

WOMEN SAFETY BELT

Manish Singh¹, Anubhav Mishra², Shashwat Dixit³, Anand Singh⁴

Ravi Srivastava⁵

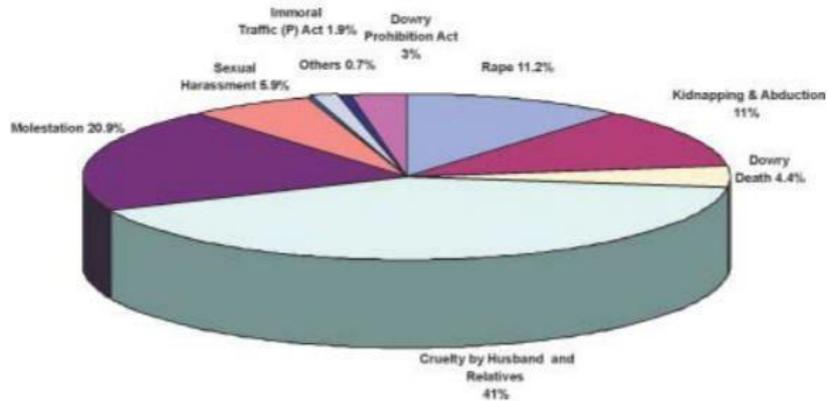
The Department of Electronics & Communication, United College of Engineering & Research,
Prayagraj, Uttar Pradesh, India

Abstract. Women safety has been a big concern and it has been the most important duty of every person. There is no chance of the welfare of the world unless the condition of the women is improved. Since the ancient time, women are given most respected place in the society but every day and every minute some women of all walks of life (women, girls and babies) are getting harassed, molested, assaulted and violated at various places all over the world. It is estimated that 35% of the women have experienced physical and sexual violence at some point in their lives. A small measure of improvement proposed in this paper, adds to the better performance of these devices and lead to better women safety.

1. INTRODUCTION

This paper involves few precautionary devices and applications in order to prevent or avoid the problems faced by women. It is not only about prevention, but it also helps the women deal with the problems faced in the past and achieve fair justification and morality in the society. The safety and security of a woman can never be at rest, no matter what new device is on the market or no matter how nice a new application is made, there always can be something added to it. There cannot be a cop always guarding a woman, but there can be secret safety measures with them which can be easily used at the time of threat and let the nearby people know that there is something bad happening and their support is need. By keeping all these things in mind many safety devices have been made and few of them are discussed in this paper.

India, a nation of 130+ billion population faces many problems regarding safety of women. Even today in many places, the safety of women is not assured at any point of time. The crimes like Rape, Molestation, Physical assault etc., against women are increasing day by day. Crime against Women despite the existence of a number of legislations for providing protection to women, crime against women has increased. A total of 327,234 crimes against women were reported in 2016 compared to 296,312 during 2015, recording an increase of around 11%.

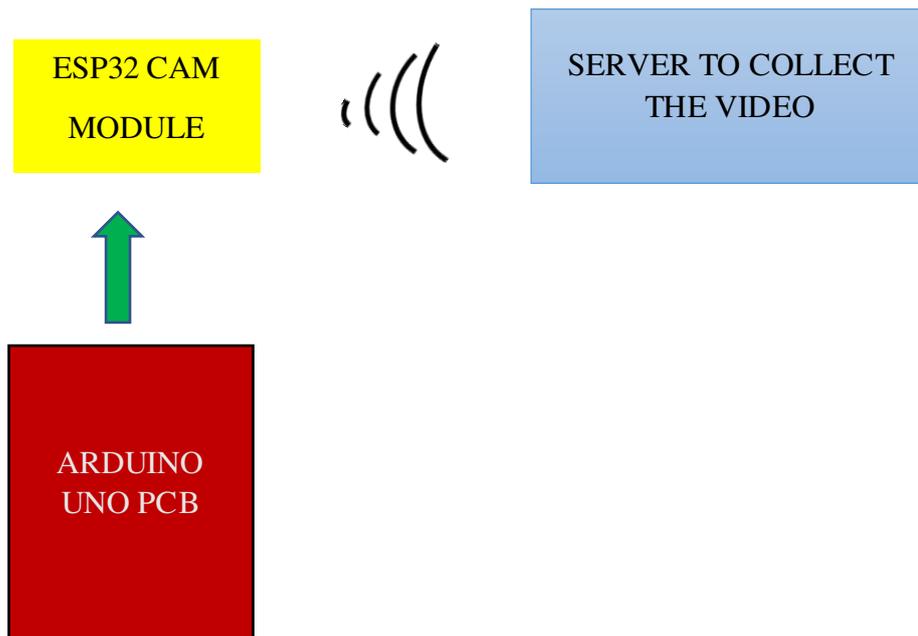


At present we have many security systems like GPS Tracker to track women in danger. But our system not only tracks the women in danger but also alerts the guardian or nearby police station (if required) by an alert message and the location of women is tracked every 2 minutes and is sent to the above said recipients. Our developed system is 100% secure and will try to overcome majority of the above said crimes, thereby ensuring the safety of women.

2. Aim of the Project:

The women safety system comprises of an Arduino Uno Microcontroller and a ESP32 cam module. The whole system can be powered from any 12V DC power supply. A switch is also connected to the microcontroller-based women security system. The developed system alerts the guardian by the live video of the place when she is in danger. The location of the victim is sent to the parents.

3. Block diagram:



4. Working:

- The whole system will work on 12V DC supply.
- Arduino UNO will be used as central processing unit.
- Panic switch can be used at the time when women is in danger.
- When panic switch is pressed then ESP32 cam will send the live video of the place where women is there to a server.
- Server will work as a control room and will provide help to the women.

5. Technical specifications:

- Microcontroller: Microchip ATmega328P
- Operating Voltage: 5 Volts
- Input Voltage: 7 to 20 Volts
- Digital I/O Pins: 14 (of which 6 can provide PWM output)
- UART: 1
- I2C: 1
- SPPI: 1
- Analog Input Pins: 6
- DC Current per I/O Pin: 20 mA
- DC Current for 3.3V Pin: 50 mA
- Flash Memory: 32 KB of which 0.5 KB used by bootloader
- SRAM: 2 KB
- EEPROM: 1 KB
- Clock Speed: 16 MHz
- Length: 68.6 mm
- Width: 53.4 mm
- Weight: 25 g

6. Linear Power Supplies

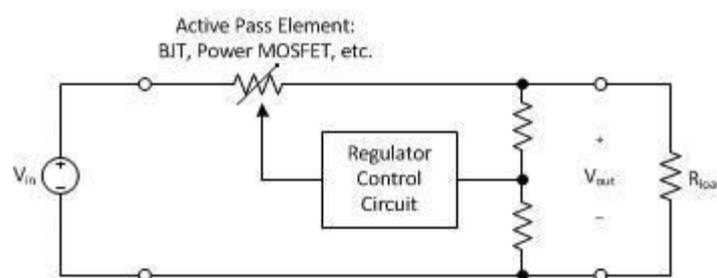
In the last instalments of the Power Supply Tutorial, we found that the most basic power supply was of a simple unregulated design. We also found that for all but the least demanding applications, the

unregulated design is not able to maintain the output voltage close enough to the prescribed set point as the line voltage and load current changes. Thus, regulation methods have been developed to maintain the output voltage or current at a constant set point. The first type of regulated design was the linear regulator power supply.

The term “linear power supply” is typically thought of as a type of AC/DC system, providing a regulated output. The linear regulator is actually the part of the linear regulator power supply that performs the regulation.

7. Linear Regulator Theory

Linear regulators employ a pass element serving as a variable resistor which forms a voltage divider with the load.



The pass element functioning as a variable resistor can be semiconductor devices such as a bipolar junction transistor (BJT), power metal oxide semiconductor field effect transistor (MOSFET), insulated gate bipolar transistor (IGBT), or an electron tube such as a triode, tetrad, or pentode. Electron tubes would be used in highly specialized applications where there are no semiconductor devices suitable.

8. Power Output Capability

A linear regulator can be designed to regulate power outputs as small as a watt or less. Linear regulators used alone in this fashion are performing DC/DC conversion. Linear power supplies can be designed to provide AC/DC conversion up to tens of kilowatts or even more. In this case the linear regulator is coupled with additional circuitry providing rectification and filtering.

9. Efficiency

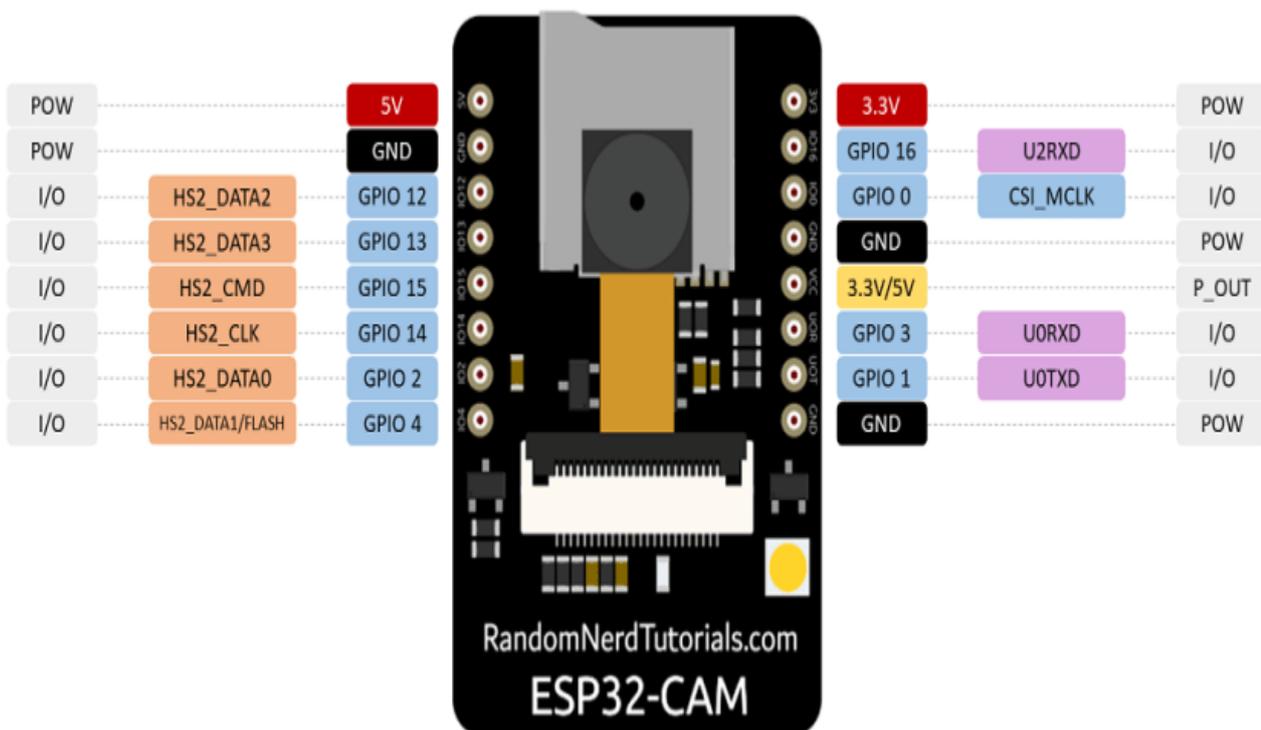
On a first order basis, the efficiency of a linear regulator is very simple to determine. The efficiency is simply the output voltage divided by the input voltage. If determined effort is made to keep the difference between the pass element input voltage and the output voltage as small as possible, the efficiency can be very good. This type of linear regulator is called a “low-dropout regulator”. For other cases where the operating point is not conducive to maintaining a low dropout, the linear regulator efficiency can suffer greatly.

As an example, if the input voltage in the figure above is 13.6 volts, and the regulator maintains an output voltage of 12 volts, for a voltage drop of 1.6 volts, the efficiency of the linear regulator is $12V/13.6V = 88.2\%$. The efficiency in this case is very good by most standards.

As another example, if the input voltage is 5 volts and the output voltage is 3.3 volts, for a voltage drop of 1.7 volts, the efficiency is $3.3V/5V = 66\%$. The efficiency in this case is not very good by most standards.

As a last example, if the input voltage is 5 volts and the output voltage is 1.8 volts, for a pass element voltage drop of 3.2 volts, the efficiency is $1.8V/5V = 36\%$. This efficiency in this case is very poor.

10. ESP32 CAM:



The ESP32 CAM WIFI Module Bluetooth with OV2640 Camera Module 2MP For Face Recognition has a very competitive small-size camera module that can operate independently as a minimum system with a footprint of only 40 x 27 mm; a deep sleep current of up to 6mA and is widely used in various IoT applications.

It is suitable for home smart devices, industrial wireless control, wireless monitoring, and other IoT applications.

This module adopts a DIP package and can be directly inserted into the backplane to realize rapid production of products, providing customers with high-reliability connection mode, which is convenient for application in various IoT hardware terminals.

ESP integrates WIFI, traditional Bluetooth, and BLE Beacon, with 2 high-performance 32-bit LX6 CPUs, 7-stage pipeline architecture. It has the main frequency adjustment range of 80MHz to 240MHz, on-chip sensor, Hall sensor, temperature sensor, etc.

Features:

1. The smallest 802.11b/g/n Wi-Fi BT SoC module.
2. Low power 32-bit CPU, can also serve the application processor.
3. Up to 160MHz clock speed, summary computing power up to 600 DMIPS.
4. Built-in 520 KB SRAM, external 4MPSRAM.
5. Supports UART/SPI/I2C/PWM/ADC/DAC.
6. Support OV2640 and OV7670 cameras, built-in flash lamp.
7. Support image WIFI upload.
8. Supports TF card.
9. Supports multiple sleep modes.
10. Embedded L whip and Free RTOS.
11. Supports STA/AP/STA+AP operation mode.
12. Support Smart Config/Air Kiss technology.
13. Support for serial port local and remote firmware upgrades (FOTA).

Specifications:

1. Wireless Module: ESP32-S WIFI 802.11 b/g/n + Bluetooth 4.2 LE module with PCB antenna, u.FL connector, 32Mbit SPI flash, 4MBit PSRAM.
2. External Storage: micro-SD card slot up to 4GB.
3. Camera
 - FPC connector.
 - Support for OV2640 (sold with a board) or OV7670 cameras.
 - Image Format: JPEG (OV2640 support only), BMP, grayscale.
 - LED flashlight.
4. Expansion: 16x through-holes with UART, SPI, I2C, PWM.
5. Misc.: Reset button.
6. Power Supply: 5V via pin header.
7. Power Consumption.
 - Flash LED off: 180mA @ 5V.
 - Flash LED on to maximum brightness: 310mA @ 5V.
 - Deep-sleep: 6mA @ 5V min.
 - Modem-sleep: 20mA @ 5V min.
 - Light-sleep: 6.7mA @ 5V min.
8. Dimensions (ESP32): 40 x 27 x 12 (LxWxH) mm.
9. Temperature Range: Operating: -20 °C ~ 85 °C; storage: -40 °C ~ 90 °C @ < 90%RH.

Advantages:

- Easily tracks a woman's location
- The buzzers help to gain people's attention
- Affordable not so expensive

Disadvantages:

- The system may not work well due network problem.
- The SMD components are sensitive to EDS.
- Errors in groundwater level measurement can occur.
- Will not give proper output if connections are loose.
- To track a woman's location internet connection is must.

10. Conclusion:

- This project can be carried anywhere easily as it is small and less weight.
- With the use of IOT technology guardian of the woman will get remote indication through SMS. So even if the guardian is too far away from that place, he/she will be intimated about the undesirable conditions / situations to the nearby police station or some other person who will help.
- This system is Cost effective, also it is Fast and efficient.

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