Abstract— In Present Scenario where the knowledge become too vast and therefore the Human working efficiency rising day to day. There are few disadvantages like utilization of these technologies. For example some unauthorized or illegal person can get access of your system and they have to experience a lot. Therefore to overcome this mentioned complexity we can build a control system to avoid this illegal access. It called “Access Control”, which is a scheme which enables an ability to control access to areas and resources in a given physical facility or computer based information system. An access control system, within the field of physical security, is usually seen as the second layer in the security or safety of a physical structure. And the advantage of it is that this system contains very high end verification and authentication technology which is unable to brake by such unauthorized element. For this reason we will use the one of the most recent, next generation and very advanced technology which is “I-Button”.

Keywords— Address, Globally, I-Button, Logging, NFC, RFID, Ring Technology, Watch.

I. INTRODUCTION

An “I-Button” is a computer chip with this in a 16mm thick stainless steel ‘Can’. Because of this restricted and durable container, modern information can take an expedition with a person or object all over they go. The steel “I-Button” can be mounted virtually anywhere because it is rugged enough to withstand not sensitive environments, indoors or outdoors. It is small and portable enough to connect to a key fob, ring, watch, or additional personal items, and be used every day for applications such as access control to buildings and computers, benefit management, and a range of data logging tasks.

Most “I-Button” devices are small, durably packaged modules with globally special digital addresses. They recommend a range of functions to distribute or record data where other products cannot, such as in insensitive environments. Our “I-Button” products will smaller your cost of rights for ‘temperature’ and ‘humidity’, ‘data logging’, ‘access control’, ‘asset tracking’, and ‘electronic cash’ (e-Cash) transactions. Contactless devices are also existing for systems requiring near-field communications (NFC)/RFID compatibility.

II. TECHNOLOGY

The key element of the entire system is “I-Button” which is a proprietary tool from Maxim. “I-Button” is a computer chip with this in a stainless steel Can. Because of this exclusive and durable container, brand new and advance information can go with a being or object everywhere they go. The steel “I-Button” can be mounted virtually anywhere because it is rugged sufficient to tolerate insensitive environments, at home or out-of-doors. It is small and transportable enough to attach to a ‘key fob’, ‘ring’, ‘watch’, or additional personal items, and be used every day for applications such as access control to buildings and computers, benefit management, and a range of data logging tasks.

III. THEORY

An “I-Button” 64-bit address provides an easy, protected way of identifying a location or an item. It can provide as an electronic sequential amount that is never duplicated.
With on board memory, “I-Button” can also store serious information regarding an item or position, such as container contents, transport destination, or owner/holder information. “I-Button” carries incomparable durability to data logger applications. Expose it also high or low temperature limits. Step on it. Drop it in water. There is no need to be worried about destroying this data logger because “I-Button” can carry on unkind inside or outside environments. The strong “I-Button” can be reprogrammed and reused for various years, expansively reducing operating costs.

1. I-BUTTON COMPONENTS

An “I-Button” uses its ‘stainless steel Can’ as an electronic connections interface. Everyone ‘Can’ have a data contact, called the ‘lid’, and an earth contact, called the ‘base’. Every one of these contacts is linked to the silicon chip inside. The ‘lid’ is the top of the ‘Can’; the base forms the sides and the bottom of the ‘Can’ and includes a projection to make simpler attaching the switch to just about anything. The two contacts are divided by a “polypropylene grommet”.

2. I-BUTTON VERSIONS

An “I-Button” produce line now comprises over 20 different products with dissimilar functionality added to the basic button. “I-Button” devices come in the following varieties:
- Address Only
- Memory
- Real-Time Clock
- Secure
- Data Loggers

3. I-BUTTON’S VERSUS OTHER TECHNOLOGIES

The “stainless steel Can” that “I-Buttons” are prepared out of is far more durable than barcodes or “RFID” tags.

An extreme test would be to abuse each technology with a hammer and see which ones last longer. Each technology will eventually fail, but the I-Button will last the longest. We offer free samples for your testing.
- An “I-Buttons” ‘Can’ guard the chip inside from moisture. Basic ‘RFID’ tags are not completed to be moisture resistant. If the ‘RFID’ chip is showing to moisture it will grow to be ineffective.
- “I-Button” is simple to touch at various angles. Readers automatically read “I-Button” when touched in take away than 10 milliseconds.
- Barcodes take longer to read due to assignment of the scanner by the user. The users have to also pull a trigger to make active the scanner.
- To read an ‘RFID’ tag, users must concurrently bring their reader to inside 2 inches of the tag and press a button to turn on the reader. Barcodes have this identical issue.
- When ‘RFID’ tags are placed after walls to defend them, read distances will also reduce. Greatest distance for embedding tags into walls is only 2mm.
- ‘RFID’ tags are also tremendously susceptible to static discharge which can make them entirely inoperable.
- Barcodes can be simply torn off or destroyed with a simple ink pen. Metal barcode tags can be simply bent or injured to make them unreadable.
- Most ‘RFID’ tags cannot be study if they are mounted on metal surfaces.
- “I-Button” can suggest you additional features that ‘RFID’ and barcodes cannot such as allowing users to trace temperatures when read.
- It only takes 2 mA of power for less than 10 ms to study or examine an “I-Button”. This is and will always be a smaller amount power than it takes for a reader to read a barcode or ‘RFID’ tag.

III. OPERATION

Primarily the access is blocked and the inactive information is exposed on the “16*2 alphanumeric LCD Display”. This access is only and only activated by a legal or valid “I-Button” device and not by any other. As soon as the anyone shows his own or personal “I Button” to the “I-Button” reader located front of the panel as show in figure. Within a second the system read the ID and the balance information of the owner/holder during the “I-Button” by the help of unique or exclusive one wire protocol processed by microcontroller.

The ‘1-Wire’ bus is an inverted-logic, wired-OR collection. This means that any of an amount of effects can take the bus
to a low level. This includes electrical short-circuits caused by the steel “I-Button” container improperly seated in the probe, reset pulses and time slots generated by the master, presence pulses generated by incoming “I-Button” devices, and presence pulses or zero bits generated by other devices that may be there on the bus.

The data is extra give to the microcontroller where embedded software confirm the integrated protected 64 bit ID and coordinated or matched with stored authorized ID databases. And when it match then the system will provide the access otherwise the system will show an error message of authorized access. The one of the major advantage of this system is that it if it detects three authorized access in carry on. The system will detect as authorized activity then it will lock itself and provide error alarm.

IV. PROPOSED SYSTEM

In this paper is proposed an access control system during using the “I-Button” safety features. The system proposed in this paper manages two “I-Button” readers; a real time clock and memory for recording devices involve access, type of access and events. Using sequential communication with a PC can be arrangement the system or can create a database with events occurred and stored in memory. The arrangement of the proposed system is shown in figure 4.

A. MICROCONTROLLER CORE

The Microcontroller core component is realized with an “AT89C8253” microcontroller from Intel 8051 family. The “AT89S8253” is a low-power, high performance CMOS 8-bit microcontroller with 12K bytes of during system programmable (ISP) Flash program memory and 2K bytes of EEPROM data memory. The device is manufactured with Atmel’s high density non-volatile memory tools and is friendly with the industry standard MCS-51 instruction set and pin out. The on-chip downloadable Flash allows the program memory (PM) to be reprogrammed in system through an SPI serial interface or by a conventional non-volatile memory programmer. By combining a flexible 8-bit CPU with downloadable Flash on a monumental chip, the Atmel “AT89S8253” is a powerful microcontroller which provides a highly flexible and cost effective solution to various embedded control applications. The “AT89S8253” provides the following standard features: 12K bytes of in system programmable flash, 2K bytes of EEPROM, 256 bytes of RAM, 32 I/O lines, programmable regulator timer, two data pointers, three 16-bit timer/counters, a six-vector, four-level interrupt design, a full duplex serial port, on-chip oscillator, and clock circuitry.
B. REAL TIME CLOCK

Real time clock element is realized using DS1302 circuit. The DS1302 trickle-charge promptness chip [2] contains a real time clock/calendar and 31 bytes of stationary RAM. It communicates with a microprocessor by an easy serial interface. The real time clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The ending of the month date is automatically accustomed for months with fewer than 31 days, including corrections for leap year. The clock operates in whichever the 24-hour or 12-hour design with an AM/PM indicator. Interfacing the DS1302 with a microprocessor is easy by using synchronous serial communication. Just three wires are essential to communicate with the clock/RAM: CE, I/O (data line), and SCLK (serial clock). Data can be transferred to and from the clock/RAM 1 byte at a time or in a fracture of up to 31 bytes. The DS1302 is designed to function on very low power and retain data and clock information on fewer than 1µW. The time and calendar information is obtained by reading the suitable register bytes. The time and calendar are set or initialized by writing the suitable register bytes. When reading or writing the time and date registers, secondary (user) buffers are used to stay away from errors when the internal registers update. When reading the time and date registers, the user buffers are coordinated to the internal registers the rising edge of CE. The countdown chain is reset each time the seconds register is written. Write transfers occur on the falling edge of CE. To avoid turn over issues, once the countdown chain is reset, the residual time and date registers must be written within 1 second. The DS1302 can be run in moreover 12-hour or 24-hour mode. The bit 7 of the hours register is defined as the 12- or 24-hour mode select bit. When high, the 12-hour mode is chosen. In the 12-hour mode, bit 5 is the AM/PM bit with logic high being PM. In the 24-hour mode, bit 5 is the second 10-hour bit (20–23 hours). The hour’s data must be reinitialized when the 12/24 bit is altered.

C. EEPROM MEMORY

To record the information regarding access rights or to record the log besides operating time are used 2 8Mbit SST25VF080B SPI serial flash memory. SST’s 25 series Serial Flash family features a four-wire, SPI-compatible interface that allows for a low pin count enclose which occupies less board space and finally lowers entire system costs. The SST25VF080B devices are improved with better operating frequency and lesser power consumption. SST25VF080B SPI serial flash memories [3] are manufactured with SST’s proprietary, high performance CMOS Super Flash tools. The split-gate cell design and thick-oxide tunneling injector attain better reliability and manufacturability compared with alternate approaches. The SST25VF080B SuperFlash memory array is organized in uniform 4 K Byte erasable sectors with 32 K Byte overlay blocks and 64 K Byte superimpose erasable blocks. The SST25VF080B is accessed during the SPI (Serial Peripheral Interface) bus compatible protocol. The SPI bus consists of four control lines; Chip Enable (CE#) is used to choose the device, and data is accessed during the Serial Data Input (SI), Serial Data Output (SO), and Serial Clock (SCK). The SST25VF080B supports both Mode 0 (0, 0) and Mode 3 (1, 1) of SPI bus operations. The disparity between the two modes is the state of the SCK signal when the bus master is in standby mode and no data is being transferred. The SCK signal is small for Mode 0 and SCK signal is high for Mode 3. For both modes, the serial data in (SI) is sampled at the growing edge of the SCK clock signal and the serial data output (SO) is determined after the falling edge of the SCK clock signal.

D. POWER SUPPLY

A power electronic converter uses semiconductor devices to convert power from one form (DC or AC) into another form (DC or AC). A buck advances in automatic control, modeling and simulation. L5973 step down converter is a specific type of DC-DC power electronic converter whose ambition is to capably step down DC voltage to a lower level with minimum ripple. Practical applications are illustrated in Figure 5 where, for example, a buck chopper may interface between the changeable output voltage of a storage battery and a susceptible piece of electronics such as a microprocessor.

![Fig.5. DC-DC Converter](image-url)
considerably better and noisier than their linear regulator counterparts, buck converters suggest higher efficiency in most cases. The L5973D is a step down monolithic power switching regulator with a lowest switch current limit of 2.5A so it is capable to convey more than 2A DC current to the load depending on the application environment. The output voltage can be set from 1.235V to 35V. The high current level is also achieved recognition to an SO8 package with showing frame, that allows to decrease the Rth( j-amb) down to approximately 40°C/W The device uses an internal P-Channel D-MOS transistor (with a typical Rdson of 250mW) as switching factor to decrease the size of the external components. An internal oscillator fixes the switching frequency at 250 KHz. Having a lowest input voltage of 4.4V only, it is mostly appropriate for 5V bus, obtainable in all computer associated applications. Pulse by pulse current limit with the internal frequency modulation (FM) offers an efficient constant current short circuit safety. The working diagram for the L5973 chip into system structure is existing in figure 6, and deliver +3.3V for EEPROM memory supply and +5V for the have a rest of the circuits.

The whole electronic system of the access control system is shown in Figure 6. It can be seen that though it has a small number of components, the access control component has performs various functions obtainable by the software running on the microcontroller “AT89S8253”. The module has set primarily an address to be linked to a modules network. The module address can be changed by serial communication; the new value is stored in the EEPROM. In this memory is as well stored the number of system starts, the last address used for the detection data, current address of the database for recorded actions. Also in this memory are stored the detection data of those who have access, as well as name, “I-Button” serial, information concerning allowing access in dissimilar places. The system records various actions such as the happening of a short circuit in one of the readers for additional than 2 seconds, returning of the reader back behind a short circuit recorded, data about illegal access (“I-Button” serial that tried to access), recognition data for acceptable access. To all this information is added the time stamp at which the happening occurred with information from the real time clock. Depending on the access permissions stored in EEPROM memory the system can manage linked devices through I/O Port lines.

Fig: 6 L5973-Step Down Converter

Fig: 7 Complete Diagrams

➤ DURABILITY OF I-BUTTON

The silicon chip inside the “I-Button” is protected by the ultimate strong material: stainless steel. You can drop an “I-Button”, step on it, or scrape it. The “I-Button” is wear tested for 10-year toughness.
V. APPLICATIONS

The “I-Button” is ideal for any application where information requirements to travel with a person or object. Affixed to a key fob, watch, or ring, an “I-Button” can grant its holder access to a structure, a PC, a part of tools, or a vehicle. Attached to a work tote, it can determine processes to get better efficiency, such as developed, delivery, and maintenance. Some “I-Button” versions can be used to store electronic cash for small communication, such as transit systems, parking meters, and transaction machines. The “I-Button” can also be used as an electronic benefit tag to store information desirable to keep track of expensive capital equipment. Click here to see a number of the “I-Button” applications used more or less the world

- Temperature and Humidity Data Logging
- Electronic Access Control
- Asset Management
- E-Cash
- Guard Tour
- A host system: this can be a PC, a laptop, a hand held computer, or an embedded system.
- A reader/writer device to obtain information into and out of the button. This can be the Blue Dot mentioned above, a pen-style probe, or a hand held device.
- A layer of software to interface “I-Buttons” to computers and create the preferred information in the desired format. Several software development kits (SDKs) are downloadable from this site at no charge.
- For a list of SDKs and relations to download, see this page. We also present 1-Wire Drivers for Microsoft platforms, beside with the One Wire Viewer, a demo application that can read/write/exercise any “I-Button”.

VI. CONCLUSION

We have combined with a number of companies called Authorized Solutions Developers, (ASDs) for short, who develop turnkey “I-Button” systems for access control, time and ‘attendance tracking’, ‘payroll’, ‘truck fleet maintenance’, manufacturing control, fare collection, and more. The ASDs can also build up custom “I-Button” applications for you immediately talk to them. You can investigate our “I-Button” solutions search to find our partners’ solutions obtainable worldwide. With over 175 million “I-Buttons” currently in transmission, the list of users is extremely long.

REFERENCES