Average project Report
AY: 2018-2019

A Major Project report

on

SMART HAND BAG FOR WOMEN SAFETY

Submitted in partial fulfillment of theRequirement for the award of the Degree

of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

BY

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Under the guidance of

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VIDYA JYOTHI INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

(Accredited by NBA & NAAC, Approved by AICTE, New Delhi &

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VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

This is to certify that the project work entitled " **SMART HANDBAG FOR WOMEN SAFETY"** is a bonafide work carried out by **K. Sai Megha (15911A0423), M. VAMSHIKA REDDY (15911A0427), P. GAYATHRI (15911A0448), T. NIHARIKA REDDY (15911A0457)** in partial fulfillment of the requirements for the award of degree of **BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING** by the **JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD**, under the guidance and supervision.

The results embodied in this project report have not been submitted to any other University or Institute for the award of any Degree.

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ACKNOWLEDGEMENT

We would like to express my sincere gratitude and indebtedness to our project supervisor for his valuable suggestions and interest throughout the course of this project

We are also thankful to Head of the department for providing excellent infrastructure and a nice atmosphere for completing this project successfully

We convey our heartfelt thanks to the lab staff for allowing us to use the required equipment whenever needed

Finally, we would like to take this opportunity to thank our family for their support through the work. We sincerely acknowledge and thank all those who gave directly or indirectly their support in completion of this work

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DECLARATION

This is to certify that the work reported in the presented project entitled **"SMART HANDBAG FOR WOMEN SAFETY"** is a record of the work done by us in the Department of Electronics and Communication Engineering, Vidya Jyothi Institute of Technology, an Autonomous Institute. The report is based on the project work done entirely by us and not copied from any other source.

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ABSTRACT

A smart wearable hand bag for women safety using physical sensor, shock mechanism, along with recordable camera is proposed. The proposed electronics is placed inside the hand bag. A shock mechanism will initially help the women up to safety followed by the location of women via SMS to 3 predefined numbers and police control room. The proposed electronics will also give the emotional status of women at a time of an attack. The FRDM-KL25Z has been designed by NXP in collaboration with mbed for prototyping all sorts of devices, especially those requiring the size and price point offered by Cortex-M0+ and the power of USB Host and Device. It is packaged as a development board with connectors to break out to strip board and breadboard, and includes a built-in USB FLASH programmer.

CHAPTER 1 INTRODUCTION

The primary factor required for women safety is a non-lethal attack made by the victim to safe guard has form the attackers. The second factor considered is the robust ness of the system that sends data about the whereabouts of an individual using short message service. The Third factor considered is to make people around aware of the situation that an lady at risk is facing and the final factor is to record the event that is happening at the scene

The above factors will be enabled if and only if the emotional parameters of the body crosses a particular threshold levelindicating panic, fear and stressed.The first levelby informing the neighbors in terms of ringing a buzzer. The next is by sending SMS to 3 contacts and police "SHE TEAMS CONTROL ROOM" and finally capturing and storing the event using a camera and subsequently in SD card.we have also used different sensors like heartbeat sensor, temperature sensor, for recognizing emotional change that takes place in the women.It is compact device, simple wearable device like hand bag,which can be used by frequent commute girls, office going women or any common people who is concerned about safety. When a push button is pressed by the women under threat, an electric shock generator will be generated. This gives the initial way of preventing the molester from reaching the girl under danger. Message in the form of SMS (Short message service) will be sent via GSM to the near police control room regarding the situation along with the location via GPS of the place where she is facing the problem. A longer buzzer will be switched on so that the surrounding people can get the attention so that they can come for help.

CHAPTER 2 LITERATURE SURVEY

In Global scenario, the main question in every girl's mind is about her safety and the harassment problems. Although a lot of women safety organizations are already available in the market but still a more safety and security. This work suggests a new technology to protect women in a crowded environment. It is mainly focusing on a security for women, so that they will never feel helpless. The aspect investigation from the several foundations has been considered and unstated as follows. Harikiran used Smart band which continuously communicates withelegant phone. SanjidaSharmin used Bluetooth safekeeping gadget associated with an android mobilerelevance. During calamity, women just need to squash badge from that security device and a habitual significance of the victim's location in sequence to the special numbers. Helen, proposed a watch for women when a women or child drainingthis watch makes a callto our registered drop a line to and throughout GPS/GSM and it will identify the nearby police station to appear soon. Shaik Mazhar Hussain, used RFID and GPS for women safety. Dhanshree Joshi, Introduced a system that does not require a smart phone unlike other applications. R. Abhipriya, Gave a prototype for women safety by using radio detection based on cognitive radio. The inimitable feature of this scheme is that is endlessly sends message for every two minutes till the relevance is bunged. Premkumar. P, the system resembles a normal watch which when activated, tracks the place of the women using GPS. SayaliVarade, this relevance minimally includes safety hardware device and main cloudserver which supervise all harmonized control over system this app be acquainted with the locality through tracking once-over. Ansari, introduced a new technology for a women safety with one touch system using GSM & GPS so that women never feel helpless while facing such social probiems or challenges. Pradeep, used a simple gadget designed solely to serve the purpose of providing security to women mainly against acid attack and sexual assault. Tanusri Dey, introduced an app that sends message to saved contacts by clicking a button in the application. Saranya, Women Safety Application system offers the added protection of being track by relatives on different time interval and different location. Siddam Kavitha GPS navigation and GSM based women home used security system using Arduino Controller. Monisha, Gave a security system, specially designed for women indistress.A. Usha Kiran Reddy, proposed a belt which allows exact location of the individual, as soon as the trigger key on the belt is pressed. Deepali, introduced a system that turns on a camera and capture live video of the events that happens around the victim subsequently messages are sent to requested numbers. Vaibhav, MEMS sensor which inverted wrong happening introduced with women according to the extraordinary movement of body. Indrajeet, gave "Stay Safe Application" which provides the combination of GPS device alerts and messages with sending an image related with situation. Abhijit Paradkar, used a tool to detect the spy camera placed at hotel, changing room and in form the user about the same, and hence provide safety from capturing the offensive photograph or videos. Sayali, introduced a GPS and GSM based women security system that provides the combination of GPS device as well as provide alerts and messages with an emergency button trigger. J. Preethi, used gadget a security framework, which recognizes secure and approach assets to enable the one to out of risky circumstances. Sridhar Mandapati, created some app to know whether a woman is safe or not? This indicates the present state of affairs of the woman by touching some option. Bhavya, Women self-defense watch including GSM and GPS introduced. Whenever emergency key is pressed the alarm gets activated. Anil Kumar Patil, the system is continuously monitoring the readings.PulicherlaGowtami, introduced a system of lady under threat that resembles a normal Glove which when activated, gives tracks the location of the victim using GPS and sends emergency messages using GSM. To make the proposed work successful, the following limitations were encountered in the existing system such that there is no non-lethal attack made by victim on the occurrence of molestation/misbehaving the systems designed were not robust as it worked only for small distance or offline mode where data is stored in the cloud and sent later.

The existing system used GSM which had less impact for non-causal events.. Many authors had worked on system that used wireless mode. Many applications have been designed in the form of app for women safety. All the above requires internet connections. Hence a system that does not use internet (3G/4G) was preferred as primary requirement. In countries like India, there is always a chance that these kinds of device could be misused for a wrong cause. Hence to eliminate the wrong usage of the device no mechanism was formulated. Hence a system that is robust,capable of giving messages, in order to protect women from being the victims of any kind of physical abuse, with offline recording has to be proposed.

CHAPTER 3 PROJECT DESCRIPTION

A handbag is a most important accessory a women carries when she steps out of her house. There are many mobile apps which provide women safety, but all of them work on mobile data. But if a woman is in a condition where she is not able to use her mobile, then she is definitely in a big trouble. To overcome such problem we are using a set up which is fit in a handbag, that ensures her safety.

The setup consists of a controller which is the FRDM board in the particular project, pulse sensor, temperature sensor, GSM module, buzzer. This set up is inserted inside a woman's handbag with a push button in order to initiate its working. If a woman carrying the handbag is in danger then she turns on the push button. Then the controller immediately checks her emotional status with the help of pulse sensor and temperature sensor. The code is written in such a way that when the value of pulse sensor is increased above certain threshold value then an SMS is sent to SHE teams and some known contacts of the victim. If the temperature is also increased beyond the threshold level then a buzzer is turned on. If the person is in a public place then the buzzer helps her to get the attention of the people around her and she may get some help.

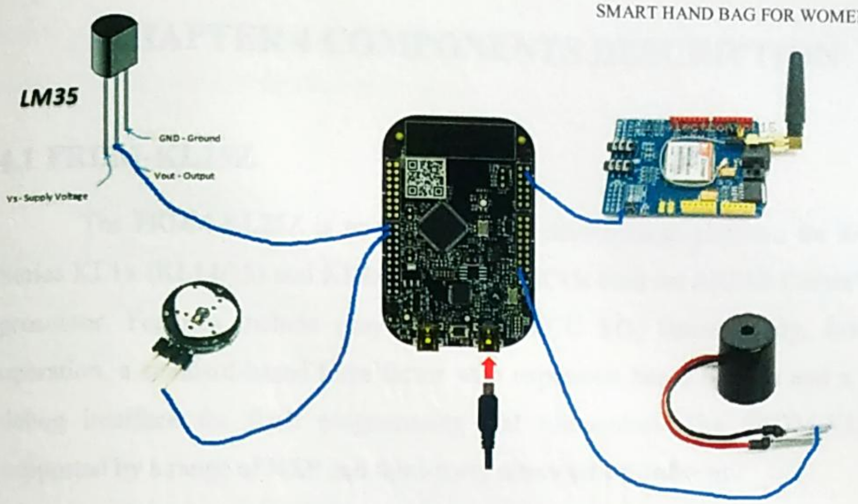

Fig 3. 1. Illustration diagram

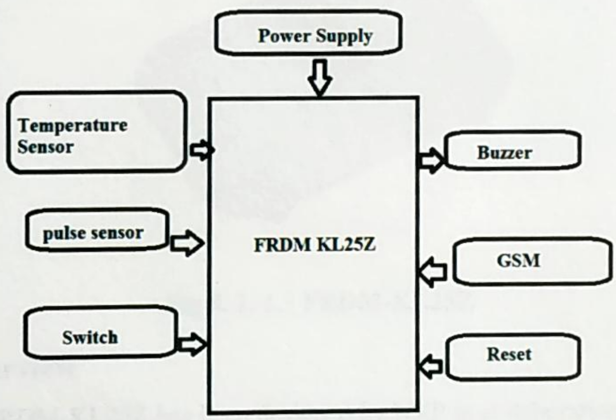

Fig 3. 2. Block diagram

CHAPTER 4 COMPONENTS DESCRIPTION

4.1 FRDM-KL25Z

The FRDM-KL25Z is an ultra-low-cost development platform for Kinetis L Series KL1x (KL14/15) and KL2x (KL24/25) MCUs built on ARM® Cortex™-M0+ processor. Features include easy access to MCU I/O, battery-ready, low-power operation, a standard-based form factor with expansion board options and a built-in debug interface for flash programming and run-control. The FRDM-KL25Z is supported by a range of NXP and third-party development software.

Fig 4. 1. 1. FRDM-KL25Z

4. 1. 1. Overview

The FRDM-KL25Z has been designed by NXP in collaboration with mbed for prototyping all sorts of devices, especially those requiring the size and price point offered by Cortex-M0+ and the power of USB Host and Device. It is packaged as a development board with connectors to break out to strip board and breadboard, and includes a built-in USB FLASH programmer.

FRDM-KL25Z can be used to evaluate the KL14, KL15, KL24 & KL25 Kinetis L series devices. It features a KL25Z128VLK, a device boasting a max operating frequency of 48MHz, 128KB of flash, a full-speed USB controller, and loads of analog and digital peripherals. The FRDM-KL25Z hardware is form-factor compatible with the Arduino™ R3 pin layout, providing a broad range of expansion board options. The on-board interfaces include an RGB LED, a 3-axis digital accelerometer, and a capacitive touch slider.

The FRDM-KL25Z is the first hardware platform to feature the Freescale open standard embedded serial and debug adapter known as OpenSDA. This circuit offers several options for serial communications, flash programming and run-control debugging.

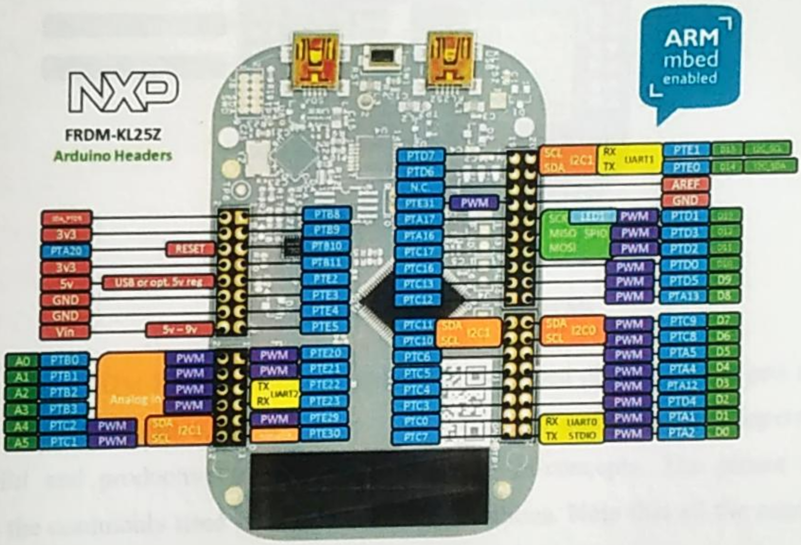

Fig 4. 1. 2. Pin diagram

It is based on the NXP KL25Z, with a 32-bit ARM Cortex-M0+ core running at 48MHz. It includes 128KB FLASH, 16KB RAM and lots of interfaces including USB Host, USB Device, SPI, I2C, ADC, DAC, PWM, Touch Sensor and other I/O interfaces.

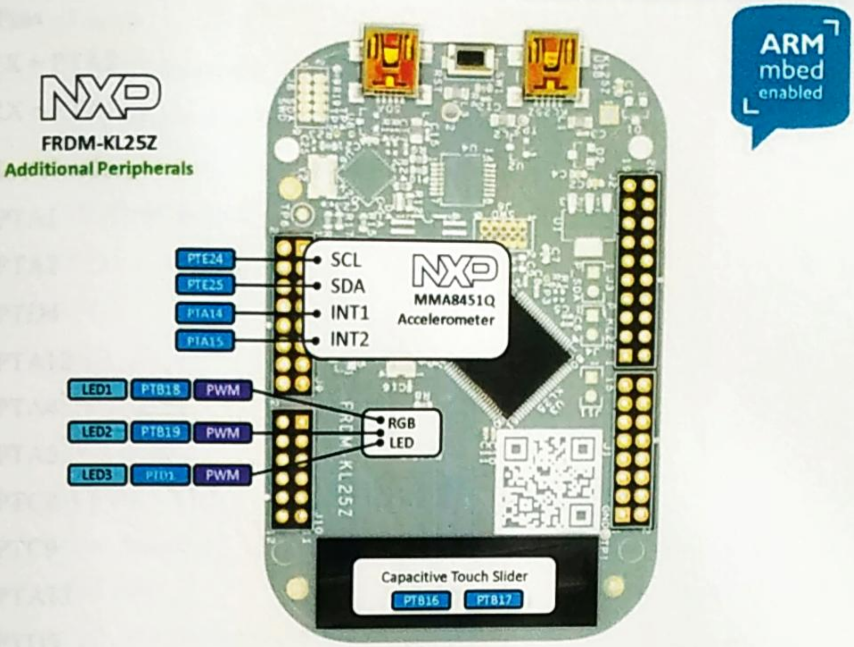

Fig 4. 1. 3. Additional Peripherals

The FRDM-KL25Z is fully supported in the mbed platform, so it gets access to the free tools and SDK that provides experienced embedded developers with powerful and productive tools for building proof-of-concepts. The pinout above shows the commonly used interfaces and their locations. Note that all the numbered pins (PT_XX) can also be used as DigitalIn and DigitalOut interfaces.

4. 1. 2. Pin names

Available PinNames for FRDM-KL25Z platform.

LED (RGB)

LED_RED = PTB18

LED_GREEN = PTB19

LED_BLUE = PTD1

mbed original LED naming

LED1 = LED_RED

LED2 = LED_GREEN

LED3 = LED_BLUE

LED4 = LED_BLUE

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USB Pins

USBTX = PTA2

USBRX = PTA1

Arduino Headers

D0 = PTA1

D1 = PTA2

D2 = PTD4

D3 = PTA12

D4 = PTA4

D5 = PTA5

D6 = PTC8

D7 = PTC9

D8 = PTA13

D9 = PTD5

D10 = PTD0

D11 = PTD2

D12 = PTD3

D13 = PTD1

D14 = PTE0

D15 = PTE1

A0 = PTB0

A1 = PTB1

A2 = PTB2

A3 = PTB3

A4 = PTC2

A5 = PTC1

I2C pins

I2C_SCL = D15

I2C_SDA = D14

TSI electrodes

TSI_ELEC0 = PTB16

TSI_ELEC1 = PTB17

4. 1. 3.Features

- **NXP KL25Z Kinetis KL2x MCU (MKL25Z128VLK4)**
  - High performance ARM® Cortex™-M0+ Core
  - 48MHz, 16KB RAM, 128KB FLASH
  - USB (Host/Device)
  - SPI (2)
  - I2C (2)
  - UART (3)
  - PWM (TPM)
  - ADC (16 bit)
  - DAC (1x 12bit)
  - Touch Sensor
  - GPIO (66)
- **FRDM-KL25Z Onboard Sensors**
  - MMA8451Q - 3-axis accelerometer
  - Capacitive touch sensor
- **Evalution Form factor**
  - 81mm x 53mm
  - 5V USB or 4.5-9V supply
  - Built-in USB drag 'n' drop FLASH programmer
- **mbed HDK & SDK enabled**
  - Drag-n-drop programming
  - USB Serial Port
  - CMSIS-DAP
  - Online development tools
  - Easy to use C/C++ SDK
  - Lots of published libraries and projects
- **Status**
  - Production

4. 1. 4. FRDM-KL25Z Hardware Overview

The features of the FRDM-KL25Z include:

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- MKL25Z128VLK4 in an 80 LQFP package
- Capacitive touch slider
- MMA8451Q accelerometer
- Tri-color (RGB) LED
- Flexible power supply options – USB, coin cell battery, external source
- Battery-ready, power-measurement access points
- Easy access to MCU I/O via Arduino ™ R3 compatible I/O connectors
- Programmable OpenSDA debug interface with multiple applications available including: Mass storage device flash programming interface P&E Debug interface provides run-control debugging and compatibility with IDE tools CMSIS-DAP interface: new ARM standard for embedded debug interface Data logging application Figure 1 shows a block diagram of the FRDM-KL25Z design. The primary components and their placement on the hardware assembly are pointed out in Figure

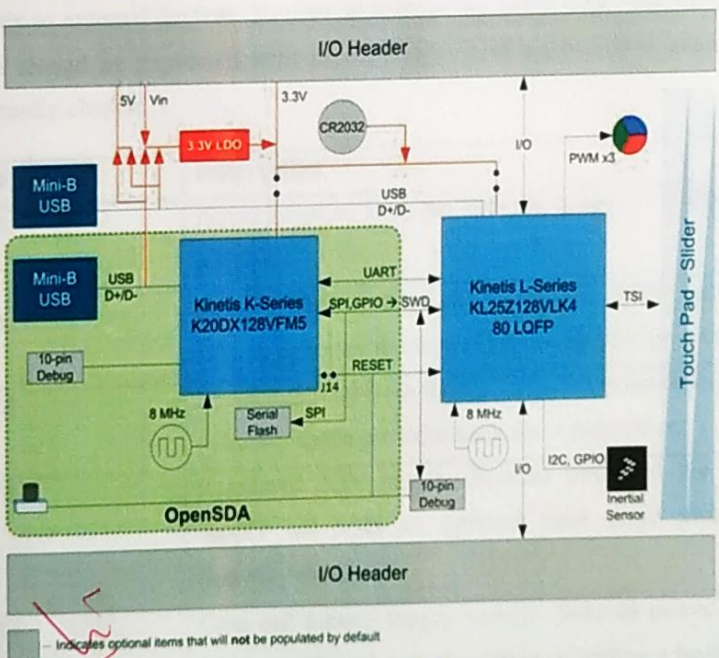

Fig 4.1.4: FRDM-KL25Z Block Diagram

4. 1. 5. FRDM-KL25Z Hardware Description

Power Supply

There are multiple power supply options on the FRDM-KL25Z. It can be powered from either of the USB connectors, the VIN pin on the I/O header, an on-board coin cell battery, or an off-board 1.71-3.6V supply from the 3.3V pin on the I/O header. The USB and VIN supplies are regulated on-board using a 3.3V linear regulator to produce the main power supply. The other two sources are not regulated onboard. Table 2 provides the operational details and requirements for the power supplies.

Note that the OpenSDA circuit is only operational when a USB cable is connected and supplying power to J7. However, protection circuitry is in place to allow multiple sources to be powered at once.

In addition, regulated power can be supplied to J3 pin 10 from an external source through P5-9V_VIN by populating the board with an optional voltage regulator, e.g. a 7805 style regulator in a TO-220 package, thus providing a high current supply to external devices. To prevent voltage sag under high load C23, C24, C25 & C28 should be populated with appropriately sized capacitors to match the regulator actually chosen.

Power supply name	Description
P5-9V_VIN	Power supplied from the VIN pin of the I/O headers (J9 pin 16).
P5V_SDA	Power supplied from the OpenSDA USB connector (J7). A Schottky diode provides back drive protection.
P5V_KL25Z	Power supplied from the KL25Z USB connector (J5). A Schottky diode provides back drive protection.
P3V3_VREG	Regulated 3.3V supply. Sources power to the P3V3 supply rail with an optional back drive protection Schottky diode. 1
P3V3_BATT	Coin cell battery supply voltage. Sources power to the P3V3 supply rail with the option of adding a back drive protection Schottky diode.4

P3V3	Main supply rail for the FRDM-KL25Z assembly. May be sourced from P3V3_VREG, P3V3_BATT, or directly from the I/O headers (J9 pin 8)
P3V3_KL25Z	KL25Z MCU supply. Header J4 provides a convenient means for energy consumption measurements.
P3V3_SDA	OpenSDA circuit supply. Header J3 provides a convenient means for energy consumption measurements.
P5V_USB	Nominal 5V supplied to the I/O headers (J9 pin 10). Sourced from either the P5V_KL25Z or P5V_OSDA supply through a back drive protection Schottky diode.

Table 4. 1. 1: FRDM-KL25Z Power Supplies

4. 1. 6. KL25Z Microcontroller

The target microcontroller of the FRDM-KL25Z is the KL25Z128VLK4, a Kinetis L series device in an 80 LQFP package. The KL25Z MCU features include: • 32-bit ARM Cortex-M0+ core up to 48 MHz operation Single-cycle fast I/O access port • Memories 128 KB flash 16 KB SRAM • System integration Power management and mode controllers Low-leakage wakeup unit Bit manipulation engine for read-modify-write peripheral operations Direct memory access (DMA) controller Computer operating properly (COP) Watchdog timer • Clocks Clock generation module with FLL and PLL for system and CPU clock generation 4 MHz and 32 kHz internal reference clock System oscillator supporting external crystal or resonator Low-power 1kHz RC oscillator for RTC and COP watchdog • Analog peripherals FRDMKL25ZUM User's Manual Page 10 of 20 16-bit SAR ADC w/ DMA support 12-bit DAC w/ DMA support High speed comparator • Communication peripherals Two 8-bit Serial Peripheral Interfaces (SPI) USB dual-role controller with built-in FS/LS transceiver USB voltage regulator Two I2 C modules One low-power UART and two standard UART modules • Timers One 6-channel Timer/PWM module Two 2-channel Timer/PWM modules 2-channel Periodic Interrupt Timer (PIT) Real time clock (RTC) Low-power Timer (LPTMR)

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System tick timer. Human-Machine Interfaces (HMI) General purpose input/output controller Capacitive touch sense input interface hardware module

- **Clock Source**

The Kinetis KL25 microcontrollers feature an on-chip oscillator compatible with three ranges of input crystal or resonator frequencies: 32-40 kHz (low freq. mode), 3-8 MHz (high freq. mode, low range) and 8-32 MHz (high freq. mode, high range). The KL25Z128 on the FRDM-KL25Z is clocked from an 8 MHz crystal.

4. 1. 7. 3-axis Accelerometer

A Freescale MMA8451Q low-power, three-axis accelerometer is interfaced through an I2 C bus and two GPIO signals as shown in Table 4 below. By default, the I2 C address is 0x1D (SA0 pulled high).

MMA8451Q	KL25Z128
SCL	PTE24
SDA	PTE25
INT1	PTA14
INT2	PTA15

Table 4. 1. 2: Accelerometer Signal Connections

4. 1. 8. RGB LED

Three PWM-capable signals are connected to a red, green, blue LED, D3. The signal connections are shown in Table 5 below

RGB LED	KL25Z128
Red Cathode	PTB18
Green Cathode	PTB19
Blue Cathode	PTD1

Table 4. 1. 3: RGB LED Signal Connections

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4. 1. 9. Input/Output Connectors

The KL25Z128VLK4 microcontroller is packaged in an 80-pin LQFP. Some pins are utilized in on-board circuitry, but many are directly connected to one of four I/O headers. The pins on the KL25Z microcontroller are named for their general purpose input/output port pin function. For example, the 1st pin on Port A is referred to as PTA1. The I/O connector pin names are given the same name as the KL25Z pin connected to it, where applicable.

4. 1. 10. Serial Peripheral Interface

Serial peripheral interface is a synchronous serial data protocol used by microcontrollers for communicating with one or more peripheral devices quickly over shoot distances.

It can also be used for communication between two microcontrollers

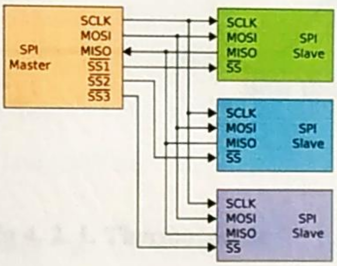

Fig 4. 1. 5. SPI Block Diagram

4.2 TEMPERATURE SENSOR

Temperature is the most often-measured environmental quantity. This might be expected since most physical, electronic, chemical, mechanical, and biologicalsystems are affected by temperature. Certain chemical reactions, biological processes, and even electronic circuits perform best within limited temperature ranges. Temperature is one of the most commonly measured variables and it is therefore not surprising that there are many ways of sensing it. Temperature sensing can be done either through direct contact with the heating source, or remotely, without direct contact with the source using radiated energy instead. There are a wide variety of temperature sensors on the market today, including Thermocouples,

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Resistance Temperature Detectors (RTDs), Thermistors, Infrared, and Semiconductor Sensors.

4. 2. 1. 5 Types of Temperature Sensors

- **Thermocouple**:It is a type of temperature sensor, which is made by joining two dissimilar metals at one end. The joined end is referred to as the hot junction. The other end of these dissimilar metals is referred to as the cold end or cold junction. The cold junction is actually formed at the last point of thermocouple material. If there is a difference in temperature between the hot junction and cold junction, a small voltage is created. This voltage is referred to as an EMF (electro-motive force) and can be measured and in turn used to indicate temperature.

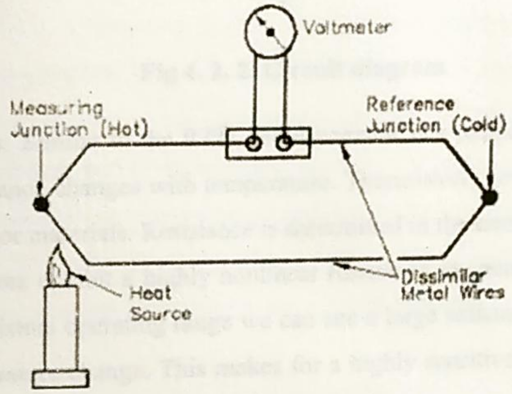

Fig 4. 2. 1. Thermocouple

- The RTD is a temperature sensing device whose resistance changes with temperature. Typically built from platinum, though devices made from nickel or copper are not uncommon, RTDs can take many different shapes like wire wound, thin film. To measure the resistance across an RTD, apply a constant current, measure the resulting voltage, and determine the RTD resistance. RTDs exhibit fairly linear resistance to temperature curves over their operating regions, and any nonlinearity are highly predictable and repeatable. The PT100 RTD evaluation board uses surface mount RTD to measure temperature. An external 2, 3 or 4-wire PT100 can also be associated with measure temperature in remote areas. The RTDs are biased using a constant current source. So as to reduce self-heat due to power dissipation, the current magnitude is moderately low. The circuit shown in figure is the constant current source uses a reference voltage, one amplifier, and a PNP transistor.

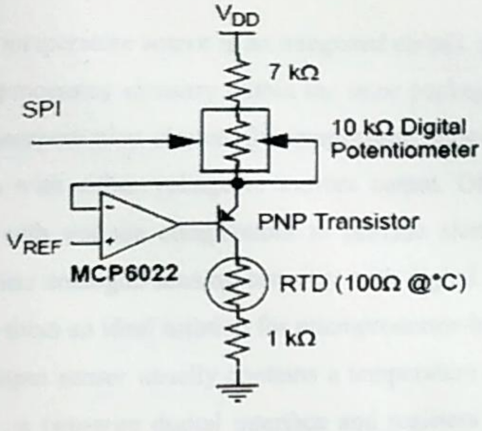

Fig 4. 2. 2. Circuit diagram

- **Thermistors**: Similar to the RTD, the thermistor is a temperature sensing device whose resistance changes with temperature. Thermistors, however, are made from semiconductor materials. Resistance is determined in the same manner as the RTD, but thermistors exhibit a highly nonlinear resistance vs. temperature curve. Thus, in the thermistors operating range we can see a large resistance change for a very small temperature change. This makes for a highly sensitive device, ideal for set-point applications.
- **Semiconductor sensors**: They are classified into different types like Voltage output, Current output, Digital output, Resistance output silicon and Diode temperature sensors. Modern semiconductor temperature sensors offer high accuracy and high linearity over an operating range of about 55°C to +150°C. Internal amplifiers can scale the output to convenient values, such as 10mV/°C. They are also useful in cold-junction compensation circuits for wide temperature range thermocouples. A brief details about this type of temperature sensor are given below.
  - **Sensor ICs**

There are a wide variety of temperature sensor ICs that are available to simplify the broadest possible range of temperature monitoring challenges. These silicon temperature sensors differ significantly from the above mentioned types in a couple of important ways. The first is operating temperature range. A temperature sensor IC can operate over the nominal IC temperature range of -55°C to +150°C. The second major difference is functionality.

A silicon temperature sensor is an integrated circuit, and can therefore include extensive signal processing circuitry within the same package as the sensor. There is no need to add compensation circuits for temperature sensor Ics. Some of these are analogue circuits with either voltage or current output. Others combine analogue-sensing circuits with voltage comparators to provide alert functions. Some other sensor ICs combine analogue-sensing circuitry with digital input/output and control registers, making them an ideal solution for microprocessor-based systems.

Digital output sensor usually contains a temperature sensor, analog-to-digital converter (ADC), a two-wire digital interface and registers for controlling the IC's operation. Temperature is continuously measured and can be read at any time. If desired, the host processor can instruct the sensor to monitor temperature and take an output pin high (or low) if temperature exceeds a programmed limit. Lower threshold temperature can also be programmed and the host can be notified when temperature has dropped below this threshold. Thus, digital output sensor can be used for reliable temperature monitoring in microprocessor-based systems.

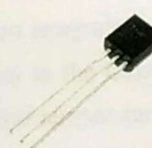

Fig 4. 2. 3 Temperature sensor

Above temperature sensor has three terminals and required Maximum of 5.5 V supply. This type of sensor consists of a material that performs the operation according to temperature to vary the resistance. This change of resistance is sensed by circuit and it calculates temperature. When the voltage increases then the temperature also rises. We can see this operation by using a diode.

Temperature sensors directly connected to microprocessor input and thus capable of direct and reliable communication with microprocessors. The sensor unit can communicate effectively with low-cost processors without the need of A/D converters.

An example for a temperature sensor is LM35. The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius temperature. The LM35 is operates at -55° to +120°C.

The basic centigrade temperature sensor (+2°C to +150°C) is shown in figure below.

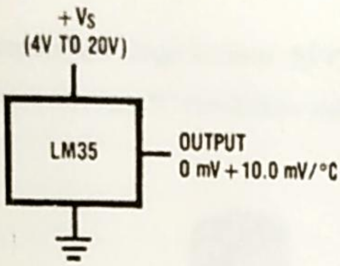

Fig 4. 2. 4. Basic temperature centigrade sensor

4. 2. 2.LM35 Temperature Sensor

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of ±1⁄4°C at room temperature and ±3⁄4°C over a full −55 to +150°C temperature range. Low cost is assured by trimming and calibration at the wafer level. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a −55° to +150°C temperature range, while the LM35C is rated for a −40° to +110°C range (−10° with improved accuracy). The LM35 series is available packaged in hermetic TO-46 transistor packages, while the LM35C, LM35CA, and LM35D are also available in the plastic TO-92 transistor package. The LM35D is also available in an 8-lead surface mount small outline package and a plastic TO-220 package.

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in °C). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With LM35, temperature can be measured more accurately than with a thermistor. It also possess low self heating and does not cause more than 0.1 °C temperature rise in still air.

The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every °C rise/fall in ambient temperature, *i.e.,* its scale factor is 0.01V/ °C.

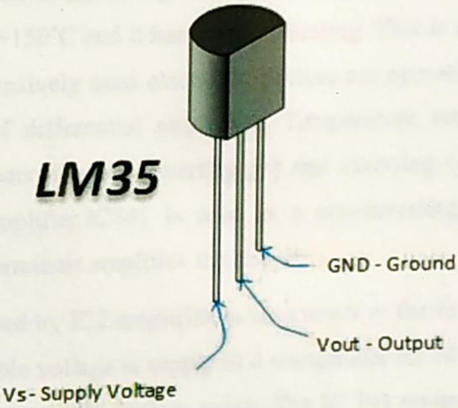

Fig 4. 2. 5. LM35 Temperature Sensor

The LM35 does not need any exterior calibration and maintains an exactness of +/-0.4°C at room temperature and +/-0.8°C over a range of 0°C to +100°C.One more significant characteristic of this sensor is that it draws just 60 microamps from its supply and acquires a low self-heating capacity. The LM35 temperature sensor available in many different packages like T0-46 metal can transistor-like package, TO-92 plastic transistor-like package, 8-lead surface mount SO-8 small outline package.

Pin No	Function	Name
1	Supply voltage; 5V (+35V to -2V)	Vcc
2	Output voltage (+6V to -1V)	Output
3	Ground (0V)	Ground

Table 4. 2. 1. Pin description

4. 2. 3. LM35 Temperature Sensor Circuit

The LM35 temperature sensor is used to detect precise centigrade temperature. The output of this sensor changes describes the linearity. The o/p voltage of this IC sensor is linearly comparative to the Celsius temperature. The operating voltage range of this LM35 ranges from-55° to +150°C and it has low-self heating. This is operated under 4 to 30 volts. The most extensively used electronic devices are operational amplifiers, which are certain kind of differential amplifiers. Temperature sensor circuit has terminals such as two inputs like non-inverting (+) and inverting (-) and only one output pin. Operational amplifier IC741 is used as a non-inverting amplifier. The variation between the i/p terminals amplifies the circuit.

The amount produced by IC2 amplifies in an amount to the temperature by 10 mV per degree. This unstable voltage is supply to a comparator IC 741. OP Amplifier is the most generally used electronic devices today. The IC 741 op-amp is one sort of differential amplifier. We have used IC741 as a non-inverting amplifier which means pin-3 is the input and the output is not inverted. This LM35 temperature sensor circuit amplifies the difference between its input terminals. The advantages of temperature sensor include It has no effect on the medium, more accurate, It has an easily conditioned output and It responds instantly.

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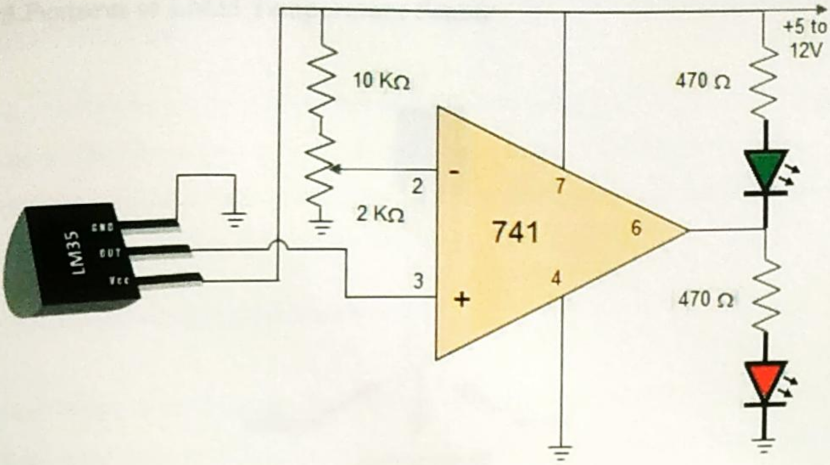

Fig 4.2. 6. LM35 Circuit Diagram

4. 2. 4. LM35 Interfacing Circuit

As such no extra components required to interface LM35 to ADC as the output of LM35 is linear with 10mv/degree scale. It can be directly interfaced to any 10 or 12 bit ADC. But if you are usingan 8-bit ADC like ADC0808 or ADC0804 an amplifier section will be needed if you require to measure 1°C change.

LM35 can also be directly connected to Arduino. The output of LM35 temperature can also be given to comparator circuit and can be used for over temperature indication or by using a simple relay can be used as a temperature controller.

How Does LM35 Sensor Work?

Main advantage of LM35 is that it is linear i.e. 10mv/°C which means for every degree rise in temperature the output of LM35 will rise by 10mv. So if the output of LM35 is 220mv/0.22V the temperature will be 22°C. So if room temperature is 32°C then the output of LM35 will be 320mv i.e. 0.32V.

4. 2. 5.Features of LM35 Temperature Sensor

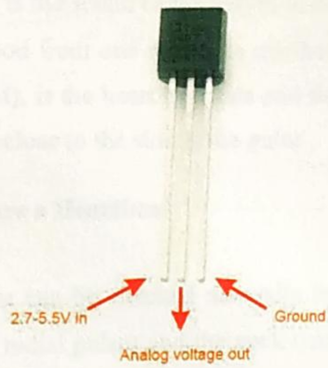

Fig 4. 2. 7. Pin out

- Calibrated directly in Degree Celsius (Centigrade)
- Linear at 10.0 mV/°C scale factor
- 0.5°C accuracy guarantee-able (at a25°C)
- Rated for full -55°C to a 150°C range
- Suitable for remote applications
- Low cost due to wafer-level trimming
- Operates from 4 to 30 volts
- Less than 60 mA current drain
- Low self-heating, 0.08°C instill air
- Non-linearity only 0.25°C typical
- Low impedance output, 0.1Ωfor 1 mA load

4. 2. 6. Applications of LM35 Temperature Sensor

The applications of LM35 temperature sensor include the following

- Measuring temperature of a particular environment and HVAC applications
- Providing thermal shut down for a component circuit
- Checking Battery Temperature

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4. 3. PULSE SENSOR

A person's heartbeat is the sound of the valves in his/her's heart contracting or expanding as they force blood from one region to another. The number of times the heart beats per minute (BPM), is the heart beat rate and the beat of the heart that can be felt in any artery that lies close to the skin is the pulse.

4. 3. 1.Two Ways to Measure a Heartbeat

- **Manual Way**: Heart beat can be checked manually by checking one's pulses at two locations- wrist (the radial pulse) and the neck (carotid pulse). The procedure is to place the two fingers (index and middle finger) on the wrist (or neck below the windpipe) and count the number of pulses for 30 seconds and then multiplying that number by 2 to get the heart beat rate. However pressure should be applied minimum and also fingers should be moved up and down till the pulse is felt.
- **Using a sensor**: Heart Beat can be measured based on optical power variation as light is scattered or absorbed during its path through the blood as the heart beat changes.

4. 3. 2.Principle of Heartbeat Sensor

The heartbeat sensor is based on the principle of photo phlethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (a vascular region). In case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important. The flow of blood volume is decided by the rate of heart pulses and since light is absorbed by blood, the signal pulses are equivalent to the heart beat pulses.
There are two types of photophlethysmography:

Transmission: Light emitted from the light emitting device is transmitted through any vascular region of the body like earlobe and received by the detector.

Reflection: Light emitted from the light emitting device is reflected by the regions.

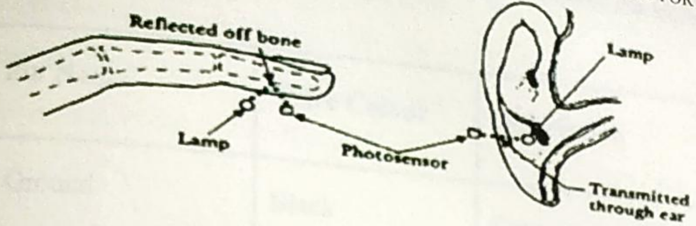

Fig 4. 3. 1. Working Principle

4. 3. 3. Pulse sensor pinout

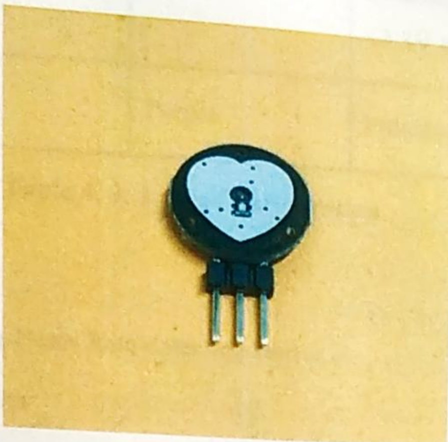

Fig 4. 3. 2. Pulse Sensor.

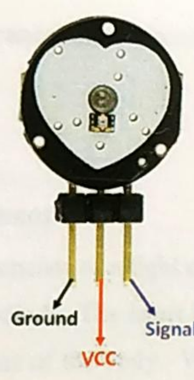

Fig 4. 3. 3 Pulse Sensor Pinout

4. 3. 4. Pin Configuration

Pin Number	Pin Name	Wire Colour	Description
1	Ground	Black	Connected to the ground of the system
2	Vcc	Red	Connect to +5V or +3.3V supply voltage
3	Signal	Purple	Pulsating output signal.

Table 4. 3. 1. Pin Configuration

4. 3. 5.Features

- Biometric Pulse Rate or Heart Rate detecting sensor
- Plug and Play type sensor
- Operating Voltage: +5V or +3.3V
- Current Consumption: 4mA
- Inbuilt Amplification and Noise cancellation circuit.
- Diameter: 0.625"
- Thickness: 0.125" Thick

4. 3. 6.Working of a Pulse Sensor

The basic heartbeat sensor consists of a light emitting diode and a detector like a light detecting resistor or a photodiode. The heart beat pulses causes a variation in the flow of blood to different regions of the body. When a tissue is illuminated with the light source, i.e. light emitted by the led, it either reflects (a finger tissue) or transmits the light (earlobe). Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector. The amount of light absorbed depends on the blood volume in that tissue. The detector output is in form of electrical signal and is proportional to the heart beat rate.

This signal is actually a DC signal relating to the tissues and the blood volume and the AC component synchronous with the heart beat and caused by pulsatile changes in arterial blood volume is superimposed on the DC signal. Thus the major requirement is to isolate that AC component as it is of prime importance.

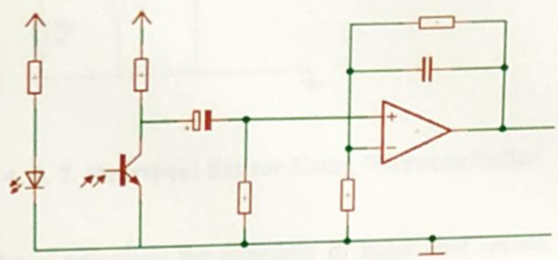

Fig 4. 3. 4. Circuit Diagram.

To achieve the task of getting the AC signal, the output from the detector is first filtered using a 2 stage HP-LP circuit and is then converted to digital pulses using a comparator circuit or using simple ADC. The digital pulses are given to a microcontroller for calculating the heat beat rate, given by the formula-

BPM(Beats per minute) = 60*f

Where f is the pulse frequency

4. 3. 7Practical Heartbeat Sensor

Practical heartbeat Sensor examples are **Heart Rate Sensor (Product No PC-3147).** It consists of an infrared led and an ldr embedded onto a clip like structure. The clip is attached to the organ (earlobe or the finger) with the detector part on the flesh.

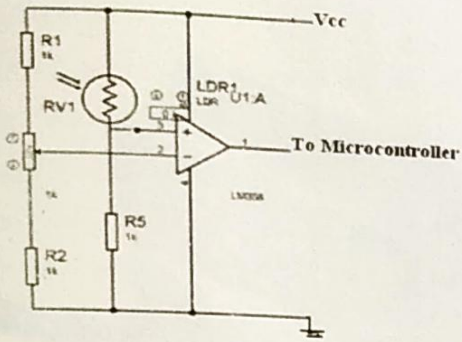

Fig 4. 3. 7. Heartbeat Sensor Using Microcontroller

As described above regarding the principle of heart beat sensor, when the finger tissue or the earlobe tissue is illuminated using a light source, the light is transmitted after getting modulated i.e. a part getting absorbed by the blood and the rest being transmitted. This modulated light is received by the light detector.

Here a Light Dependant Resistor (LDR) is used as a light detector. It works on the principle that when light falls on the resistor, its resistance changes. As the light intensity increases, the resistance decreases. Thus the voltage drop across the resistor decreases.

Here a comparator is used which compares the output voltage from the LDR to that of the threshold voltage. The threshold voltage is the voltage drop across the LDR when the light with fixed intensity, from the light source falls directly on it. The inverting terminal of the comparator LM358 is connected to the potential divider arrangement which is set to the threshold voltage and the non inverting terminal is connected to the LDR. When a human tissue is illuminated using the light source, the intensity of the light reduces. As this reduced light intensity falls on the LDR, the resistance increases and as a result the voltage drop increases. When the voltage drop across the LDR or the non inverting input exceeds that of the inverting input, a logic high signal is developed at the output of the comparator and in case voltage drop being lesser a logic low output is developed. Thus the output is a series of pulses. These pulses can be fed to the Microcontroller which accordingly processes the information to get the heart beat rate and this is displayed on the Display interfaced to the Microcontroller.

Fig 4. 3. 5. Practical Heartbeat Sensor.

Another example is **TCRT1000**, having 4 pins-

Pin1: To give supply voltage to the LED

Pin2 and 3 are grounded. Pin 4 is the output. Pin 1 is also the enable pin and pulling it high turns the LED on and the sensor starts working. It is embedded on a wearable device which can be worn on the wrist and the output can be sent wirelessly(through Bluetooth) to the computer for processing.

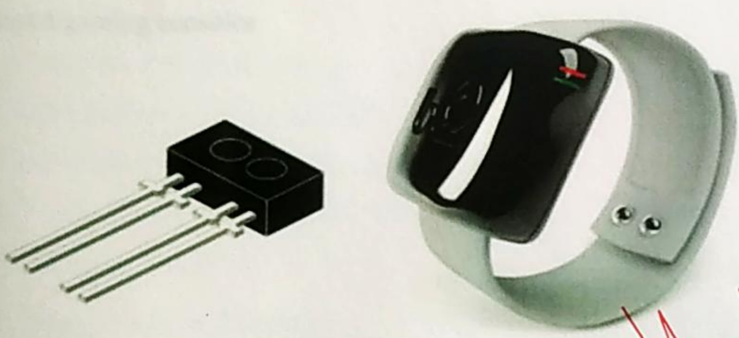

Fig 4. 3. 6. TCRT1000

4. 3. 8. Application Developing your own Heartbeat Sensor System

A basic Heartbeat Sensor system can also be built using basic components like a ldr, comparator IC LM358 and a Microcontroller as given below.

4. 3. 9.How to use Pulse sensor

Using the pulse sensor is straight forward, but positioning it in the right way matters. Since all the electronics on the sensor are directly exposed it is also recommended to cover the sensor with hot glue, vinyl tape or other non conductive materials. Also it is not recommended to handle these sensors with wet hands. The flat side of the sensor should be placed on top of the vein and a slight presser should be applied on top of it, normally clips or Velcro tapes are used to attain this pressure.

To use the sensor simply power it using the Vcc and ground pins, the sensor can operate both at +5V or 3.3V system. Once powered connect the Signal pin to the ADC pin of the microcontroller to monitor the change in output voltage. If you are using a development board like Arduino then you can use the readily available code which will make things a lot easier. Refer the datasheet at the bottom of the page for more information on how to interface the sensor with Arduino and how to mount it. The schematics of the sensor, code and processing sketch can be obtained from the Sprakfun product page.

4. 3. 10.Applications

- Sleep Tracking
- Anxiety monitoring
- Remote patient monitoring/alarm system
- Health bands
- Advanced gaming consoles

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4.4. GSM Sim 900

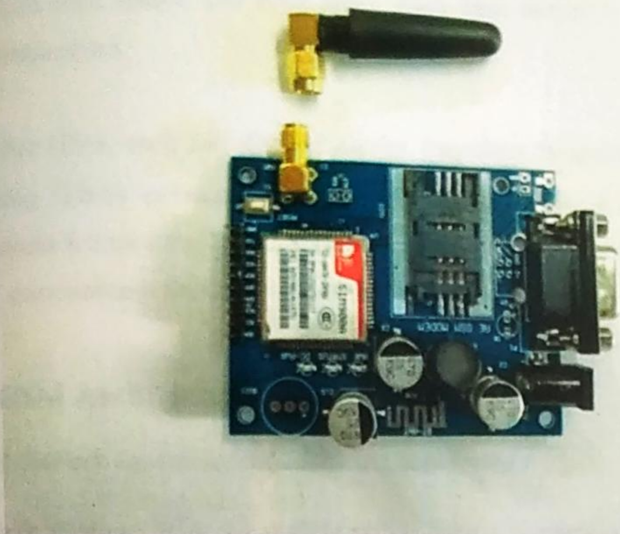

Fig4. 4. 1 GSM Module-Sim900

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.

4.4.1Working of GSM Module

Global System for Mobile Communications (GSM) uses a combination of Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA).

Frequency Division Multiple Access: It involves dividing a frequency band into multiple bands such that each sub-divided frequency band is allotted to a single subscriber. FDMA in GSM divides the 25MHz bandwidth into 124 carrier frequencies each spaced 200 KHz apart. Each base station is allotted one or more carrier frequencies.

For GSM, each sub divided carrier frequency is divided into different time slots using TDMA technique. Each TDMA frame lasts for 4.164 milliseconds (ms) and contains 8 time slots. Each time slot or a physical channel within this frame lasts for 577 microseconds and data is transmitted in the time slot in form of bursts.

4.4.2.GSM Architecture

A GSM network consists of the following components:

A Mobile Station: It is the mobile phone which consists of the transceiver, the display and the processor and is controlled by a SIM card operating over thenetwork.

Base Station Subsystem: It acts as an interface between the mobile station and the network subsystem. It consists of the Base Transceiver Station which contains the radio transceivers and handles the protocols for communication with mobiles. It also consists of the Base Station Controller which controls the Base Transceiver station and acts as a interface between the mobile station and mobile switchingcentre.

Network Subsystem: It provides the basic network connection to the mobile stations. The basic part of the Network Subsystem is the Mobile Service Switching Centre which provides access to different networks like ISDN, PSTN etc. It also consists of the Home Location Register and the Visitor Location Register which provides the call routing and roaming capabilities of GSM. It also contains the Equipment Identity Register which maintains an account of all the mobile equipments wherein each mobile is identified by its own IMEI number. IMEI stands for International Mobile EquipmentIdentity.

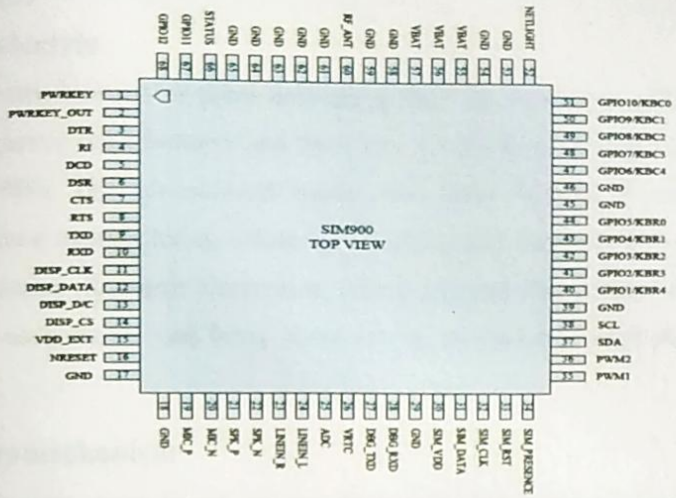

Fig 4.4.2 Pin Out Of SIM900

4. 4. 3. Specifications

PCB size	71.4mm X 66.0mm X1.6mm
Indicators	PWR, status LED, net LED
Power supply	5V
Communication Protocol	UART
RoHS	Yes
Frequency	850MHz, 900MHz, 1800MHz a 1900MHz

Table 4. 4. 1 Specifications Of GSM Module

4. 5. BUZZER

A buzzer or beeper is an audio signalling device,□ which may be mechanical, electromechanical or piezoelectric (*piezo* for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

4. 5. 1. TYPES

- **Piezoelectric**

Piezoelectric buzzers, or piezo buzzers, as they are sometimes called, were invented by Japanese manufacturers and fitted into a wide array of products during the 1970s to 1980s. This advancement mainly came about because of cooperative efforts by Japanese manufacturing companies. In 1951, they established the Barium Titanate Application Research Committee, which allowed the companies to be "competitively cooperative" and bring about several piezoelectric innovations and inventions.

- **Electromechanical**

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.

Fig 4. 5. 1 Buzzer

CHAPTER 5 BATTERY BACKUP

In most of our electronic products or projects we need a power supply for converting mains AC voltage to a regulated DC voltage. For making a power supply designing of each and every component is essential. Here I'm going to discuss the designing of regulated 5V Power Supply.

Let's start with very basic things the choosing of components

5.1 Component List

1. Step down transformer
2. Voltage regulator
3. Capacitors
4. Diodes

Let's get into detail of rating of the devices :

5.1.1 Voltage regulator

As we require a 5V we need LM7805 Voltage Regulator IC.

7805 IC Rating :

- Input voltage range 7V- 35V
- Current rating $I_c = 1A$
- Output voltage range $V_{Max=5.2V}$, $V_{Min=4.8V}$

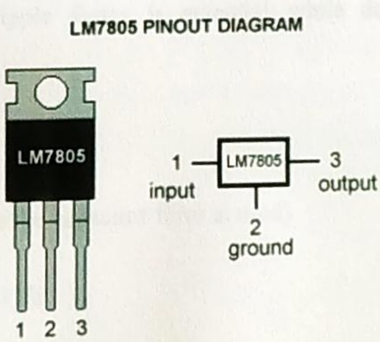

Fig 5. 1 LM7805 Pinout Diagram

5.1.2 Transformer

Selecting a suitable transformer is of great importance. The current rating and the secondary voltage of the transformer is a crucial factor.

- The current rating of the transformer depends upon the current required for the load to be driven.
- The input voltage to the 7805 IC should be at least 2V greater than the required 2V output, therefore it requires an input voltage at least close to 7V.
- So I chose a 6-0-6 transformer with current rating 500mA (Since $6*\sqrt{2} = 8.4V$).

NOTE : Any transformer which supplies secondary peak voltage up to 35V can be used but as the voltage increases size of the transformer and power dissipation across regulator increases.

5.1.3 Rectifying circuit

The best is using a full wave rectifier

- Its advantage is DC saturation is less as in both cycle diodes conduct.
- Higher Transformer Utilization Factor (TUF).
- 1N4007 diodes are used as its is capable of withstanding a higher reverse voltage of 1000v whereas 1N4001 is 50V

5.1.4 Capacitors

Knowledge of Ripple factor is essential while designing the values of capacitors

It is given by

- $Y=1/(4\sqrt{3}fRC)$ (as the capacitor filter is used)

1. f= frequency of AC (50 Hz)

2. R=resistance calculated

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$R = V/I_c$

V= secondary voltage of transformer

- $V = 6\sqrt{2} = 8.4$
- $R = 8.45/500mA = 16.9\Omega$ standard 18Ω chosen

3. C= filtering capacitance

We have to determine this capacitance for filtering

$Y = V_{ac\text{-}rms}/V_{dc}$

$V_{ac\text{-}rms} = V_r/2\sqrt{3}$

$V_{dc} = V_{Max} - (V_r/2)$

$V_r = V_{Max} - V_{Min}$

- $V_r = 5.2 - 4.8 = 0.4V$
- $V_{ac\text{-}rms} = .3464V$
- $V_{dc} = 5V$
- $Y = 0.06928$

Hence the capacitor value is found out by substituting the ripple factor in $Y = 1/(4\sqrt{3}fRC)$

Thus, C= 2314 µF and standard 2200µF is chosen

Datasheet of 7805 prescribes to use a 0.01µF capacitor at the output side to avoid transient changes in the voltages due to changes in load and a 0.33µF at the input side of regulator to avoid ripples if the filtering is far away from regulator.

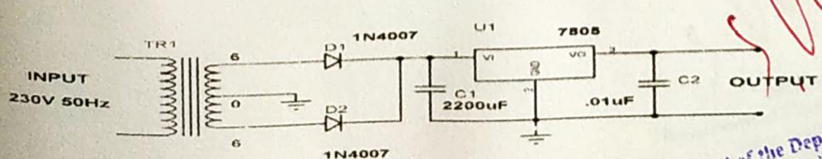

Fig 5.2.Circuit Diagram

CHAPTER 6 WORKING PROCESS

The flow chart shown in explains the working of the prototype. The system is powered on initially. The control unit reads the status of panic switch. If the panic switch is on then the control unit reads the data from the different sensors like temperature sensor (t), and heart beat sensor (Hb). There are two cases in which the working of the smart handbag is explained. In case 1, if the heart beat sensor holds a value between 60 and 105 it indicates that the girl is in danger and hence the messege is sent by SMS to three known contacts and police SHE teams. In case 2, if the temperature sensor holds a value greater than 102 then it indicates that the emotional status of the girl is changed either due to panic or stress that happens to her by someone. Hence considering this condition as harmful the buzzer is on along with messege is sent by SMS.

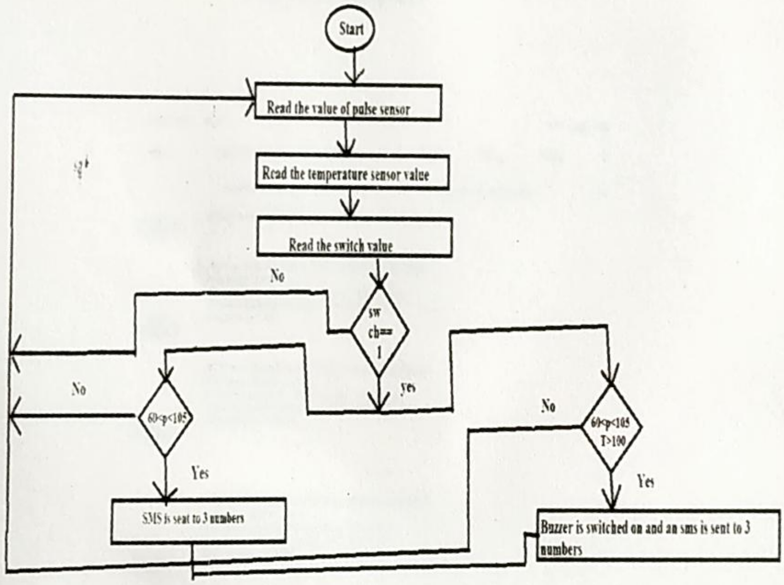

Fig 6. 1. Flow chart

OUTPUT:

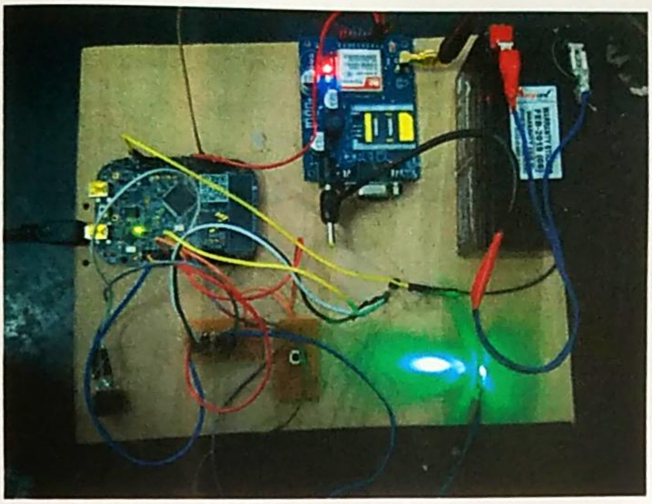

Fig 6. 2. output

Fig 6. 3. sms image

CHAPTER 7 CONCLUSION

A smart wearable device in the form of lady's hand bag addressing 4 levels of safety was proposed. The proposed device was robust, capable of offering a first level of defence, indicating the location of the individual in SMS form in accordance with the emotional status of the individual. Stay smart, stay safe is thus established. The Smart handbag weight about 1.5 Kg and designed for a hand bag of 16" X 10". The handbag is trendy and cost about few thousands for implementation. Hence a low cost smart wearable handbag for women safety is designed.

7. 1. References

[1] g c harikiran, karthikmenasinkai, "smart security solution for women based on iot", international conference on electrical, electronics, and optimization techniques (iceeot),pp 1-10 2016.

[2] sanjidasharmin, shajedakhanam, "an android based security alert system for female",ieee (iwci) 2016.

[3] a. helen, v.k.gkalaiselvi, "a smart watch for women security based on iot concept watch me", (ieee) 2017.

[4] shaikmazharhussain, ajayvikramsingh, "prototype of an intelligent system based on rfid and gps technologies for women safety", ieee (icrito) 2016.

[5] dhanshreejoshi,chaitailkulkarni, "protection circuit for girls",(ijett) 2016.

[6] r. abhipriya, s.aysha, "a radio identification based continuous spectrum sensing protocol for safety of women in cognitive radio networks", ieee (conference) 2017.

[7] premkumar.p1, cibichakkaravarthi, "one touch alarm system for women's safety using gsm", (ijstm) 2015.

[8] ms.sayalivarade.ms.tejshreeitnare, "advanced women security based on iot", (ijritcc) 2017.

[9] a.h.ansari, balsarafpratiksha .p,"women security system using gsm&gps",(irset) 2017.

[10] m.pradeep, r.abinaya, "women security system using gsm&gps",(irset) 2017.

[11] tanusridey, upamabhattacharjee, "advanced women security app: we 'safe", (ieta) 2017.

[12] n. saranya m.c.a.1, mr. k. karthik, "women safety application using android mobile",(ijesc) 2015.

[13] siddamkavithal.prathima, "an arduino-based women safety network model", (ijitr) 2016.

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[14] d. g. monisha, m. monisha1, g. pavithra, "women safety device and application-femme", (ijst) 2016.

[15] a. usha kiran reddy, p. sushmitha, "self defense system for women safety with location tracking and sms alerting",(ijit) 2017.

[16] ms.deepali m. bhavale, "iot based unified approach for women and children security using wireless and gps", (ijarcet) 2016.

[17] mr.vaibhav, ashishmanusmare, "a study based on women security system", (jsetr) 2017.

[18] mr.indrajeet a. mane1, miss. jyotsna, "stay safe application", (irjet) 2016.

[19] abhijitparadkar, deepaksharma, "all in one intelligent safety system for women security", (ijaca) 2015.

[20] r.a.mahajan, sayali a. lavhate, "a survey on women's security system using gps and gsm", (ircce) 2017.

[21] j. preethi, a. aswini, "effective safety system with monitoring an alert features for women's security", (ijraset) 2017.

[22] dr. sridharmandapati, sravyapamidi, "a mobile based women safety application (i safe apps)", (iosr-jce) 2015.

[23] bhavya.nagesh, "women self-defense watch",(ijeecs) 2016.

[24] anilkumarpatil, danishahmad, "smart cab for women safety", (ijetcs) 2016.

[25] pulicherlagowtami, sridharsunkari, "advanced system for vehicle and women safety",(ijraet) 2016.

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