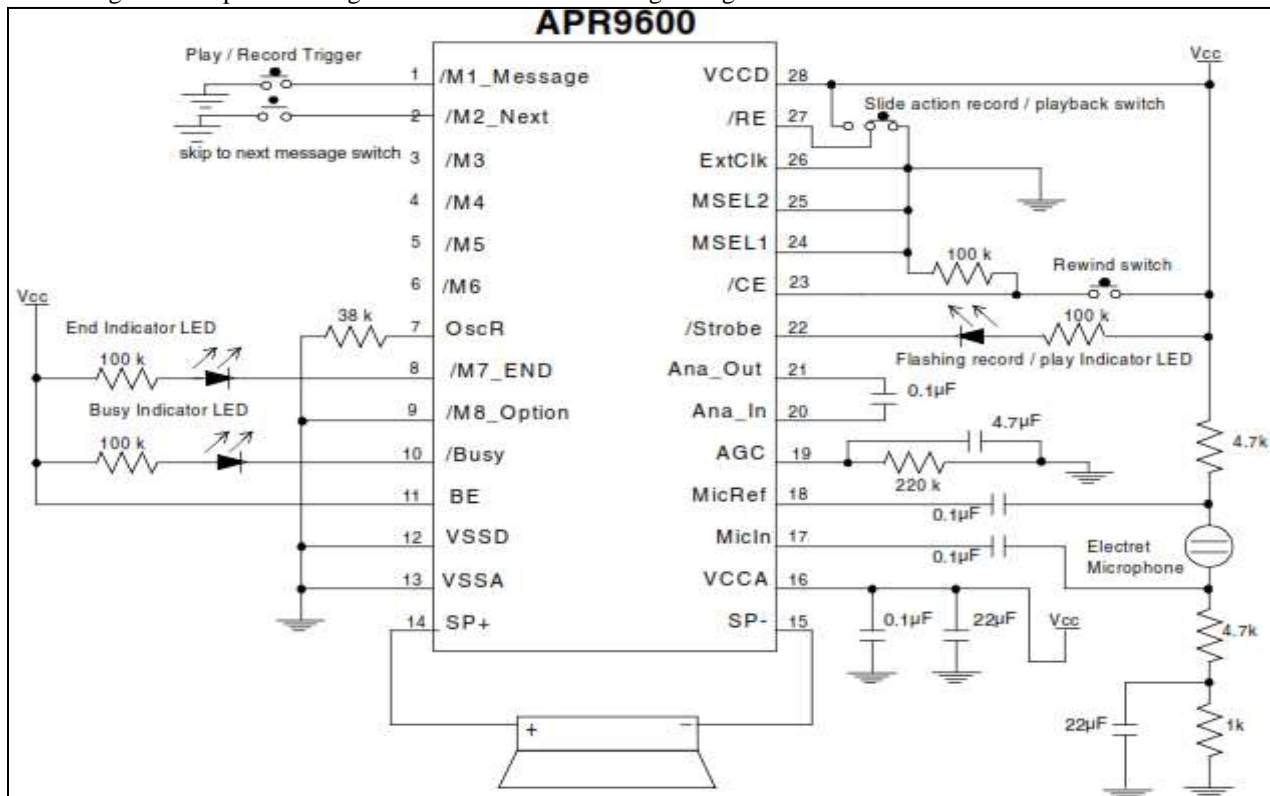


Fig. 7: Tape Mode, Auto Rewind Option

### C. Hardware Circuit

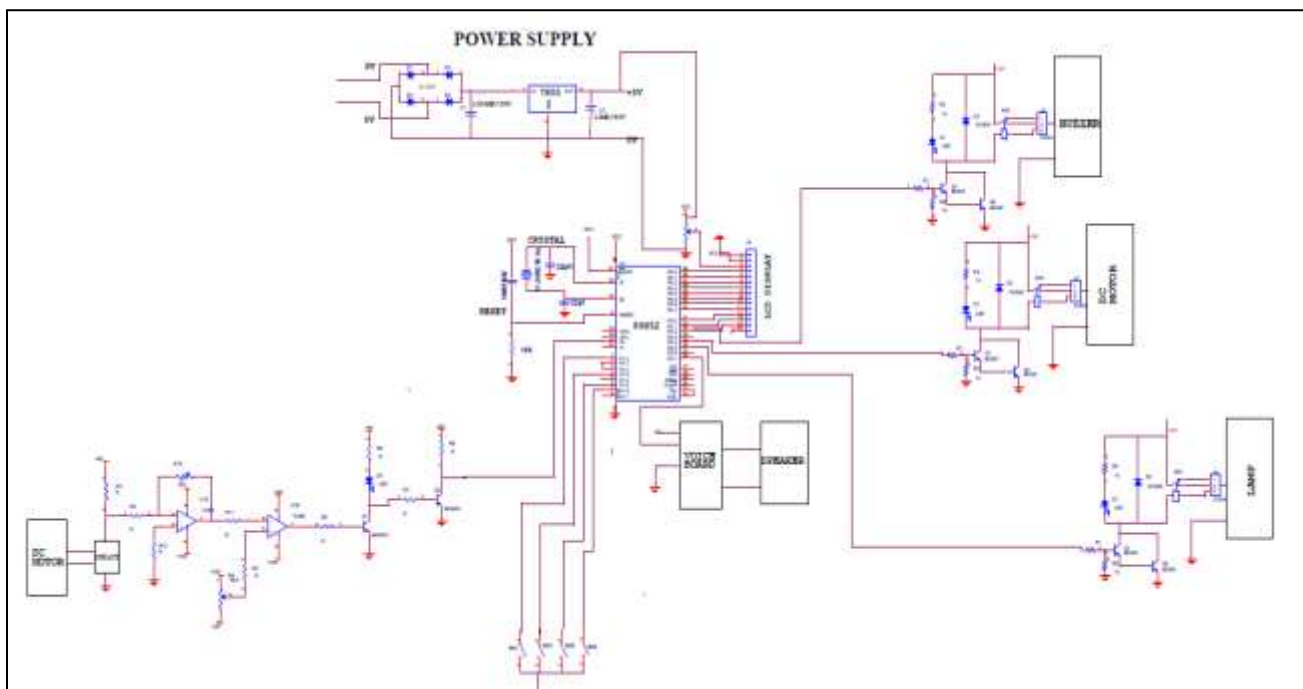


Fig. 8: complete System circuit

#### IV. CONCLUSION

This paper is mostly emphasizing the minimization of generation misfortunes with ceaseless task, maintaining a strategic distance from influence request and expanding the compelling yield items by decreasing the greatest influence .Effective request administration venture is utilized to abridge power charges, positive points of confinement inside contracted request in order to stay away from the punishment and influence charges which influence the creation procedure. It is valuable in stack shedding that uses the base embed age and ideal usage of both EB influence and embed age prompting low pay back period and high reserve funds of influence and cash . The reasonableness and viability of the proposed ideas are confirmed by the reenactment and test comes about.

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