THEFT PROTECTION SYSTEM

Vinoth Kumar L[1], Mohana Krishna Rajan S[2], Sabareeswaran VC[3]

[1]Vinoth kumar.L, Assistant Professor-III, Dept. of Electrical and Electronics Engineering, Velammal college of Engineering and Technology, Tamil Nadu, India

[2]Mohana Krishna Rajan.S, U.G, Department of EEE, Velammal College of Engineering and Technology, Tamilnadu, India

[3]Sabareeswaran.VC, U.G, Department of EEE, Velammal College of Engineering and Technology, Tamilnadu, India

---***---

Abstract - *Currently, most of the mare faces problems with how to secure their personal belongings, such as ornaments, valuable documents and money kept at home due to the theft of homes, offices and organizations. Hence most of the house people are taking almanacs and safeguard lockers in homes to provide security to their important belongings. Yet still they still worked with manual lock and key system service without providing the user with any knowledge when theft occurs by breaking them. Hence, an attempt has been made to develop theft protection system by alerting the people through Alarm and Emergency lights when the robbers breaking the doors.If the people were at the moment they can see the robbery outside and stop it with the help of a smartphone.The present system provides the better security to all kinds of houses and also this system has very economical cost, so that it can affordable to all. The system successfully developed, implemented and tested in our laboratory and we found that its working is satisfactory.*

Keywords: **Hooter, secret camera, Emergency Light, SMPS, Zero potential Relay**

1. INTRODUCTION

Security protects our lives and our variable properties. Ensuring of safety and security of people and their valuable things in home are very important for avoiding the illegal protection from the intruders by theft which is not safety [1].At present safety has become an essential issue for most of the people in rural and urban areas. The things will try to cheat or steal the property which may endanger the safety of their belongings such as ornaments, important documents and money in the houses, offices and homes. To overcome this security threat, most of the people will install bunch of locks or closing systems. But at present the robbery will be easily happened due to the mechanical locks Locks that use specialized equipment to quickly brake over.. Hence, we made an attempt to develop a theft protection system with Alarm, Emergency Lights and camera. And also enabling mobile app to stop the robbery in the current location which will be more secure than others as a low cost system to replace the present

procedure as presented in abstract for the operation of doors used by the people

2. LITERATURE SURVEY ON EARLIER WORKS

Several related works related to the Theft security system are discussed in this section as the work describes the implementation of the GSM-based Advance Warning Home Locker Safety System using ARDUINO where the home is fitted with fingerprint and password authentication and sends the message via GSM[2].Daeminshen et.al. Designed and implemented the path optimisation protection protocol in DMM-based smart Home IOT Networks where protection via two structured security analysis tools BAN-logic and Automated Internet Security Protocols and Applications Validation (avispa)[3].Kalyani Pampattiwar et.al developed Home Automation using Rasperberry Pi managed by Android Application Remote monitoring built on Zig-Bee technology and GSM / GPRS Network. The program will use MMS&SMS to send irregular images and warning messages, and more information[4]. Jun Hou et.al Intelligent Home Security Surveillance System Work Based on Zig Bee does Home Automation.

3. DEVELOPMENT OF HARDWARE AND SOFTWARE OF THEFT PROTECTION SYSTEM USING ALARM,EMERGENCY LIGHTS AND SECRET CAMERA

The block Diagram of the Theft protection system is shown in figure 1 and the schematic diagram in figure 2. The Theft protection system consists of the mainly following units.

They are

> 1.Power supply unit 2.Magnetic Reswitch 3.Zero Potential Relay 4.Secret Camera 5.Alarm or Hooter 6.Emergency Light 7.SMPS
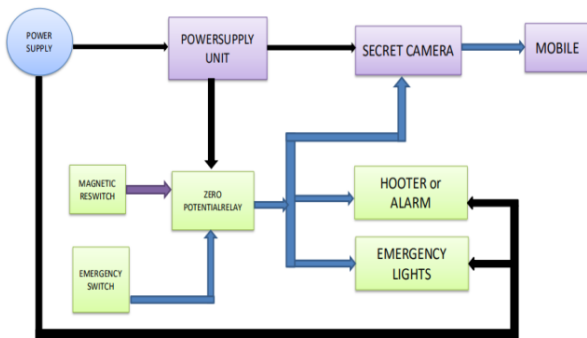

Figure 1. Block diagram of Theft Protection System

Figure 2. Schematic diagram of Theft Protection System

3.1 Power Supply Unit

A Power Supply is an electrical system providing electrical power to an electric charge. A power supply's primary function is to convert electric current from a source to the appropriate voltage, current, and frequency to control the charge. Electric power converters are often referred to as power supplies. Some power supplies are standalone separate pieces of equipment, while others are included in the loading appliances which they control. Sources of

these include power supplies used on personal computers and tools for consumer electronics. Certain functions that power supplies can perform include regulating the current drawn by the charge to safe levels, turning off the current in the event of an electrical failure, power conditioning to avoid electronic noise or voltage surges on the power supply Input from load, power factor correction and energy storage so that the load will continue to be driven if the source power is momentarily disrupted (uninterrupted power supply).Both power supplies have an input power link that receives energy in and one or more power output connections that supply the load with current. The power supply may come from the electrical grid, such as power outlets, power storage devices such as batteries or fuel cells, generators or alternators, solar converters, or other power supplies. Input and output are typically hardwired circuit connections, while wireless energy transfer is used by some power supplies to control their loads without wired connections. Some power supplies have other input forms Outputs can also be provided for purposes such as external monitoring and control. This transforms AC to DC. The output can be either 12v or 24v.The operating voltage is 230v AC.
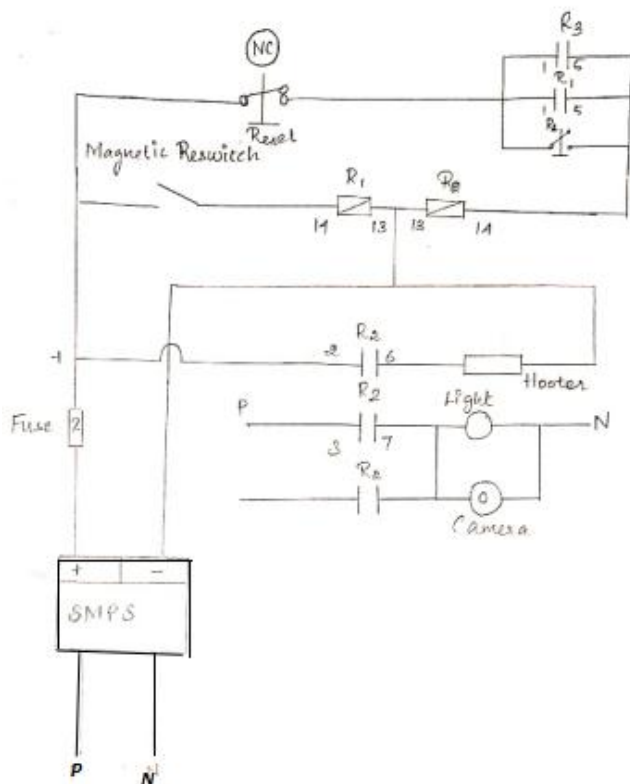
3.2 Magnetic Reswitch

The advanced design of the magnetic switches includes the use of a handheld magnet, which the switch "sees." Based on the switch design, when the switch senses the magnetic field, it activates the switch contacts, either turning the electrical circuit "on" or "off" When mounted, the switch can be either exposed to viewing or hidden by a piece of equipment, rendering it more difficult to defeat. Lever arm or other mechanical type switches are more likely to malfunction or be more easily overridden by external moving parts. Magnetic switches are not harmed by gasoline, water, dirt, snow, ice and are less likely to be defeated. If you are looking for a reliable electrical switch then consider using a Magnet Link magnetic switch. No matter what kind you want, the use of magnetic switches over certain types of electric switches provides certain special benefits. Such advantages include:

- turn on/off easily

- Less touch resistance

- Longer lifetime

- Lower maintenance costs/requirements

Moreover, by using MagneLink switches in particular, you can be sure to use some of the highest-quality and longest-lasting switches currently on the market. Our configuration features make sure you get a magnetic switch that suits your application best. MagneLink is proud to provide many types of magnetic switches that operate in a variety of industries And as for applications. --type of magnetic switch features unique components that allow them to adjust for various uses and functions to certain currents and voltage levels. MagnetLink's range of magnetic switches includes Reed switches, Hall switches, Triac switches, Transistor switches and Coded switches. Each uniquely built switches make them suitable for different applications touch with the magnetic reed to open or close an electric circuit. Such switches are also called 'hot touch' switches. These can control either alternating current (AC) or direct current (DC) voltage circuits. Because of their ability to handle both AC and DC loads, reed switches are commonly used. Reed switches are commonly used to detect open or closed doors. As they can switch either AC or DC loads, repair technicians often prefer them to stock on repair trucks so they can minimize their inventory while having switches readily magnetic Reed switches can be used in the following locations: CNC equipment, power transfer, recycling equipment, actuators that can be used. In automated equipment in factories, car washes, and storage of products. Some other applications may include: protection in the automotive sector, such as seatbelt buckles and sensors used for collision detection, or in security systems. Reed switches are also popular in home appliances such as refrigerators that rely on sensors to detect when the door is closed or open to turn off / on the light, or in top-loading washing machines that avoid the door opening washing cycle. Reed switches are also frequently found in computers, electronics and communications equipment which regulates automation. It has 2 pins which working voltage is 12v (DC).

Figure 3.2 Magnetic Reswitch

3.3 Zero Potential Relay

The control logic circuit determines a zero crossover point in response to an output from the zero crossover detection circuit, and controls a relay coil to actuate the relay contacts to modify a load at the zero crossover point of a load current when the load is connected to the a minimum of one pair of relay contacts, such the voltage and current across the relay contacts is zero. The smart plug further includes a zero crossing detector (ZCD) coupled to the relay, the ZCD outputting an in depth signal to the relay when a voltage of the facility is substantially zero and outputting an open signal to the relay when a current of the facility is substantially zero. The switch consists of an electromagnetic relay and a controllable bidirectional semi-conductor switch such as a triac, parallel to the relay switch and an impact device for controlling the relay and therefore the semi-conductor switch in order that when connecting the load to an influence source the semi-conductor switch is first turned on at the zero of the AC voltage, after which and after a delay the switch of the relay is turned on, and when disconnecting the load from the facility source, the switch of the relay is first turned off, after which and after a delay the semi-conductor switch is turned off at the zero of the AC .The invention relates to a drive circuit for an electromagnetic relay having a relay coil and switch contacts, comprising a primary switching device which is arranged between a primary terminal of the relay coil and a primary voltage source , a second switching device which is arranged between a second terminal of the relay coil and a zero potential, and an impact device which is meant to supply a current flow through the relay coil to shut both switching devices. The apparatus solving the matter includes a two-way switching circuit connected in serial form to an AC voltage generator said circuit disconnecting the AC voltage to a bell when the bell is present. Its zero crossing, and a discharge circuit for discharging the bell before it's connected via a relay to a SLIC circuit , such the voltage across the bell is Inside the SLIC voltage interval the relay connects the bell to the SLIC circuit which occurs when the signal is connected and de-energising an electrical coil of an electro-mechanical relay including an influence supply controller adapted to supply output table voltage at definable intervals approaching or about zero crossing to charge a capacitor arrangement to a selectable voltage in communication with a resistor to supply an available current. The relay-welding detection circuit detects

welding of relays (RYP, RYN) provided on a charging path from an external power supply (PW) to a primary battery a second battery is provided which supplies a welding-detection power supply independently of the external power supply. a transistor switch that's a circuit during which there's substantially zero current flowing in from the external power supply (PW) side of the relays, which controls whether or to not supply the welding-detection power supply to the second battery on the idea of the voltage at the external power supply (PW) side of the relays; and an impact unit that's electrically insulated from the transistor switch , which detects welding of the relays (RYP, RYN) on the idea of whether or not the transistor switch has supplied the welding-detection power supply. It has 11 pins. The operating voltage 12v (DC).

also be "hidden" because it's not visible to the topic being filmed, or is disguised as another object. Such a camera might not be visible to the topic , for instance , because it's fitted with a long-focus lens and located beyond the view of the topic , or located, say, behind a two-way mirror. Hidden cameras are often built into commonly used objects like television sets, smoke detectors, clock radios, motion detectors, ball caps, plants, and mobile phones. Hidden cameras even be is also could also be used for household surveillance and should also be used commercially or industrially as security cameras. The availability and lower cost of video equipment has led to an rise in the use of secret cameras for legitimate surveillance purposes, as well as for entertainment and other purposes. The operating range is 230v AC.This help to identify the thief without the knowlege of themselves that camera is available because it is in the shape of LEDbulb.

Figure 3.3 Zero Potential Relay

3.4 Secret Camera

A secret camera or a surveillance camera, spy camera can be a still camera or a video camera used to film people without their knowledge.. The term "secret camera" is usually utilized in reality TV shows, sometimes when subjects are unaware that they're being recorded, and sometimes with their knowledge and consent. The term "spy camera" is usually used when the topic would normally be expected to object to being recorded as an invasion of their privacy. The word "security camera" is generally used to explain a sudden recording and can be contrasted with CCTV, which is visible and often followed with a warning notice of its presence. The camera could

Figure 3.4 Secret Camera

3.5 Alarm or Hooter

A Hooter is a loud noise-making device. Civil defense hooter are mounted in fixed locations and used to warn of natural disasters or attacks. Hooter are used on emergency service vehicles such as ambulances, police cars, and fire trucks. There are two general types: pneumatic and electronic. Many Hooter (used for calling the volunteer fire fighters) serve double duty as tornado or civil defense sirens, alerting an entire community of impending danger. Most fire hooters are mounted either on a fire station's roof, or on a pole next to the fire station. Fire Hooter can also be mounted on or near government buildings, on tall structures such as water towers, as well as in systems where several hooter are distributed around

a town for better sound coverage. Most hooter are single tone and mechanically driven by electric motors with a rotor attached to the shaft. Some newer hooter are electronically driven speakers.Hooter are often called "whistles", "alarms", or " horns". Although there is no standard signaling of Hooter, some utilize codes to inform firefighters of the location of the fire. Civil defense hooter also used as fire hooter often can produce an alternating "hi-lo" signal (similar to emergency vehicles in many European countries) as the fire signal, or a slow wail (typically 3x) as to not confuse the public with the standard civil defense signals of alert (steady tone) and attack (fast wavering tone). Hooter are often tested once a day at noon and are also called "noon hooter" or "noon whistles". The first emergency vehicles relied on a bell. Then in the 70s, they switched to a duotone airhorn. Then in the 80s, that was overtaken by an electronic wail. The supply to the hooter is connected through a relay (inside a controller or an alarm annunciator). Thus the supply is connected to the hooter when the relay is switched on. The solid state oscillator circuit inside the hooter is activated which drives the speaker to provide audio output the hooters are available in various specifications complying with the international quality parameters.

Figure 3.5 Hooter

3.6 Emergency Light

An emergency light could also be a battery-backed illuminator that automatically activates when a building experiences an influence failure. Emergency lights, including college dormitories, condos, and hotels, are common in new commercial and high occupancy residential buildings. Most building codes require that they be installed in older buildings also .Incandescent light bulbs were originally utilized in emergency lights, before

fluorescent lights and later light-emitting diodes (LEDs) superseded them in the 21st century. Modern emergency lighting is installed in virtually every commercial and high occupancy residential building. The lights contains one or more incandescent bulbs or one or more clusters of high-intensity light-emitting diodes (LED). The heads of emergency lighting are typically either PAR 36 sealed beams or base lamps with wedges. All units have some sort of a device to focus and intensify the light they produce. This can either be within the sort of a plastic cover over the fixture, or a reflector placed behind the sunshine source. Most individual light sources are often rotated and aimed for where light is required most in an emergency, like toward fire exits. Modern fixtures typically have some kind of test button which temporarily overrides the device and causes it to turn on the lights and operate from battery power, even if the main power is still on. Modern devices run at relatively low voltage, typically about 6-12 volts. This both reduces the dimensions of the necessary batteries and reduces the charge on the circuit to which the emergency light is drawn. Modern installations have a small transformer that reduces the voltage from the main current to the low voltage needed by the lights inside the fixture base. Batteries are commonly made from lead-calcium, and may last for 10 years or more on continuous charge. U.S. fire safety codes require a minimum of 90 minutes on battery power during an influence outage along the trail of egress.
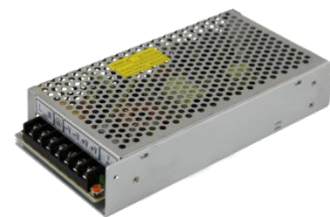

Figure 3.6 Emergency Light

3.7 SMPS

A switched-mode energy deliver is an electronic strength deliver that includes a switching regulator to convert electric strength efficiently. Like different energy supplies, an SMPS transfers power from a DC or AC source (regularly mains strength) to DC hundreds, sort of a personal computer, whilst converting voltage and modern

characteristics. in contrast to a linear energy deliver, the bypass transistor of a switching-mode supply always switches among low-dissipation, complete-on and full-off states, and spends very little time in the excessive dissipation transitions, which minimizes wasted electricity. A hypothetical best switched-mode electricity supply dissipates no strength. Voltage law is executed by means of various the ratio of on-to-off time (also stated as responsibility cycles). In contrast, a linear energy deliver regulates the output voltage via always dissipating electricity inside the pass transistor. This higher energy conversion performance can be a important gain of a switched-mode electricity deliver. Thanks to the reduced transformer size and weight, switching energy components may often be considerably smaller and lighter than a linear supply. Switching regulators are used as substitutes for linear transformers. when better efficiency, smaller size or lighter weight are required. they're, but, more complex; their switching currents can motive electric noise issues if not carefully suppressed, and simple designs may have a terrible strength aspect. Linear power deliver (non-SMPS) makes use of a linear regulator to affords the required output voltage by using dissipating excess energy in ohmic losses (e.g., for the duration of a resistor or within the collector–emitter place of a pass transistor in its lively mode). A linear regulator regulates either output voltage or modern-day via dissipating the extra electric powered energy in the type of warmth , and therefore its most electricity performance is voltage-out/voltage-in because the volt distinction is wasted.In evaluation, a SMPS changes output voltage and present day with the aid of switching ideally lossless storage elements, like inductors and capacitors, among specific electrical configurations. ideal switching factors (approximated through transistors operated outdoor of their lively mode) have no resistance when "on" and bring no modern while "off", then converters with ideal additives would operate with 100% performance (i.e., all enter power is delivered to the weight; no electricity is wasted as dissipated warmness). really, these best additives don't exist, so a switching electricity deliver can not be a hundred% green, but it's nevertheless a massive development in performance over a linear regulator. for example, if a DC source, an inductor, a switch, and as a result the refore the corresponding electric ground are placed serial and consequently the switch is pushed with the aid of a square wave, the peak-to-height voltage of the waveform measured throughout the transfer can exceed the input voltage from the DC source. that is regularly due to the fact the inductor responds to changes in contemporary via inducing its very own voltage to counter

the change in contemporary, and this voltage provides to the supply voltage at the same time as the switch is open. If a diode-and-capacitor mixture is placed in parallel to the transfer, the peak voltage are frequently stored within the capacitor, and as a consequence the capacitor are regularly used as a DC supply with an output voltage extra than the DC voltage riding the circuit. This increase converter acts kind of a transformer for DC indicators. A greenback–enhance converter works at some point of a uniform manner, but yields an output voltage which is opposite in polarity to the input voltage. different dollar circuits exist to reinforce the usual output current with a discount of voltage.In a SMPS, the output contemporary waft relies upon at the input strength sign, the garage elements AND circuit topologies used, and also at the pattern used (e.g., pulse-width modulation with an adjustable responsibility cycle) to pressure the switching elements. The spectral density of those switching waveforms has strength concentrated at quite high frequencies. As such, switching transients and ripple delivered onto the output waveforms are regularly filtered with a hint LC filter.

Figure 3.8 SMPS

OPERATION:

The theft protection system consists of power supply unit, Magnetic reed switch, zero potential relay, Hooter, Emergency Light and Secret camera. All the component works under the power supply 12V DC except camera. Through SMPS the 230V AC power is converted into 12V DC where the step down rectification occurs. The magnetic reswitch will be in the state of conduction so it may not lead the further power supply to hooter, camera and emergency light.. Once the magnetic reswitch moved out from the state of the conduction it supplies the power from the switch to relay. The two relays are using in this process one is for to trip the signal and another relay is using for hold the tripping. After breaking the door the whole system starts to work the hooter blows the sound and emergency lights will glow. The secret camera records the activity of the robbers and sent the information to the

police.If we were outside at the moment we can watch the activity of the robbers through mobile. The camera connects through AP mode to the mobile. The blowing of alarm stops only with the switches which was unknown for the robbers and known by the users. This operation stops the robbery immediately alerts the neighbourhood resident peoples and helps to convey the problem to the police.

CONCLUSION:

The developed system is tested and implemented in our laboratory using hotter, Security Camera and Emergency light as an theft protection system.And we found the systems working is satisfactory. The systems having advanced features like portable and low cost and standalone system. In the future extensions to the project we are going to install face recognisation to open the door if they try to broke the door then alarm, security camera and Emergency light works.Thereby increasing the safety quotient of the system

REFERENCES:

[1]. Mohammed Amenulleh "Microcontroller based programmable digital door lock security systems by using key pad GSM/CDMA Technology", IOSR Journal of electrical and Electronics Engineering (IOSR-JEEE),volume 4 ,issue 6(Mar.-Apr .2013).

[2]. Khaing Mar Htwe,Zew Min Htun,HlaMyoTun " Design and Implementation of Home Locker Security System based on Fingerprint Sensing circuit and RFID reader ",International journal of scientific & Technology Research Volume 4, issue 07,july2015.

[3].R.Ramani,S.Selvaraju ,S.Valamurthy,P.Niranjun "Home Locker Security System based on RFID and GSM Technology, International Journal of Computer Applications Volume 57-No.18,November 2012.

[4]. R.Srinivasan, T.Mettilda, D.Surendran, K.Gobinath, P.Sathishkumar, 'ADVANCED LOCKER SECURITY SYSTEM', International Journal of Advance Research In Science And Engineering,IJARSE, Vol. No.4, Special Issue (01), March 2015.

[5]. M.P.Manjunath, P.M.Ramkumar, Pradeep kumar, NalajalGopinath, Ms. Hari Priya M.E,(PhD) "NFC Based Home Locker Systems", International Journal of Engineering Trends and Technology (IJETT),volume 23 Number I-May 2015

[6]. Abhishek S. Parab,Amol Joglekar, 'Implementation of Home Security System using GSM module and Microcontroller', Abhishek S. Parab et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 6 (3) , 2015, 2950-2953.

[7]. Crystalynne D. Cortez, Jaswinder S. Badwal, Jocelyn R. Hipolito, Ditche Jane C. Astillero, Melvie S. Dela Cruz, and Jaira C. Inalao, 'Development of Microcontroller-Based Biometric Locker System with Short Message Service',

Lecture Notes on Software Engineering, Vol. 4, No. 2, May 2016

[8]. Raghu Ram.Gangi, SubhramanyaSarma.Gollapudi, 'Locker Opening And Closing System Using RFID, Fingerprint, Password and GSM' International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), Volume 2, Issue 2, March – April 2013.