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POWER DEMAND AND MANAGEMENT SYSTEM

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ABSTRACT

It is an innovative concept used to eliminate the power shutdown to consumers due to increase in power demand .Our proposed project is to distribute available power proportionally to all consumer that reducing total power consumer. Whenever power demand increases the partial shutdown system is implementation and thus power usage to the consumer is limited. This limit is fixed based on the basic power necessary of the consumer. Also in our project the power used by the consumer is automatically calculated and corresponding amount for the power used is calculated. The power is exceed their limit is used the buzzer is alert

INTRODUCTION

An embedded system is some combination of computer hardware and software that specifically designed for a particular function .The embedded system is a computer system with a dedicated function within a largest mechanical or electical system, often with real time computing constraints. it is embedded as part of a complete device often including hardware and mechanical parts.embedded systems control many devices in common today.As an embedded system usually performs a simple role that does not change, the requirements for the operating system are less onerous .Hardware demands for embedded systems are usually much lower than those for full PCs.Embedded computers when compared with general-purpose counter parts are low power consumption ,small size, rugged operating ranges,and low per unit cost.This comes at the price of limiting processing resources,which make them significantly more difficult to program and to interact with.However, by building intelligence mechanisms on top of the hardware, taking advantage of possiblrexisting sensor and the existence of a network of embedded units,one can both optimally manage available resources at the unit and network levels as well as provide functions,well beyond those vailable.For example, intelligent techniques can be designed to manage power consumption of embedded systems.

PROPOSED SYSTEM

MICROCONTROLLER

A microcontroller is a complete microprocessor system built on a single IC Microcontrollers were developed to meet a need for microprocessors to be put into low cost products. Building a complete microprocessor system on a single chip substantially reduces the cost of building simple products,which use the microprocessor's power to implement

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their function because the microprocessor is a natural way to implement many products.this means the idea of using a microprocessor for low cost products comes up often. But the typical 8-bit microprocessor based system,such as one using a Z80 and 8085 is expensive.both8085 and Z8 system need some addition circuits to make a microprocessor system. Each part carries costs of money. Even though a product design may requires only very simple system, the part needed to make this system as a low cost product.

PICstands for peripheral interface controller ad coined by microchip Technology inc.,USA.PIC is a very popular microcontroller world wide. Microchip is the first manufacturer of 8 pin RISC MCU. Microchip is the world's second largest chip manufacturer.Focus on high performance cost-effective, field programmable embedded control solutions. Variety of end-user applications-specific standard product(ASSP) & application-specific integrated circuits. Global network of manufacturing and customer support facilities.Additional information on the Timer() module is available in the PICmicro Mid-Range MCU Family Reference Mannual(DS33023).Timer mode is selected by clearing bit T0CS (OPTION_REG<5>).In Timer mode ,the Timer() module will increment every instruction cycle (without prescaler). If the TMR0 register is written, the Increment is inhibited for the following two instructions cycles. The user can work around this by writing an adjusted value Counter mode is selected by setting bit T0CS (OPTION_REG<5>).In Counter mode, Timer() will increment either on every rising or falling edge of pin RS4/T0CKI. The incrementing edge is determined by the Timer() Source Edge Select bit, T0SE(OPTION_REG<4>).Clearing bit T0SE selects the rising edge. The prescaler is mutually exclusively shared between the Timer(module and the Watchdog Timer. The prescaler is not readable or writable.

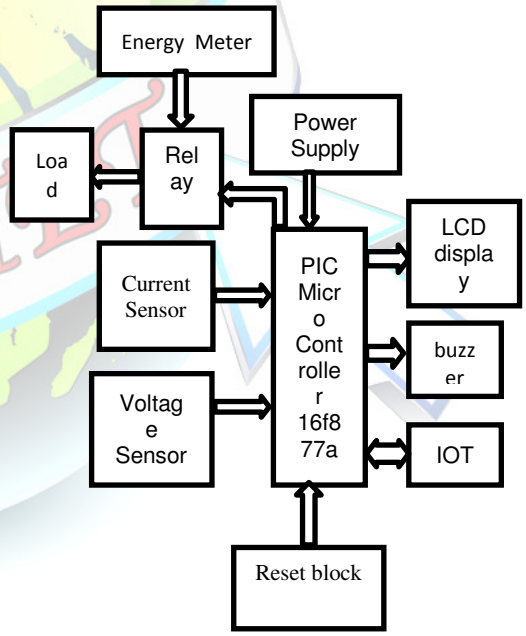

FIGURE : BLOCK DIAGRAM

FEATURES

ANALOG FEATURES

- 10_bit, up to 8_channel Analog-to_Digital Converter(A/D)

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- 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 internals Voltage reference
- Comparator outputs are externally accessible

SPECIAL MICROCONTROLLER

- 100,000 erase/write cycle Enhanced Flash program memory typical
- 1,000,000 erase/write cycle Data EEPROM memory typical
- Data EEPROM Retention>40 years
- Self_reprogrammable under software control
- In_Circuit Serial Programming^tm(ICSP^tm)via two pins
- Single_supply 5V In_Circuit Serial Programming
- Watching Timer(WDT) with its own on_chip RC oscillator for reliable operation
- Programmable code protection and Power saving Sleep mode
- Selectable oscillator options
- In Circuit Debug(ICD)via two pins

BUZZER

A buzzer or beeper is a signaling device , usually electronic ,typically used in automobile ,household appliances such as a microwave oven or game shows.It most commonly consists of a number of switches or sensor connected to a control unit that determines if and which button was pushed or a preset time has lapsed and usually iliminates a light on the appropriate button or control panel and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound.

POWER SUPPLY

A power supply is an electrical device that supplies electric power to an electrical load. The primary function of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters. Some power supplies are separate standalone pieces of equipment, while others are built into the load

FIGURE : POWER SUPPLY

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LOAD

- Structural load forces which apply to a structure,
- Cargo, paraphernalia being transported
- Mechanical load, the external mechanical resistance against which a machine, such as a motor or engine, acts
- Load, Kentucky
- The *load* of a mutual fund (see Mutual fund fees and expenses)
- Electrical load, a device connected to the output of a circuit
- Electronic load, a simulated electrical load used for testing purposes

CURRENT SENSOR

current sensor is a device that detects electric current in a wire, and generates a signal proportional to that current. The generated signal could be analog voltage or current or even a digital output. The generated signal can be then used to display the measured current in an ammeter, or can be stored for further analysis in a data acquisition system, or can be used for the purpose of control.

Alternating current input,

- Analog output, which duplicates the wave shape of the sensed current.
- Bipolar output, which duplicates the wave shape of the sensed current.
- Unipolar output, which is proportional to the average or RMS value of the sensed current.

Direct current input,

- Unipolar, with a unipolar output, which duplicates the wave shape of the sensed current
- Digital output, which switches when the sensed current exceeds a certain threshold

LCD

A liquid crystal display a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, insteadusing a backlight or reflector to produce images in colour or monochrome. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and 7-segment displays, as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements

ENERGY METER

An electricity meter**,** electric meter, electrical meter, or energy meter is a device that measures the amount of electric energy consumed by a residence, a business, or an electrically powered device.Electric utilities use electric meters installed at customers' premises for billing purposes. They are typically calibrated in billing units, the most

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common one being the kilowatt hour (*kWh*). They are usually read once each billing period.When energy savings during certain periods are desired, some meters may measure demand, the maximum use of power in some interval. "Time of day" metering allows electric rates to be changed during a day, to record usage during peak high-cost periods and off-peak, lower-cost, periods. Also, in some areas meters have relays for demand response load shedding during peak load periods.

FIGURE : ENERGY METER

RELAY

➢ **Relay logic** is a method of implementing combinational logic in electrical control circuits by using several electrical relays wired in a particular configuration. In many cases, it is possible to design a relay logic diagram directly from the narrative description of a control event sequence.

INTERNET OF THINGS

The **Internet of things** (**IoT**) is the network of physical devices, vehicles, home appliances and otheritems embedded with electronics, software, sensors, actuators,and conn ectivity which enables these objects to connect and exchange data.[1][2][3] Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate existing Internet infrastructure.The figure of online capable devices increased 31% from 2016 to 8.4 billion in 2017.[4] Experts estimate that the IoT will consist of about 30 billion objects by 2020.[5] It is also estimated that the global market value of IoT will reach $7.1 trillion by 2020. The IoT allows objects to be sensed or controlled remotely across existing network infrastructure,[7] creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention.