

# Automatic Ration Dispensary System using HAN

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**Abstract**— Every Indian family is issued a Ration Card by Government of India and the families are entitled to receive subsidized food grains against the card. Quantity of different grains like rice, wheat are fixed for every month for the families depending upon their income. However many families do not claim their quota of ration and yet few families manages to acquire card of other families. This has led to anarchy and black marketing of the subsidized product. As a solution to aforementioned problem this paper proposes a transparent and highly scalable Ration Distribution (Food Distribution) system with biometric authentication with face and fingerprint Biometric for Ration Card Holder. Every time ration is collected by the family is logged into the smart card. The data logging system is connected with cloud to maintain a centralized inventory across the nation. Biometric data of one member of the family is also logged in the card. Every time before ration collection, the authorized person needs to go through the verification phase. Therefore not only false and dummy card ration collection is avoided but at the same time a proper log of quantity per product acquired by the card holder is also tracked. This architecture replaces the conventional paper ration book with RFID based smart card.

**Key words:** RFID, HAN, DTMF decode

**Abbreviations:** HAN (Human area network)

## I. INTRODUCTION

Automatic Ration Dispensing System using HAN presented here is an advanced system useful for the automatic & more efficient way of ration distribution. This project is designed to minimize the manual intervention in the process of ration distribution, so that more transparency & efficiency can be maintained. Human Area Networking (HAN) technology, which is under development that uses the surface of the human skin as a safe, very high speed network spread path. It is completely different from wireless and IR technologies as it uses the tiny electric field discharged on the surface of the human skin. A transmission pathway is formed at the instant a part of the human skin comes in interaction with a HAN transceiver. Communication is possible using any body surfaces, such as the hands, legs, fingers, arms, feet, face and torso. HAN works through shoes and dress as well. When the bodily contact gets separated, the communication will stop.

The project consists of a User Card; based on a card as user card & an automated system interfaced with a MC and material dispensing mechanism. The project is also equipped with a microcontroller unit for the ease of message display and for easy future enhancements in the project.

The Coded Card Security System is a novel approach to modern automated security management. This system helps in the field of Security Automation, by monitoring and managing the security of an industry, financial institution, commercial complex, hospitals, banks, storage rooms, military base, etc.

## A. Problem Definition

In present situation the facilities given by our government is not reaching properly to the deserved people due to the human involvement, specially this problem is occurring while distribution food grains to the people. So by this project we can eliminate human involvement in food grain distribution process. By this we can eliminate malfunction in quality in quantity.

## B. Features of the Project

Economical in nature, simple in design & operation. Highly flexible in nature. The system can be used as a stand-alone unit. Due to the digital & analogue circuits, the system is highly accurate & automatic in nature. It gives both visual and audible indication to the operator Circuit connections are very easy.

## C. Objectives

Because of to much corruption in government sector, the facilities given by our government are not reaching the deserved people. Our main objective is to make all facilities must reach the deserved people without any malfunction in quality and quantity.

## II. BLOCK DIAGRAM OF ROBOTIC VEHICLE CONTROL AND SENSOR

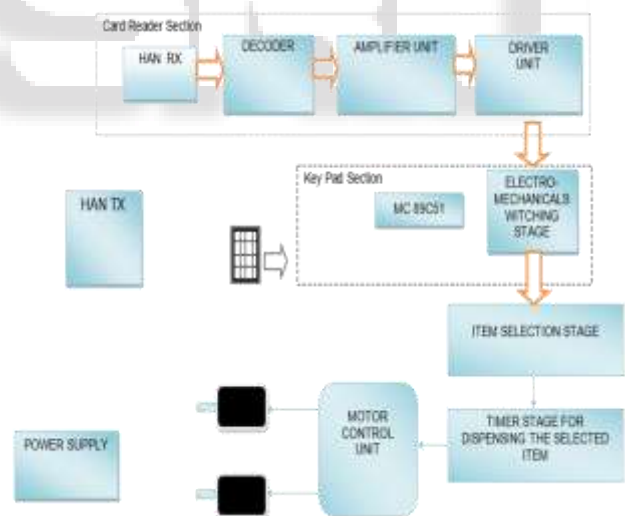


Fig. 1: Block diagram of robotic vehicle control and sensor

## III. BLOCK DIAGRAM EXPLANATION

### A. Power Supply Unit

This section needs two voltages viz., +12 V & +5 V, as working voltages. Hence specially designed power supply is constructed to get regulated power supplies.

### B. Switches

In electrical engineering, a switch is an electrical element that can break an electrical circuit, interjecting the current or distracting it from one conductor to another. A switch may

be directly influenced by a human as a control signal to a system. By design operated switches can be used to control the gestures of machineries.

### C. Buffers

Buffers do not disturb the logical state of a digital signal (i.e. a logic one input results in a logic one output whereas logic zero input results in a logic zero output). Buffers are usually used to over extra more current drive at the output but can also be used to normalize the logic existing at an interface.

### D. Drivers

This section is used to drive the relay where the output is complement of input which is applied to the drive but current will be amplified.

### E. Relays

It is an electromagnetic device which is used to drive the load connected across the relay and the o/p of relay can be connected to controller or load for further processing.

### F. Buzzer

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and conformation of user input such as a mouse click or keystroke.

## IV. METHODOLOGY

The Automatic Ration Dispenser Using Embedded Systems works as follows: Whenever Customers ID card touches the data receiving plate or receiver the Menu driven software present in the Computer navigates throughout the process. User can retrieve the stored information such as ID Number, this Months ration is taken or not, if taken how much [quantity] etc. If this months ration is not taken then system allows to take prescribed amount of ration deliberately. Operator has to enter the quantity of the item viz., rice, sugar and kerosene. Then the Dispenser section comes into action and respective items vending motor turns ON for prescribed time [depend upon the quantity] and respective message is displayed on the LCD Module through Microcontroller chip for customer's information. Each vending motor's below one container will be placed and is monitored by O\_Track Section. If container is not in proper place the buzzer will ring and attract the interest of the operator immediately.

## V. LITERATURE SURVEY

### A. Vineet Batra et al.,

This work reviews that there is new thought of Redtaction which form the Human body as a communicating network by name HAN (Human Area Network). RedTacton is a break-through technology that, utilities the surface of the human body as a harmless, very high speed network transmitting path. This paper is informing the specific brand-new functional characteristics and tremendous potentiality of RedTacton as a Human Area Networking technology. Technology is devising many things simpler; Our concept is standing illustration for that. We have seen LAN, MAN, WAN, INTERNET and some more but here is very new thought of "RED TACTON" which forms the

human body as a communicating network. Why Named RedTacton Because with this technology, the communication beginnings by touching (Touch), directing to several activities (Act on) and the color red to express the meaning of warmth in communication. Compounding these phrases led to the name, "RedTacton" [1].

### B. Ryoji Nagai et al.,

this report shows that Wireless body area networks about the human body are foretold to play an vital role in several areas of application, such as in remote observation of health, sports education, mutual games, sharing of personalized information, assured certi\_cation, train ticket wicket gate, and medical information systems. Body-channel communication (BCC) technologies have newly been actively reported. These communicating technologies combined of transceivers (TRXs) on the human body (wearable TRXs)[2]

### C. Mrignayani Chhotwani et al.,

This work reviews that So some technologies for networking are best-known and are in use. These technologies connect peoples, objects and other networks together to share information .Thus make information ready. Automatic Ration Dispensary system using HAN Literature Survey for approach. Our body could shortly be the backbone of a broadband individual data network tie your mobile phone or MP3 player to a wireless headset, digital camera to a PC or printer, and all of the appliances carry around to each other [3].

### D. Mitsuru Shinagawa et al.,

This work reviews that Ubiquitous work that are truly user-friendly to each and everyone will necessitate technologies that modify communication between people and objects in close proximity. The direction on the naturalness, certainty, and awareness of safety conveyed by touching in everyday life, this section describes human area networking technology changes communication by touching, which we call it as RedTacton [4]. augmented and virtual reality allowing multiple users to collaborate and experience the theatre interactively with each other and 3D images of live actors.

## VI. WORKING PRINCIPLE AND IMPLEMENTATION

This chapter learns about the experimental setup and operation. In this system the customer ID card will be with the card holder. When the authorized person touches the touch plate then only the system will turn ON until and otherwise system will be in o\_ position. The card must be in contact with the human body .When the system gets activated suddenly the RF transmitter sends the RF signal to base station. Then in the base station LCD it displays as authorized. Now the password entry stage when the authorized person operate the key pad at that time in the LCD it shows enter password ,now the person enters his password using 4 x 4 key pad matrix. If it's a correct password it displays correct pin code, then only the dispensary system will get activated. If he enters wrong pin code it displays wrong password. By using dispensary system the person switches the motor using the provided switches, it starts rotating for a particular time accordance

with the quantity, grain size and chamber design, If unauthorized person touches the touch plate then RF transmitter sends the signal to base station. The LCD displays unauthorized and the provided buzzer will make beep sound for alerting the detector who is watching in base station, but the system will not get activated. If some thief tries to tamper the system then the tampering unit sends the RF signal to base station, there the LCD displays that system is tampered and also buzzer start to make beep sound to alert the detector in base station. Likewise the system will work automatically by HAN technology without any human assistance for giving any ration to the customers.

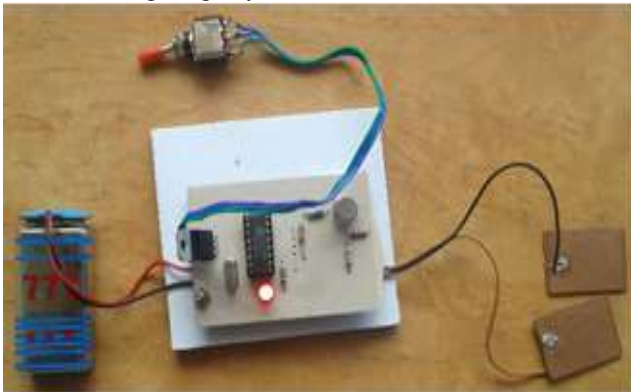


Fig. 2: Photographic view of User ID card

Which includes battery, DTMF encoder, touch plate, LED, toggle switch, voltage regulator, resistors etc... 0001 frequency authorized person and 0010 frequency unauthorized person just by operating the toggle switch the DTMF encoder will send the signal to touch plate, when the user touches the touch plate the data will flow on the human body.

## VII. CIRCUIT DIAGRAM EXPLANATION

### A. Circuit Diagram of +5V & +12V Full Wave Regulated Power Supply

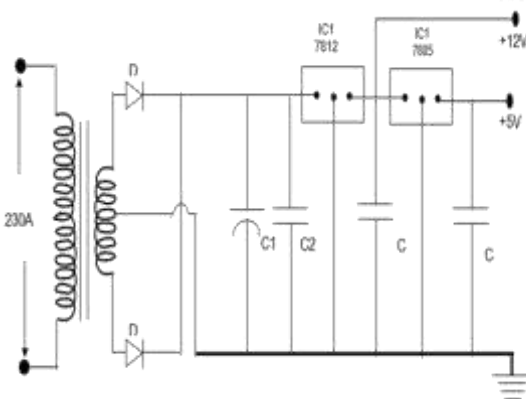


Fig. 3: Circuit Diagram of +5V & +12V Full Wave Regulated Power Supply

Circuit Description: A DC power source which keeps the given output voltage constant unrelatedly of AC. mains fluctuations is known as regulated DC. power supply. It is can also be mentioned as full-wave controlled power supply as it uses four diodes in bridge fashion with the transformer. This laboratory power supply offers excellent line and load regulation and output voltages of +5V & +12 V at output currents up to one amp.

### B. DTMF Decode

The circuit uses IC KT3170 (DTMF-to-BCD converter) and agrees error code from Field Unit in the form of encoded DTMF signal change them into 4-bit Binary Coded Decimal and fed to parallel port of monitoring PC for additional processing. Automatic Ration Dispensary system using HAN Circuit Diagram Explanation circuit is to be connected to the FM Receiver output points. The DTMF Signals from FM Receiver are incoming this juncture through RC network formed by R1, R2, C1 & R3 components. Pin-3 of IC1 is biased with input telephone line during resistor R4. The Crystal X1 is submitted to pins 7 & 8 of IC1 for internal oscillation purpose. The pin-10 is Vcc and given to power supply line. Internal circuitry of IC1 needs biasing hence pin-16, 11, and 17 are connected with R5 and C2. The IC1 outputs DTMF signals coming from FM Receiver into 4-bit BCD form at pins 12, 13, 14 & 15. The Conversion inspect bit is get from pin-18 of IC1. This pin output goes HIGH if DTMF-to-BCD conversion is successful. These outputs are fed to then stage Buffer for conversion indication and further taken out for PC's parallel port input. The Buffer section comprises of IC2, which has six buffers. Five Buffers of IC2 are used to drive -ve LEDs for output indication.

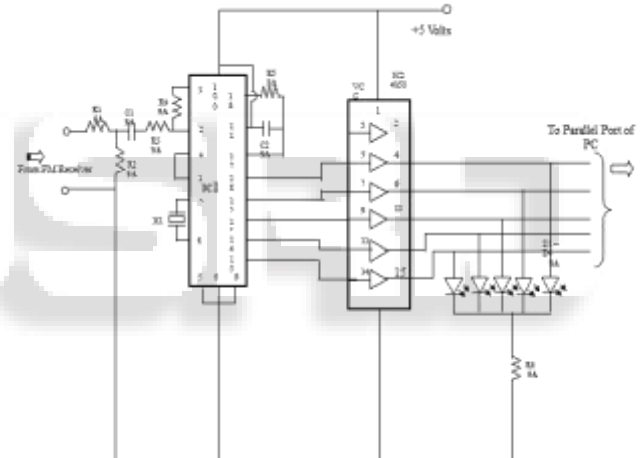


Fig. 4: DTMF decode

### C. Micro-Controller 89C51

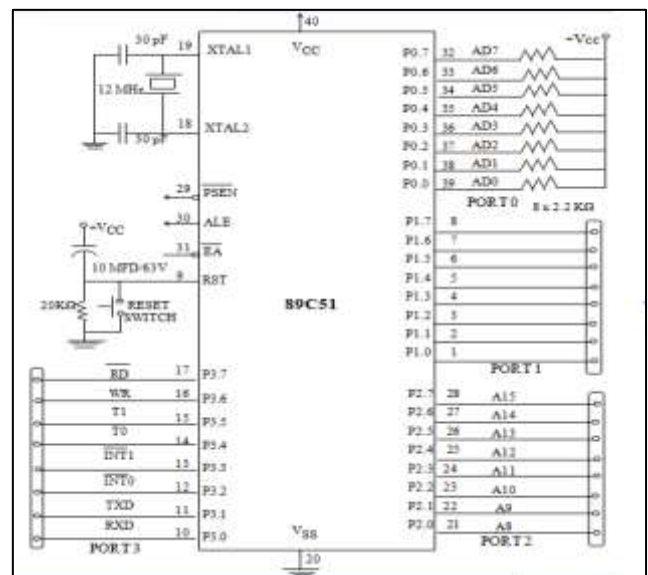


Fig. 5: Micro-controller 89C51



The field parameters are governed by this Microcontroller chip with the assist of user written program and generates aware message for LCD display and fault code for remote monitoring end transmission. The Microcontroller Chip has input port for getting mistake condition of field parameters and 'Stop' signal through RF Receiver and output port for sending fault code to DTMF Encoder and switching Relay [MCB] for isolating power line from load.

#### D. ATMEL 89C51 Technical Description

The ATmel 89C51 is a low-power, high-performance CMOS 8-bit microcomputer by means of 4K bytes of Flash programmable and erasable read only memory (PEROM).

The ATmel 89C51 device is manufactured using Atmel's high-density nonvolatile memory technology and is well-suited with the industry-standard MCS-51 order set and pinout. The on-chip Flash lets the program memory to be reprogrammed in system or by a predictable non-volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C51 it is a powerful microcomputer which delivers reasonably an extremely elastic and cost-effective result to many embedded control applications. The ATmel 89C51 deliver the following pattern sorts: 4K Bytes of Flash, Automatic Ration Dispensary system using HAN Circuit Diagram Explanation bytes of RAM, 32 I/O lines, two 16-bit timer/counters, a -ve vector two-level interrupt architecture, a occupied duplex serial port, on-chip oscillator and clock circuitry. In addition, the 89C51 is intended with static logic for action down to zero frequency and provisions two software selectable power saving modes. The Idle Mode stops the CPU while permitting the RAM, timer/counters, serial port and break o\_ system to remain working. The AT89C51 Power-down Mode saves the RAM contents but stops

##### 1) Compatible with MCS-51 Products

- 4K Bytes of In-System Reprogrammable Flash Memory.
- Fully Static Operation: 0 Hz to 24 MHz.
- 3-level Program Memory Lock.
- 128 x 8-bit Internal RAM 32.
- Programmable I/O Lines.
- Two 16-bit Timer/Counters.
- Six Interrupt Sources Programmable Serial Channel.
- Low-power Idle and Power-down Modes 40-pin DIP.

### VIII. RESULT AND DISCUSSION

By using HAN (Human Area Network technology ) the data from the user ID card to ration dispensary system is send through the human body surface in a high speed and very safe way of transmitting data so that is our main goal this project. The dispensary system will get activated only when the authorized person in- teracts with the system until and other wise system will be in OFF condition only. If the user enters a wrong password then also system will be deactivated.

In the base station mainly three results are coming which is displayed on LCD and also the buzzer will make sound to alert. The three displays are:

- AUTHORIZED
- UNAUTHORIZED
- TAMPER

### IX. ADVANTAGES

- RedTacton ensures not need the electrode to be in direct contact with the skin.
- Can spread data at a rate complex than that of peer technologies. (max. of 10Mbps) and Security is more.
- RedTacton transceivers are programmable and we can choose what to part with whom and what plans you communicate with the project is fully automatic and easy to use, eliminating the man power, we can control the corruption.
- A communication environment can be shaped simply and at low-cost.
- Communication environment can be formed with items close at hand like desks, walls and metal objects.
- Reduces heavy antennas and receivers like devices to carry.
- The project is based in advanced chip technology, thus enabling to to track & protect the database of the user With its centralized server connectivity the project can be made real time & thus helping resource management effectively.

### X. DISADVANTAGES

- The clear obstacle to entrance is that the price and time to develop HAN TECH. is very costly.
- Automatic Ration Dispensary system using HAN Advantages and Disadvantages
- New technology HAN necessity to gain acceptance between users to help pull the technology into the souk instead of taking it pushed upon them.
- Extensive marketing drives will need to be advanced to highlight the protects of HAN technology to facilitate its acceptance.
- Not valuable unless many people accept it.
- It can be useful within few centimeters only.

### XI. APPLICATION

- Automobile Applications.
- Conference Systems.
- Touch Advertising.
- Wireless Headset.
- This project can be used in Military, Medical and Consumer applications.

### XII. FUTURE SCOPE

RedTacton has a wide range of sole new useful features and huge potential as a Human Area Networking technology. NTT is dedicated to rapidly recognizing and opening up those application areas with the popular commercial promise for RedTacton, a business growth process to be synchronized under NTT's Comprehensive Producer Function program. After receiving the materials, controller sends the info to government office and customer through GSM technology.

### XIII. CONCLUSION

The automatic ration dispensary using HAN has been implemented successfully and it is tested on hardware components in the model which has been explained previously. Results obtained from the model made the overall

system fully automatic and also when we compare the RedTacton technology with the other technologies it's a fully secured and faster way to transmit the data, has our body itself acts as a transmitting media therefore there is no problem of hackers and thief,s. The main intention is to automate the overall system of ration dispensary is achieved. Ensures not need the electrode to be in direct contact with the skin, communication environment can be shaped simply and at low-cost, can spread data at a rate greater than that of peer technologies (max. of 10Mbps) and Security is more.

The system is fully automatic and easy to use, eliminating the man power, hence we can control the corruption. With the centralized server connectivity the project can be made real time & thus helping resource management effectively. RedTacton transceivers are programmable and we can choose what to part with whom and what plans you communicate with. The project is based in advanced chip technology, thus enabling to track & protect the database of the user.

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