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Automatic Infant Warmer

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Abstract: An infant warmer-incubator constructed to provide a controlled air environment about the infant. The incubator maintains the proper environment in an "open" or "closed" position and will permit resuscitation, technical procedures, surgery or routine nursing care of the infant as with a crib or bassinet. In the "closed" position some nursing care may be performed while in the open position it may serve as an operating table and not materially disturb the controlled environment for the infant. The presently known and now utilized infant warmers and incubators fail to meet the demand for careful treatment and care of the premature infant. To date, there is not an incubator operating table available to the medical profession. The procedure now used is to heat the whole operating room for premature infant surgery. There is not in existence a closed incubator system which accurately maintains an environment of desired temperature, humidity, and weight of the infant since they require circulation and thus consistency is hard to achieve. The proposed system is used to overcome the disadvantages of existing warmer system and provide safety to the infant. The main objective of this project is to control the humidity and temperature parameters of warmer based upon IOT. To convert the mode of acquiring information regarding the measured temperature through android application. This system will be used to control the multiple warmer at the same time and also reduce the man power.

Keywords: Microcontroller, Humidity sensor, Arduino, IOT

I. INTRODUCTION

Maintenance of Temperature and humidity is crucial in the care of the new born. The requirements vary depending on the gestational age at which the baby is born. A humidity of 60 to 80 percent is essential. Even after the discharge of the baby from the hospital the new born is subjected to diurnal variations in temperature and cold at night. Using low cost available materials we have developed a cost effective neonatal open care system suitable for tropical weather in south Indian population. The temperature varies from 38 degrees C in day in summer to 16 or 18 degree C in the night at winter. The baby is at risk of hypothermia in winters or exposure to low temperatures when there are heavy rains.

1.1 Automatic warmer System

The problem of premature and congenitally ill infants is not a new one. Before the industrial revolution, premature and ill infants were born and cared for at home and either lived or died without medical intervention. In the mid-nineteenth century, the infant incubator was first developed, based on the incubators used for chicken eggs. Dr. StephaneTarnier is generally considered to be the father of the incubator (or isolate as it is now known), having developed it to attempt to keep premature infants in a Paris maternity ward warm. Other methods had been used before, but this was the first closed model; additionally, he helped convince other physicians that the treatment helped premature infants. France became a forerunner in assisting premature infants, in part due to its concerns about a falling birth rate. Healthcare cost is an urgent issue globally. The costs for infant care are high due to highly intensive labor. For healthy infants, Sudden Infant Death Syndrome (SIDS) is one of the most critical problems needed to be addressed and it requires a great deal of care labor. SIDS is defined as any sudden and unexplained death of an apparently healthy infant aged from One month to one year.

The developed sensory baby vest for the monitoring of infants includes fully integrated sensors for the parameters respiration, heart rate, temperature and humidity, to detect excessive sweating, for the continuous monitoring of infants under clinical and home conditions. It allows the early alert for potential life threatening events as well as the recognition of the development or progression of diseases at an early stage. Health protection or even life-saving is enabled in time.A variety of principles for the measurement of the parameters have been assessed for the integration into the garment. Prototypes have been manufactured incorporating the chosen sensing principles with textile and textile-compatible technologies. A non-invasive infant monitoring system includes CO2 sensors to non-invasively monitor the exhaled air from an infant in order to reduce the potential risks for Sudden Infant Death Syndrome (SIDS). CO2 sensors placed in the crib around an infant to non-invasively monitor the exhaled air concentration variation from him/her. By monitoring the outputs of CO2 sensors, we can detect if there is anything unusual with the infant's respiration. The output data is sent wirelessly to activate an alarm or logged for further diagnoses.

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1.1.1 Warmer

Basic aim was to keep baby warm which is amenable for home care. Baby is wrapped in clean towel within which,temperature of the baby's axilla is monitored with digital thermometer .It is usually between 1 to 2 degrees C higher than the surface temperature. Bulb needs to be changed when higher temperatures are recorded beyond 34 degrees. Eyes are covered with Head cap like a sunshade which also prevents loss temperature from the scalp and prevents direct exposure of the light .Cochrane review shows after 32 weeks there is less damage to eyes on exposure to light however still necessary precautions.

1.2 Existing system

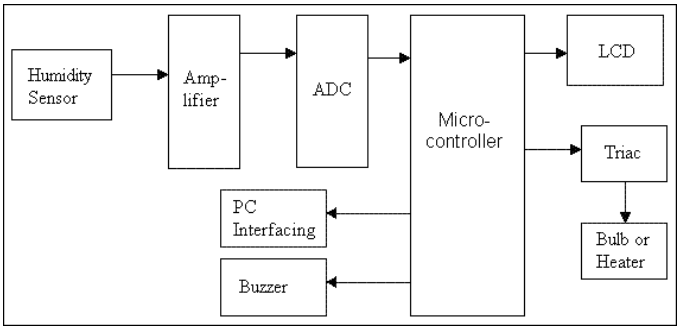

Fig 1.1 Block Diagram of Existing warmer

1.2.1 Objectives of INFANT WARMER

- A heating element generates a significant amount of radiant energy in the far IR wavelength region (longer than three microns)
- To avoid damaging the infant's retina and cornea
- The radiant output of the heating unit is also limited to prevent thermal damage to the infant.
- The IR energy is readily absorbed by the infant's skin; increased blood flow in the skin then transfers heat to the rest of the body by blood convection (Heat exchange between the blood and tissue surfaces) and tissue conduction
- Heat transfer between adjacent tissue surfaces

These devices are commonly used to provide thermal support for newborns in the delivery suite, for critically ill infants who require constant nursing intervention, and for infants undergoing treatment that prolongs exposure to a cool environment. Prolonged cold stress can overwork heat producing mechanisms, drain energy reserves, and result in hypoxia, acidosis, hypoglycemia, and, in severe cases, death.

1.3 Statement of the Problem

Infant incubator is a biomedical device which provides Warmth, Humidity, Temperature, and Oxygen all in a controlled environment as required by the new born. Due to high cost and closed loop system we are moving to Warmer. Warmer is also a biomedical device which provides Temperature and Humidity in a controlled environment as required by the new born. To satisfy the thermal needs of the infant. It increases the temperature of the blood and the tissue which causes the transfer of heat throughout the baby. It connects with the central oxygen and suction unit to access real time. Current study is undertaken to answer some of questions raised by the Warmer Systems, such as:-

- Its failure to serve more warmer systems in one room
- Continuous Observation is difficult
- To satisfy the thermal needs of the infant is not high accuracy
- Suddenly, to control the temperature is difficult
- Its failure to sense the water content of the infant

(New born water content is depend on the infant temperature and weight)

To find a solution to the above problems of Warmer System, as raised by the Planning Commission, present study is devoted.

1.4 Proposed System

The proposed system aids to control disperency among patient information by replacing manual work with automatic system based on android system. It also rectifies most of the problems in existing system.

Benefits in Proposed System:

- Increased mistakes in the hospital can be reduced through extensive content. As well as continuous monitoring can be prevailed to tech valuable nature.
- Increased adulteration in consumables can be prevented

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- The problem of hoarding at nurse work is deprived by easy access through Wi-Fi.
- Cost effective approach
- Time saving approach

1.4.1 Block Diagram

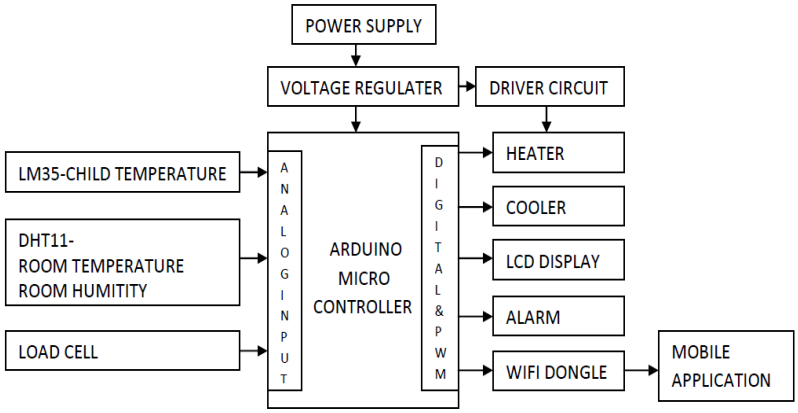

Fig 1.2 Block Diagram of Proposed warmer

1.4.2 Process Description of Proposed System

Maintenance of Temperature and humidity is crucial in the care of the new born. The requirements vary depending on the gestational age at which the baby is born. A humidity of 60 to 80 percent is essential for the infant .Even after the discharge of the baby from the hospital the new born is subjected to diurnal variations in temperature and cold at night. Using low cost available materials we have developed a cost effective system. In existing warmer system there is a drawback of the water content of the infant will be reduced. This reduced water content will be induced the infant to be in critical condition. This project suggests a new perspective technology for infant safety. The proposed system is used to overcome the disadvantages of existing warmer system and provide safety to the infant. The main objective of this project is to control the humidity and temperature parameters of warmer based upon IOT. To convert the mode of acquiring information regarding the measured temperature through android application. This system will be used to control the multiple warmer at the same time and also reduce the man power.

II. SOFTWARE ENVIRONMENT

2.1 Android

Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. In addition to touch screen devices, Google has further developed Android TV for televisions, Android Auto for Cars and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics.

2.2 Arduino software

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. Arduino programs may be written in any programming language with a compiler that produces binary machine code. Atmel provides a development environment for their microcontrollers, AVR Studio and the newer Atmel Studio. The Arduino project provides the Arduino Integrated Development Environment (IDE), which is a cross-platform application written in the programming language Java. It originated from the IDE for the languages *Processing* and *Wiring*. It is designed to introduce programming to artists and other newcomers unfamiliar with software development. It includes a code editor with features such as syntax highlighting, brace matching, and automatic indentation, and provides simple one-click mechanism to compile and load programs to an Arduino board. A program written with the IDE for Arduino is called a "sketch". The Arduino IDE supports the languages C and C++ using special rules to organize code. The Arduino IDE supplies a software library called Wiring from the Wiring project, which provides

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many common input and output procedures. A typical Arduino C/C++ sketch consist of two functions that are compiled and linked with a program stub *main()* into an executable cyclic executive program:

- *setup()*: a function that runs once at the start of a program and that can initialize settings.
- *loop()*: a function called repeatedly until the board powers off.

After compiling and linking with the GNU tool chain, also included with the IDE distribution, the Arduino IDE employs the program to convert the executable code into a text file in hexadecimal coding that is loaded into the Arduino board by a loader program in the board's firmware.

2.3. Programming for temperature:

The required parameter of infant temperature entered by the customer in app is transferred to the arduino coding and it is saved as variable. Instantaneously the sensor at the mouth of the unit gets started for some time period as given in the coding. The output is continuously read by the arduino.

AGE	1000-1200 gms	1201-1500 gms	1501-2500 gms	>2500gms & >36weeks
0-12hrs	35.0	34.0	33.3	32.8
12-24hrs	34.5	33.8	32.8	32.4
24-96hrs	34.5	33.5	32.3	32.0
5-14days	33.5	33.5	32.1	32.0
2-3 weeks	33.1	33.1	31.7	30.0
3-4 weeks	32.5	32.5	31.4	
4-5 weeks	32.0	32.0	30.9	
5-6 weeks	31.4	31.4	30.4	

Fig 3.1Temperature condition for infant

2.4 Programming for humidity:

The required parameter of humidity entered by the customer in android is transferred to the rduino coding and it is saved as variable. Previously the constant time required for obtaining the information is calculated and saved in coding.

2.5 Transferring data from Arduino to Android:

This instructable show you how to build a mobile application that communicates with your WiFi shield, in this particular example we will create an application that can turn a LED on/off connected to your Arduino. The mobile application will be developed using nothing but web technologies, this is possible using the popular framework Cordova and fast turn-around using Evothings Studio, both open sourced under the Apache license. The framework supports cross platform development, meaning that the application that you create will function both on Ios and Android. You won't need xCode or Android SDK to do this instructable, only later if you want to publish your app on iTunes or Google Play.

III. HARDWARE ENVIRONMENT

3.1 Arduino Controller

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs light on a sensor, a finger on a button, or a Twitter message. It turns it into an output activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

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Fig 4.1 Arduino UNO Board

3.1.1 Details of Arduino Controller

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers - students, hobbyists, artists, programmers, and professionals - has gathered around this open-source platform, their contributions have added up to an incredible amount of accessible knowledge that can be of great help to novices and experts alike.

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open-source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.

Technical Specifications:

Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz

Power, Memory and I/O

The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and V_{in} pin headers of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

The power pins are as follows:

- VIN: The input voltage to the Arduino board when it's using an external power source (as opposed to5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.
- 5V: The regulated power supply used to power the microcontroller and other components on the board. This can come either from VIN via an on-board regulator, or be supplied by USB or another regulated 5V supply.

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- 3V3: A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50mA.
- GND: Ground pins.

The Atmega328 has 32 KB of flash memory for storing code (of which 0,5 KB is used for the boot loader); It has also 2 KB of SRAM and 1 KB of EEPROM (which can be read and written with the EEPROM library).Each of the 14 digital pins on the Uno can be used as an input or output, using pin Mode(), digital Write(), and digital Read() functions. They operate at 5 volts. Each pin can provide or receive a maximum of 40mA and has an internal pull-up resistor (disconnected by default) of 20-50Kohms. In addition, some pins have specialized functions:

- Serial: 0 (RX) and 1 (TX).Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the corresponding pins of the ATmega8U2 USB-to-TTL Serial chip.
- External Interrupts: 2 and 3.These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attach Interrupt () function for details.
- PWM: 3, 5, 6, 9, 10, and 11.Provide 8-bit PWM output with the analog Write () function.
- SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication, which, although provided by the underlying hardware, is not currently included in the Arduino language.
- LED: 13.There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off. The Uno has 6 analog inputs, each of which provide 10 bits of resolution (i.e. 1024 different values). By default they measure from ground to 5 volts, though is it possible to change the upper end of their range using the AREF pin and the analog Reference () function. Additionally, some pins have specialized functionality:
- I2C: 4 (SDA) and 5 (SCL).Support I2C (TWI) communication using the Wire library. There are a couple of other pins on the board:
- AREF.Referencevoltage for the analog inputs. Used with analog Reference ().
- Reset. Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

3.1.2 Key Features

There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's BX-24, Phidgets, MIT's Handyboard, and many others offer similar functionality. All of these tools take the messy details of microcontroller programming and wrap it up in an easy-to-use package. Arduino also simplifies the process of working with microcontrollers, but it offers some advantage for teachers, students, and interested amateurs over other systems:

- **Inexpensive** - Arduino boards are relatively inexpensive compared to other microcontroller platforms. The least expensive version of the Arduino module can be assembled by hand, and even the pre-assembled Arduino modules cost less than $50

- **Cross-platform** - The Arduino Software (IDE) runs on Windows, Macintosh OSX, and Linux operating systems. Most microcontroller systems are limited to Windows.

- **Simple, clear programming environment** - The Arduino Software (IDE) is easy-to-use for beginners, yet flexible enough for advanced users to take advantage of as well. For teachers, it's conveniently based on the Processing programming environment, so students learning to program in that environment will be familiar with how the Arduino IDE works.

- **Open source and extensible software** - The Arduino software is published as open source tools, available for extension by experienced programmers. The language can be expanded through C++ libraries, and people wanting to understand the technical details can make the leap from Arduino to the AVR C programming language on which it's based. Similarly, you can add AVR-C code directly into your Arduino programs if you want to.

- **Open source and extensible hardware** - The plans of the Arduino boards are published under a Creative Commons license, so experienced circuit designers can make their own version of the module, extending it and improving it. Even relatively inexperienced users can build the breadboard version of the module in order to understand how it works and save money.

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3.2 Circuit Arrangement

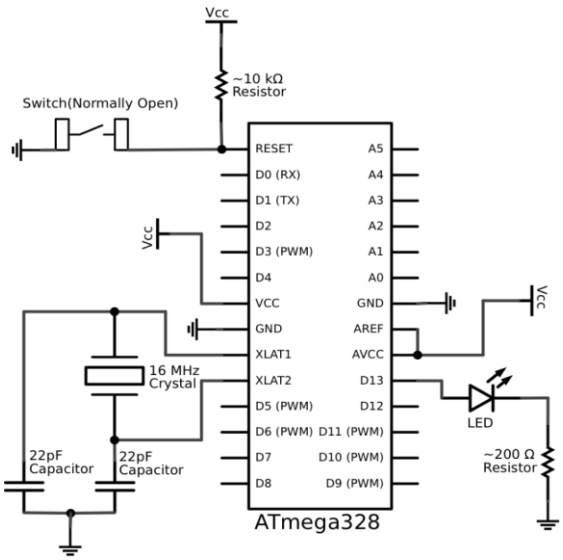

Fig 3.2 Circuit Diagram of Arduino Board

3.2.1 LCD Display

Order Code

LED008 16 x 2
FRM010 Serial LCD Firmware (optional Alphanumeric Display

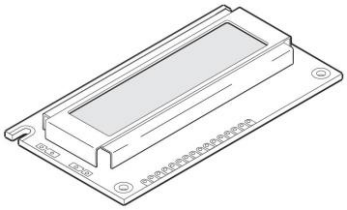

Fig 3.3 LCD DISPLAY

Alphanumeric displays are used in a wide range of applications, including palmtop computers, word processors, photocopiers, point of sale terminals, medical instruments, cellular phones, etc. The 16 x 2 intelligent alphanumeric dot matrix display is capable of displaying 224 different characters and symbols. A full list of the characters and symbols is printed on pages 7/8 (note these symbols can vary between brand of LCD used). This booklet provides all the technical specifications for connecting the unit, which requires a single power supply.

3.2.2 Relay Drivers

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal. They repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations. They have very high current rating and both AC and DC motors can be controlled through them because motor will be completely isolated from the remaining circuit.

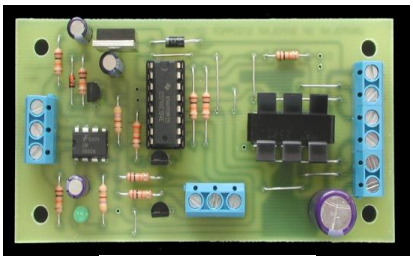

Fig 3.4 Relay Board

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Working of a relay: Relays consist of an electromagnet, armature, spring and electrical contacts. The spring holds the armature at one electrical contact and as soon as a voltage is applied across the electromagnet, it coils the armature, changes its contact and moves to another electrical contact.
The figure below describes its working.

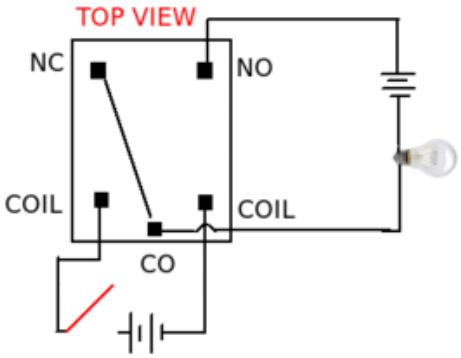

Fig 3.5 Relay circuit

Terms associated with relays:

- **Normally Open (NO):** contacts connect the circuit when the relay is activated; the circuit is disconnected when the relay is inactive.
- **Normally Closed (NC):** contacts disconnect the circuit when the relay is activated; the circuit is connected when the relay is inactive.
- **Change over (CO):** It's the common contact.
- **COIL:** It is the electromagnet coil inside relay.

Relay ratings:

- **Coil rating:** It's the Voltage at which the coil gets fully activated. Some also have coil resistance mentioned on them. Relay coil voltage rated 6V and 12V are the most commonly available.
- **Contact rating:** It depends on whether AC or DC current is passing through the contacts. The blue colored relay shown in the start of this page has a rating of 12A at 120V AC, 5A at 250V AC and 10A at 24V DC.

Relay triggering circuit:
Depending upon a relay's coil rating, some may require current greater than 100mA. If an IC cannot provide this much current, a transistor is used as a switch to trigger the relay as shown below. Don't avoid the protection diode (D1 shown in circuit) as it will protect transistor from back emf induced in relay coil. Relays are used to drive an AC load from a small DC circuit, or to drive a high current consuming motor. Have you noticed a sound of tic -tic while car wiper is on, this is the sound of relay inside the car that drives the wiper motor. The dispensing is done by the opening and closing of the mouth of the container. The motor runs through the relay driver.

3.2.3 Humidity arrangement

Microprocessor and DHT11 of connection typical application circuit as shown above, DATA pull the microprocessor I / O ports are connected.
1. Typical application circuit recommended in the short cable length of 20 meters on the 5.1K pull-up resistor, the resistance of greater than 20 meters under the pull-up resistor on the lower of the actual situation.
2. When using a 3.5V voltage supply cable length shall not be greater than 20cm. Otherwise, the line voltage drop will cause the sensor power supply shortage, caused by measurement error.
3. Each read out the temperature and humidity values are the results of the last measurement for real-time data, sequential read twice, but are not recommended to repeatedly read the sensors, each read sensor interval is greater than 5 seconds can be obtained accurate data.

3.2.4 Wiring connections

Wiring of the LM34 temperature functional module consists of wiring of functional module box and wiring of the sensor probe. The sensor is mounted on the probe head and the probe is connected to the module box. For LM34 in metal can package (TO-46), the small tab on the sensor indicates the position of "+Vs" leading pin.

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3.2.5 Temperature arrangement:

RHK's new quartz lamp sample holder is a powerful addition to the RHK family of variable temperature sample holders.

Fig 3.6 Lamp arrangements

A large field of research studies the interaction of reactive gas species with various surfaces. These experiments must be performed, however, with several precautions. Nude ion gauges must be turned off for fear that the hot filament could damage or the reactive gases might ionize and decompose, calling the entire experiment into question.

Similar precautions for heating samples preclude the use of a bare filament as a radioactive heater. RHK's UHV 700 and 750 subsystems offer a special solution to these constraints. Their built-in quartz lamp sample holder's free researchers to safely tackle the real science of high pressure SPM.

Aside from allowing radioactive heating in a reactive atmosphere, the new design confers other advantages. The first of these is in the proximity of the heater. RHK's quartz lamp sample holder has its fixed quartz lamp heater built in directly below the sample (Figure 1). Compared with a similar heater on the sample stage, this quartz lamp is significantly more effective, being situated much closer to the sample itself.

3.2.6 Fan

Overview of Cooling Fans

Today's comfortable life and society is supported by advanced control systems, which may present many heat sources. To operate these devices 24 hours a day, 365 days a year, the devices require appropriate heat designs and heat measures. Oriental Motor offers a wide range of heat measure products centered on cooling fans to meet these requirements.

Fig 3.7 Fan

3.3 ESP8266 Wi-Fi control and connection.

Introduction

Your ESP8266 is an impressive, low cost Wi-Fimodule suitable for adding Wi-Fi functionality to an existing microcontroller project via a UART serial connection.

The module can even be reprogrammed to act as a standalone Wi-Fi add power!

The feature list is impressive and includes:

- 802.11 b/g/n protocol
- Wi-Fi Direct (P2P)
- Soft-AP Integrated TCP/IP protocol stack.

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This guide is designed to help you get started with your new Wi-Fi module so let's start!

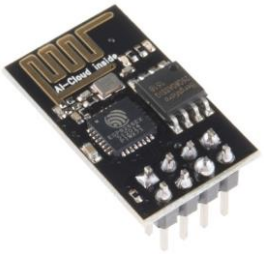

Fig 3.8ESP module

Hardware Connections

The hardware connections required to connect to the ESP8266 module are fairly straight-forward but there are a couple of important items to note related to power: The ESP8266 requires 3.3V power–do not power it with 5 volts! The ESP8266 needs to communicate via serial at 3.3V and does not have 5V tolerant inputs, so you need level conversion to communicate with a 5V microcontroller like most Arduino use. However, if you're adventurous and have no fear you can possibly get away with ignoring the second requirement. But nobody takes any responsibility for what happens if you do.

IV. EXPERIMENTAL RESULTS

4.1 Verification and Requirement Analysis

4.1.1 Identification Window

The first step in our process is to identify and verify the details of the patient. For this, the Visual basic and Arduino software should be installed and the programming is done in both the software for the execution. After starting the VB execution, first the identification window opens as follows.

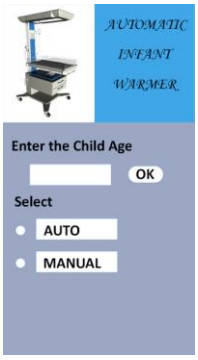

Fig 4.1 Window for mode selection

Here we have to enter our individual patient name and click on find button. The details of the patient for entered number are displayed in the same window.

Fig 4.2 Window for automatic mode.

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The displayed details should be checked by the nurse and the doctor in the hospital. Then the 'ok' button is pressed. Now the new window appears. This window shows the mode of operation from the system to the particular patient whose information is entered in the previous window. It also shows the temperature, humidity, weight of the baby. It creates transparency in the patient analysis. After observing the information online, click on 'okay' button. The next window will open.

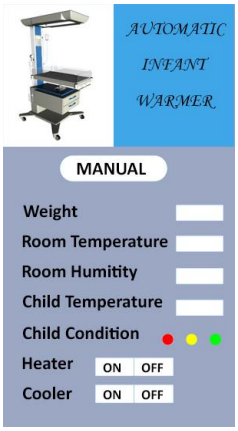

Fig 4.3 Window for manual mode.

The window for manual modes the window, where we have to enter the required information manually. At this moment, the value entered is passed to the arduino board to continuous information as required by the doctor. If we don't require auto mode we can press Proceed to get information. If we want to get the information both automatically and manually, the Ok button is pressed. The new window opens for the process. In this window, the value of required quantity of wheat should be entered as required by the customer. At this instant the value entered in this window is passed to the arduino coding to dispense the wheat required.

Adding the input information:

To add the patient information and processed value, there is a new window for adding the availing values from the sensors.

After the verification of details, "ok" button is pressed. Now, the new window appears which shows the allocated temperature, humidity, and weight of individual patients.

4.2 Warmer Analysis

At the time of entering the required mode of obtaining information the circuit gives and controls information and are processed through Wi-Fi. The hardware arrangement is shown below.

Circuit Connection:

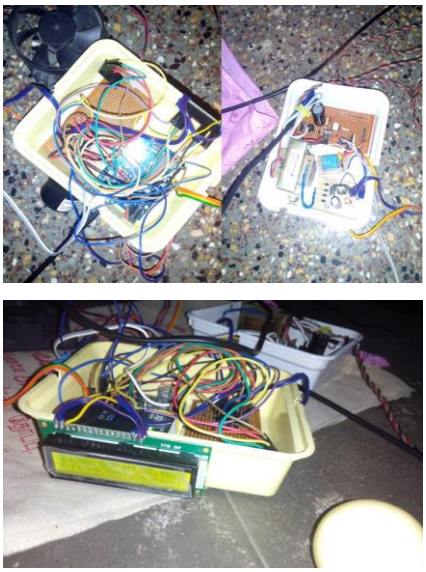

Fig 4.4 Hardware Circuit

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The whole setup for the project is given in the image below.

Fig 4.5 Whole Hardware Setup

V. CONCLUSION AND FUTURE WORK

This proposed method can provide a safe, secure and efficient way of Warmer system. By using this technique, Android based automated infant warmer; it solves the problem of manual process in Warmer System. This new technology gives solution and this research work will make a great change in information analysis and provides benefit to the doctors in easy monitoring. The conventional system has drawbacks like errors, thermal needs for infant and continuous observation for the infant without any acknowledgement to doctor and patient. To overcome above problems, automatic infant warmer played important role. The automatic infant warmer involved android technology to distribute the information to doctors and nurses in their stable place. The proposed system creates the transparency in patient condition as the work becomes automatic. With the help of this system, it is possible to make patient analysis efficient and free from mistakes. The proposed system has advantages like it is helpful to prevent endangered patient at hospitals, maintain data properly, reduces paper work, time saving approach and cost effective. In this system, temperature, humidity and weight are through automatic mechanism without any help of humans. This project definitely paves way for easy analysis. In this system easily add more sensors for to baby monitoring likewise oxygen level, Heart rate, pulse rate &etc…This system is very accurate, simple and low power consumption, which is used for the real time applications. Automation of infant warmer is the useful idea which will help the hospital easier; this is the idea that can be used in the child care hospital in all over the India. This is an advanced system useful for making automation in existing system. Finally, various parameters such as weight atmosphere are valuably controlled.

FUTURE WORK

In future it is possible to use IOT to send the details of past patients to the customer's mobile phones and the hospital can also monitor the details of health condition day by day without any influences. Human efforts are replaced by sensors and information is sent to doctor using IOT. And also, after receiving the information, controller sends the information to doctor's phone through database in server.

Fig 5.1 Future work by IOT Technology

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