Premature Born Baby Incubator

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Abstract - *As there is tremendous growth in the death of new born babies preterm birth is attributing, either directly or indirectly, to at least 30% of neonatal deaths, and due to low birth weight (lbw) new-borns are facing at the risk. Out of total, or 1.8 million babies each year, die for lack of a consistent heat as they have the body fat and metabolic rate to stay warm. In such a cases there is necessity of developing an environment which is healthy to new born babies which suits to their body temperature. This project is going to help to prevent the death of such new born babies. The baby incubator which is based on ARM7 LPC2138, will helps to all people to prevent their baby's life from harmful environment. The cost this system is very less as compared to the other baby incubators which are used in superspeciality hospitals. So, everyone who belongs to economical backward class those who are not able to afford the cost of hospitals can also take the benefit of this system. This work proposed in this system not only used for monitoring and controlling the temperature but also provide number of advantages such as controlling temperatue, humidity, and oxygen level etc.*
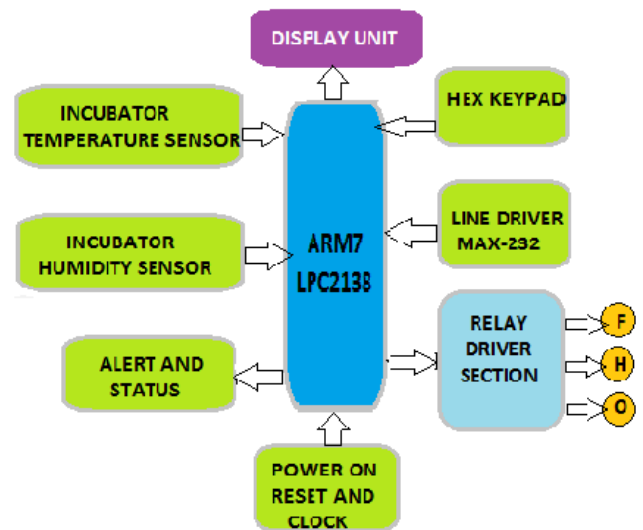
1. INTRODUCTION

The proposed system is an embedded system which will closely monitor and control the incubator parameters such as Temperature, Humidity, which could maximize their requirement. When any of the above measured incubator parameters cross a safety threshold which has to be maintained to protect the baby, the sensors sense the change and controller then performs the needed actions by employing relays until the strayed-out parameter has been brought back to its optimum level.An neonatal Incubator is a medical device used to maintain an optimal environment for it is used for premature babies, meaning those born pre-term, or before 37 weeks amenorrhea(a measure of time used in pregnancy), but also those with certain congenital diseases.

Incubators are attracting interest from the medical profession. They are glass and metal cases heated to certain humidity, into which enough air is admitted to maintain life. Until such time as in fact incubator is strongly recommended. In baby incubator humidity control is very important. Therefore we controlling the humidity according to our requirement, humidity controller can be done by Electronic circuit, microprocessor & microcontroller. Now ARM controllers are advanced among all above, therefore we are using ARM controller for humidity/temperature control of baby incubator.

1.1 Block diagram:

1.2 Flow chart:
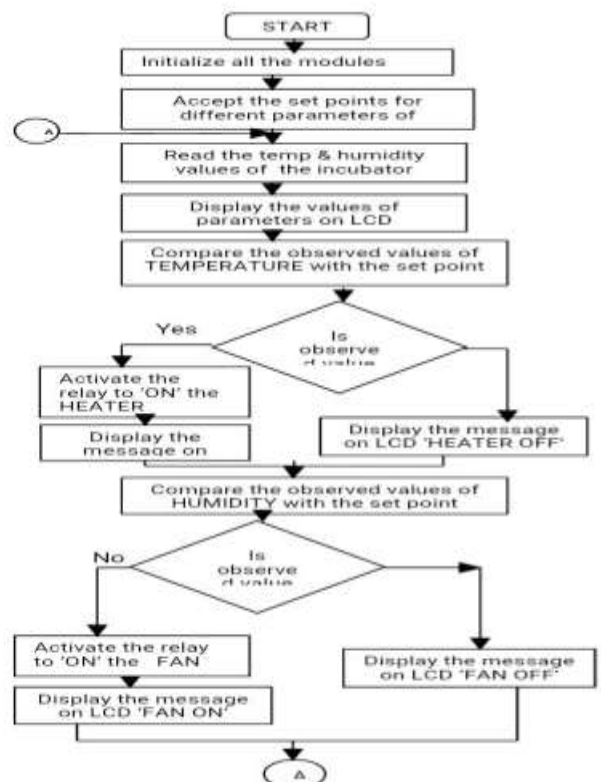
2. BLOCK DIAGRAM DESCRIPTION:

Hardware part used

- ARM7 LPC2138 controller Board.

- Temperature and Humidity sensor Data

- LCD, heater/ fan driver circuit.

- Solenoid Valve Oxygen flow c

- Keyboard,Power supply section board interface

Infants who born before 37 weeks of the gestation period, are nursed in incubators. But millions of infants are dying every year due to money and maintenance in hospitals and due to advanced technology. In baby incubator humidity control is very important. Therefore we controlling the humidity according to our requirement, humidity controller can be done by Electronic circuit, microprocessor & microcontroller. we are using ARM controller for humidity/temperature control of baby incubator.

We are using ARM7 LPC2138 controller. First we will measure the temperature and humidity of the incubator using temperature sensor PT100 and Humidity sensor HS200/HS2000 and then transmit the data using ARM7 controllers ports pins. If the data is above/below a set point set by the user then the controller will give the heating pad accordingly. The readings will be shown on the 16*2 LCD screen.

The PT100 and Humidity sensor HS200/HS2000 sensors will give continuous data and so we can know the temperature and humidity and oxygen level at any time. So using this model we can easily control the temperature, humidity and oxygen level. The sensor will give the reading continuously and the room-heater / fan on-off. Thus the temperature will remains same and the infant will stay safe control system. Keyboard interface for setting temperature value. Power supply section is used for supplying the power to the designed system.

Table -1: Arm pin connection:

Input:

Analog input Temp	AD1.0 : P0.6
Analog input humidity	AD1.2 : P0.10
Sim oxygen input	AD1.3 :P0.12

Output:

Relay1 (Temp)	P1.27
Relay2 (Hmd)	P0.28
Relay3 (Oxy)	P0.29
Relay4 (Bz)	P1.22

Output:

Lcd data 4 bit mode	P0.20: DO P0.19: D1 P0.18: D2 P1.30: D3
Lcd enable	P1.29
Lcd RS	P1.28
READ/WRITE	GND

Input Keyboard:

Strobe	P1.20
D0,D1,D2,D3	P1.16,P1.17,P1.18,P1.19

Circuit diagram:

LPC2138 ARM BOARD WITH LCD,UART,RST,POWER SUPPLY
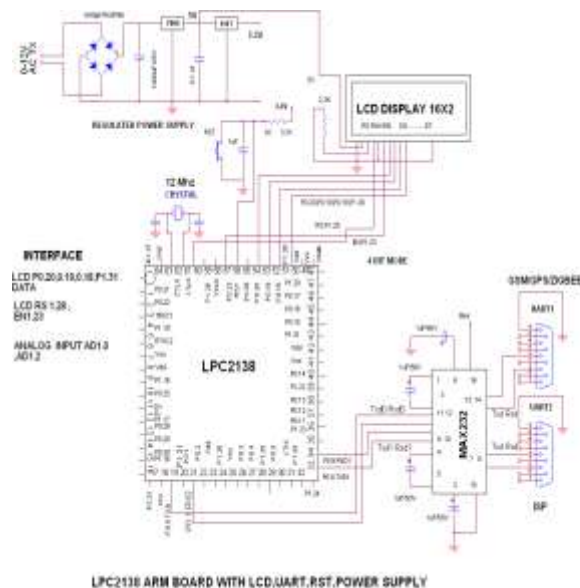
3. CONCLUSIONS

The proposed system monitors the infant and temperature and humidity of the surrounding. Temperature monitoring is done in order to keep the environment suitable for the neonate.Temperature monitoring of the infant's body will help to detect many other internal diseases like infections, common cold, and pneumonia have a common symptom of fever as the body temperature goes high .

Humidity measure values also help in detecting of having internal problems like cold, dehydration.. But the temperature inside the incubator loose due to atmosphere or any other problems, the heating pad will not on

automatically, as we didn't implement the feature. And also for continuous monitoring threshould always have the facilities of power supply. But in many places there is still have the problem of power cut about several hours.

ACKNOWLEDGEMENT

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BIOGRAPHIES

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