Contactless Temperature Measurement with Automatic Sanitization System

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ABSTRACT

The design and development of a non-contact temperature reader and sanitizer dispenser (NTRSD) system is presented in this study. The system is intended to help prevent the spread of SARS-cov-2 infection and assist in maintaining and/or improving community health and reducing the negative impact of the infection on the economy and society. The NTRSD has two subsystems, the temperature reader (TR) and the sanitizer dispenser (SD), which is controlled from a common microcontroller and by design, cannot operate simultaneously. The TR is designed and developed to perform comparably in terms of accuracy with existing and commercially handheld infrared thermometers, display to the user the temperature read, and give visual and aural alerts when the temperature read exceeds the critical body temperature of 38 degrees centigrade. The SD is designed and developed to deliver sanitizer economically, by dispensing only once and only at a needed amount when activated. The design and development of the system go through the following methodology:

- *System Specification,*
- *Control System Design,*
- *Hardware Prototype Development,*
- *System Test and Data Collection.*

Based on data obtained from tests made on the built prototype, a reiteration of the above steps is carried out wherein the control system software logic and parameters are adjusted so as to meet the specified system performance. The final test results are acceptable and shows the NTRSD provides a significant contribution on temperature monitoring and on disinfecting the hands. The system utilizes a single Arduino Uno, an MLX90614 temperature sensor, two ultrasonic sensors, an LCD, two pilot lights, a buzzer, a submersible sanitizer pump, an alcohol reservoir, a power supply and a frame to house the system. Photos of the built and tested prototype, a schematic diagram of the control system, and the flowchart on which the Arduino script is developed are shown. The operation and user interaction of the actual system is also described .Tabulated and shown along with statistical analysis. The control system program is written such that the temperature read and displayed by the NTRSD very closely matches that of a hand held temperature reader. The non-contact feature for both the reading of body temperature and the dispensing of sanitizer provided by NTRSD precludes the possible viral transmission from using traditional. Thermometers, renders handheld IR thermometer operators (hitos) unnecessary, avoids viral transmission between hitos and subjects of their temperature scans, and ensures a clean and Uncontaminated sanitizer. The system is envisioned for strategic deployment in public and private areas like public markets, banks, hospitals, schools, offices, residences, and many others. Index Terms- Arduino Automated System, Covid19, Temperature sensor, Ultrasonic Sensor.

Keyword : *Sanitizer dispenser, Temperature sensor, Hardware prototype development, Ultrasonic sensor, LCD, Buzzer, Submersible sanitizer pump, and Covid19*

1. Introduction :

1.1 Problem Statement

The spread of the dreaded and potentially deadly Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2) virus has caused a worldwide pandemic, hitting hard and putting at risk the global economy and overwhelming public and private healthcare facilities everywhere. The World Health Organization (WHO) officially named the disease caused by SARS-Cov-2, the 2019 novel .

Body temperature may be read in a number of ways and using a variety of contact and non-contact devices or systemts. Devices that uses mercury to read body temperature fall under traditional methods.

1.2 Objective :

A benefit of thermal imaging systems is that the medical personnel who handles the thermal imaging system is not required to be physically close to the person being evaluated. In fact, the person who handles the thermal imaging system could be in a different area or room, The thermal imaging system may measure surface skin temperature faster than the typical forehead or oral (mouth) thermometers, all of which require the handler a close distance or physical contact with the person being evaluated. Scientific studies show that, when used correctly, thermal imaging systems generally measure surface skin temperature accurately.

The person who handles a thermal imaging system is trained and follow all manufacturer instructions to make sure the system is set up properly and located where it can measure surface skin temperature accurately [4]. The trained personnel also needs to properly prepare the person being evaluated. An inaccurate temperature reading, a false negative, may put other people at risk. The effectiveness of temperature checks depends on the device and conditions under which it is used. From the study of G. Marques and R Pitarma, a web application is designed to access and monitor the collected data and provide the history of the temperature evolution. The results obtained are promising, representing a significant contribution to infrared temperature monitoring systems base Another study on Infrared temperature measurement module for the measurement of body temperature, the measurement of the traditional contact thermometer is avoided; it is particularly suitable for measuring body temperature for infants and young children. The measured temperature is displayed through the LCD module; it has a voice broadcast function that can be used by a man of poor eyesight.

Scope of project:

In recent years, non-contact measurement methods have been used for numerous applications such as medical, environmental monitoring, home automation, automotive electronics, aerospace and military applications.

1.2 Methodology :

The development of the Non-Contact Temperature Reader with Sanitizer Dispenser follows a four-part methodology: formulation of the required design based on sensor behavior, operational, manufacturing and economic requirements; design, modeling, and simulation of the micro-controller-based control system; Non-Contact Temperature Reader with Sanitizer Dispenser, hardware prototype development; and system test and data collection.

Recently used method :

Image 1 : Sanitization and Temperature checking by using hand touch

2. SYSTEM DESIGN

2.1 System Requirements :

Ethiopia ministry of health encourage every company to check the temperature of every worker leaving and entering the premises to find those who have a fever and be brought to designated quarantine area and to install alcohol dispenser to sanitize workers hands on entering the work premises. The system is designed to help meet these requirements. The control system components are to be selected so that they are the cheapest possible or can be sourced from junk materials. The frame or housing of the Non-Contact Temperature Sensor with Sanitizer Dispenser system should be able to use any locally available materials and could be built in any way, provided that itmeets the requirement that is also movable. The code for the micro-controller should be written so that it can easily be modified to suit the actual components used and make the temperature reading and alcohol dispensing system respond

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2.2 Overview of system

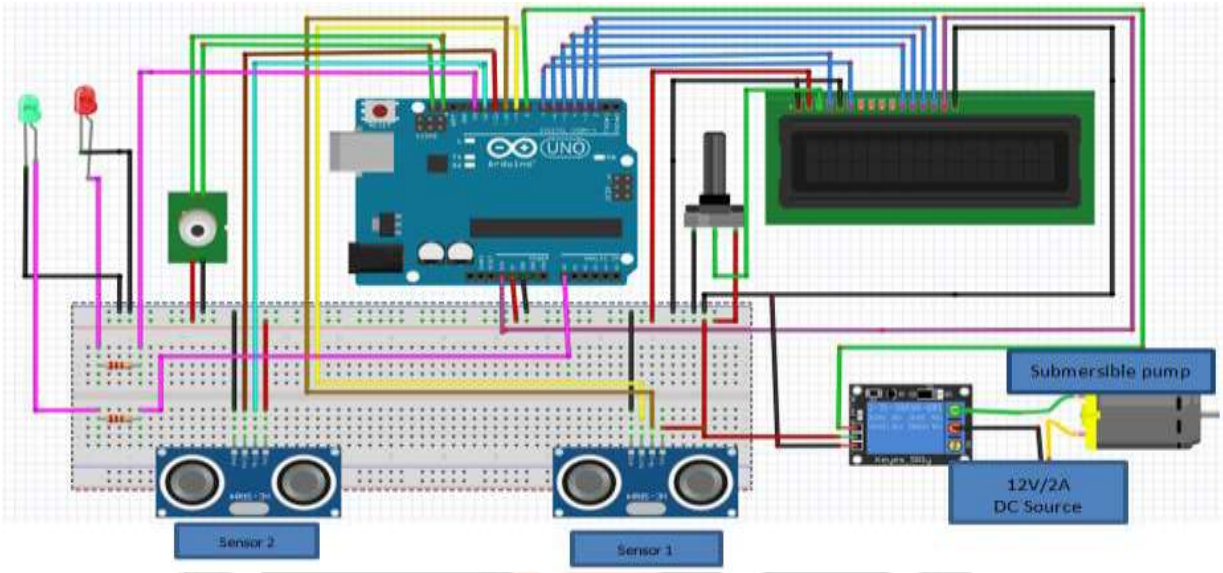
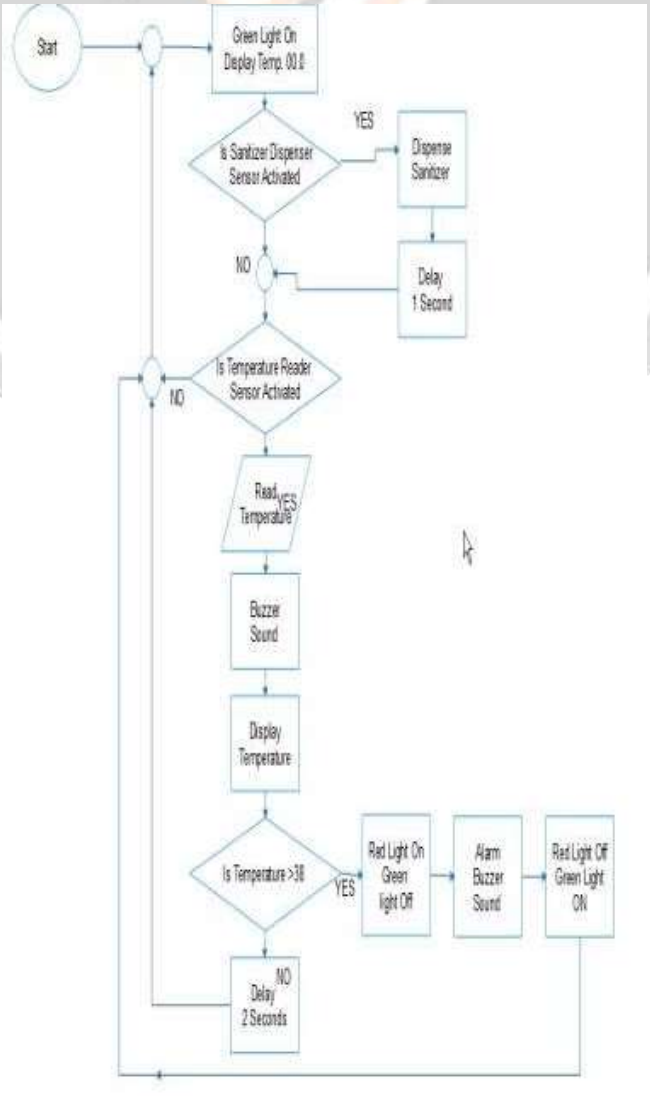


Image 2 : System Overview .

2.3 Control system design: flow chart



Flow chart : Overall system flow chart

3. Hardware and software used

Hardware Model Parts List :

3.1 Arduino

Image 3 : Arduino

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode. Revision 3 of the board has the following new features:

Pin out: added SDA and SCL pins that are near to the AREF pin and two other new pins placed near to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible both with the board that use the AVR, which operate with 5V and with the Arduino Due that operate with 3.3V. The second one is a not connected pin that is reserved for future purposes.

1. Stronger RESET circuit.
2. Atmega 16U2 replace the 8U2.

"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.

3.2 Temperature Sensor :

Image 4 : Temperature sensor

The MLX90614 is an infrared thermometer for non-contact temperature measurements. Both the IR sensitive thermopile detector chip and the signal conditioning ASIC are integrated in the same TO-39 can. Integrated into the MLX90614 are a low noise amplifier, 17-bit ADC and powerful DSP unit thus achieving high accuracy and resolution of the thermometer. A non- contact infrared sensor thermometer is useful for measuring temperature under circumstance where thermocouple or other probe type sensors cannot be used or do not produce accurate data for a variety of reasons.

3.3 Ultrasonic sensor hc-sr 4

Is a device that can measure the distance to an object by using sound waves. It measure distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back.

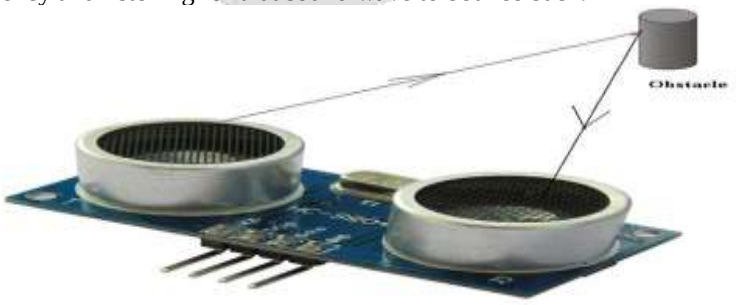


Image 5 : ultrasonic sensor

The ultrasonic sensor is used for obstacle detection. Ultrasonic sensor transmits the ultrasonic waves from its sensor head and again receives the ultrasonic waves reflected from an object. There are many application use ultrasonic sensors like instruction alarm system, automatic door openers etc. The ultrasonic sensor is very compact and has a very high performance. It has both the transmitter and receiver. It consists of four pins Vcc pin to offer a 5V supply to the sensor, trigger pin give a TTL pulses (15us), echo pin to get the output from the sensor and ground pin. Ultrasonic sensor HC-SR04 is shown in Fig

3.4 Pump :

Submersible Motor Pump: It is electric pump that is fully submerged in alcohol and it does not require a lot of energy to dispense alcohol

Water Pump for desert air cooler is a very powerful and heavy-duty pump that can be used in a number of ways. High grade material - Our cooler submersible pumps are made from high grade material designed to last for long time. The cooler submersible pumps provide smooth operation for water pumping purposes. Low electricity consumption

Image 6 : Sub-Mersible water pump

3.5 Power Supply Design :

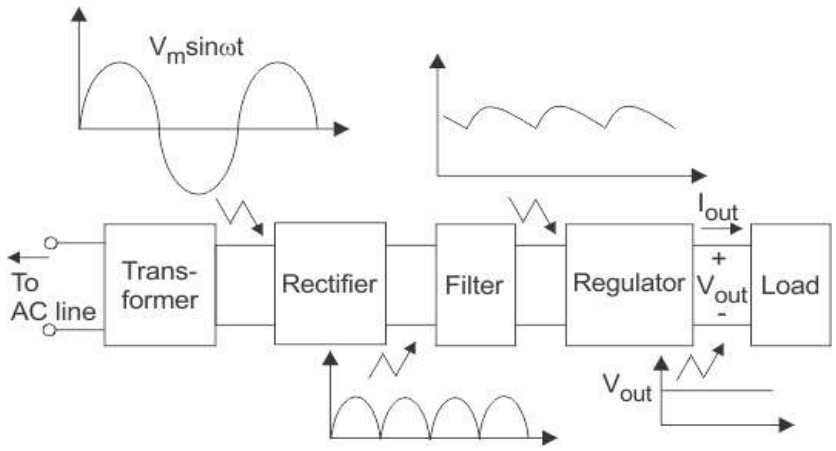


Fig. Block diagram of power supply

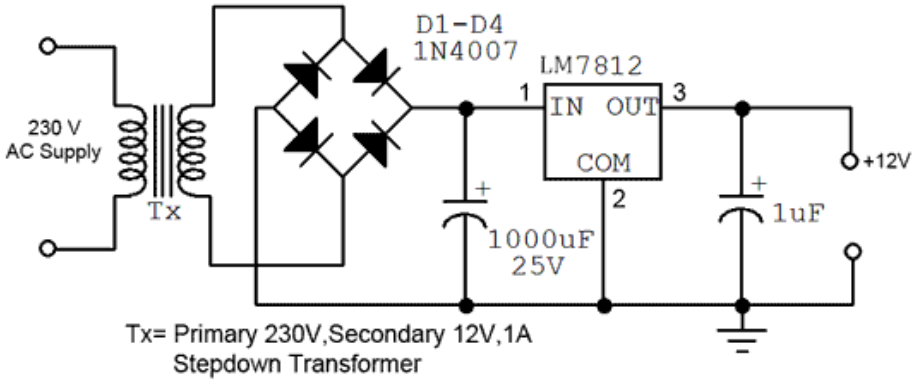


Fig. 7 - Circuit diagram of power supply

Description :

The electrical power is almost exclusively generated, transmitted and distributed in the form of ac because of economical consideration but for operation of most of the electronic devices and circuits, dc supply is required. Dry cells and batteries can be used for this purpose. No doubt, they have the advantages of being portable and ripple free but their voltages are low, they need frequent replacement and are expensive in comparison to conventional dc power supplies.

Now days, almost all electronic equipment includes a circuit that converts ac supply into dc supply. The part of equipment that converts ac into dc is called DC power supply. In general at the input of the power supply there is a power transformer. It is followed by a rectifier (a diode circuit) 1a smoothing filter and then by a voltage regulator circuit.From the block diagram, the basic power supply is constituted by four elements,

i. Transformer
ii. Rectifier
iii. Filter
iv. Regulator

The output of the dc power supply is used to provide a constant dc voltage across the load. Let us briefly outline the function of each of the elements of the dc power supply. Transformer is used to step-up or step-down (usually to step-down) the-supply voltage as per need of the solid-state electronic devices and circuits to be supplied by the dc

power supply. It can provide isolation from the supply line-an important safety consideration. It may also include internal shielding to prevent unwanted electrical noise signal on the power line from getting into the power supply and possibly disturbing the load. It is used to supply the power to ADC and microcontroller, LCD, etc.

I. Transformer

Step-down transformer is one whose secondary voltage is less than its primary voltage. It is designed to reduce the voltage from the primary winding to the secondary winding. This kind of transformer "steps down" the voltage applied to it. As a step-down unit, the transformer converts high-voltage, low-current power into low-voltage, high-current power. The larger-gauge wire used in the secondary winding is necessary due to the increase in current. The primary winding, which doesn't have to conduct as much current, may be made of smaller-gauge wire.

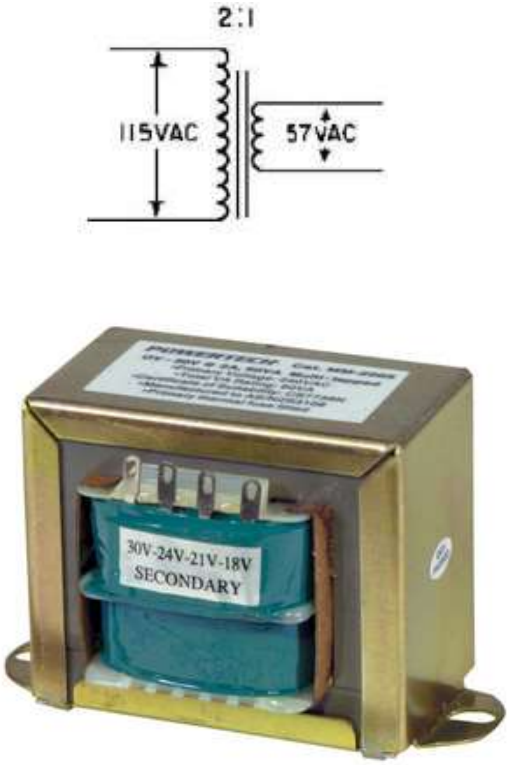


Fig. Step-down transformer

Design of step down Transformer :

The following information must be available to the designer of the transformer.

1) Power output.
2) Operating voltage.
3) Frequency range.
4) Efficiency and regulation.

Size of core is one of the first consideration in regard of weight and volume of a transformer. This depends on type of core and winding configuration used. Generally following formula is used to find Area or Size of the Core.

$$Ai = \sqrt{Wp} / 0.87$$

Where Ai = Area of cross section in square cm.
Wp = Primary Wattage.

For our project we require +5V output, so transformer secondary winding rating is 12V, 1amp.

So secondary power wattage is,

P2 = 24 * 1000mA
= 24Watt

So,

Ai = √ 24 / 0.87
= 5.25

Generally 10% of area should be added to the core.

So,

Ai = 5.25+0.525= 5.77

a) Turns per volt: **-** Turns per volt of transformer are given by relation.

Turns per volt = 100000 / 4.44 f * Bm * Ai

Where,

F = Frequency in Hz.

Bm = Density in Wb / Square meter.

Ai = Net area of the cross section.

Following table gives the value of turns per volt for 50 Hz frequency.

Flux density 0.76 Wb / sq m	1.14	1.01	0.91	0.83
Turns per Volt 45 / Ai	40 / Ai	45 / Ai	50 / Ai	55 / Ai

Table. 5

Generally lower the flux density better the quality of transformer. For our project we have taken the turns per volt is 0.91 Wb / Sq.m from above table.

Turns per volt = 50 / Ai
= 50 / 5.77
= 8.66

Thus the turns for the primary winding is,

230 * 8.66 = 1991.8

And for secondary winding,

24 * 8.66 = 207.84

Wire size: - As stated above the size is depends upon the current to be carried out by winding which depends upon current density. For our transformer one tie can safely use current density of 3.1 Amp / sq.mm.

For less copper loss 1.6Amp/sq.mm or 2.4sq.mm may be used generally even size gauge of wire are used.

R.M.S secondary voltage at secondary to transformer is 12V. so maximum voltage Vm across secondary is

= 12* 1.141
= 13.68v

D.C output voltage Vm across secondary is,

Vdc = 2 * Vm/pi
= 2 * 19.68/3.14
= 8.71 V

P.I.V rating of each diode is

PIV = 2Vm

= 2 * 8.71

= 17.42 V

Maximum forward current, which flow from each diode, is1A. So from above parameter, we select diode IN4007 from the diode selection manual.

II. Rectifier

Rectifier is a device which converts the sinusoidal ac voltage into either positive or negative pulsating dc. P-N junction diode, which conducts when forward biased and practically does not conduct when reverse biased, can be used for rectification i.e. for conversion of ac into dc. The rectifier typically needs one, two or four diodes. Rectifiers may be either half-wave rectifiers or full-wave rectifiers (centre-tap or bridge) type. The output voltage from a rectifier circuit has a pulsating character i.e., it contains unwanted ac components (components of supply frequency f and its harmonics) along with dc component. For most supply purposes, constant direct voltage is required than that furnished by a rectifier. To reduce ac components from the rectifier output voltage a filter circuit is required.

Thus filter is a device which passes dc component to the load and blocks I ac components of the rectifier output. Filter is typically constructed from reactive circuit I elements such as capacitors and/or inductors and resistors. The magnitude of output dc voltage may vary with the variation of either the input ac voltage or the magnitude of load current. So at the output of a rectifier filter combination a voltage regulator is required, to provide an almost constant dc voltage at the output of the regulator. The voltage regulator may be constructed from a Zener diode, and or discrete transistors, and/or integrated circuits (ICs). Its main function is to maintain a constant dc output voltage. However, it also rejects any ac ripple voltage that is not removed by the filter. The regulator may also include protective devices such as short-circuit protection, current limiting, thermal shutdown, or over-voltage protection.

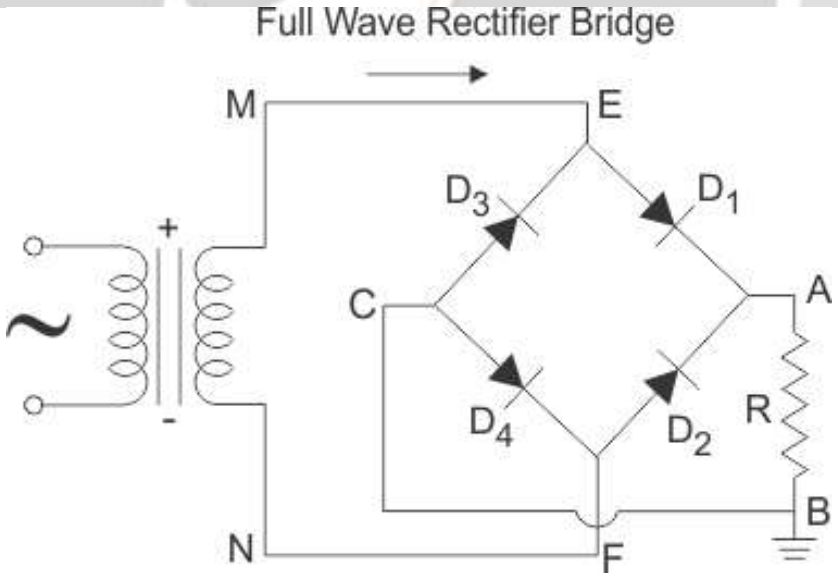


Fig. : Full wave bridge rectifier

This type of single phase rectifier uses four individual rectifying diodes connected in a closed loop "bridge" configuration to produce the desired output.

The main advantage of this bridge circuit is that it does not require a special centre tapped transformer, thereby reducing its size and cost. The single secondary winding is connected to one side of the diode bridge network and the load to the other side as shown below. The four diodes labelled D1 to D4 are arranged in "series pairs" with only two diodes conducting current during each half cycle. During the positive half cycle of the supply, diodes D1 and D2 conduct in series while diodes D3 and D4 are reverse biased and the current flows through the load as shown below.

The Positive Half-cycle :

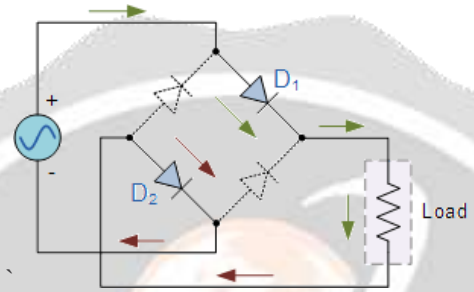


Fig. : Positive half cycle

During the negative half cycle of the supply, diodes D3 and D4 conduct in series, but diodes D1 and D2 switch "OFF" as they are now reverse biased. The current flowing through the load is the same direction as before.

The Negative Half-cycle

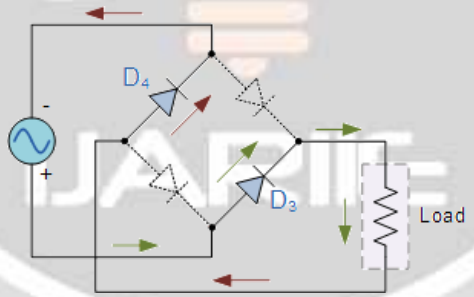


Fig. : Positive half cycle

As the current flowing through the load is unidirectional, so the voltage developed across the load is also unidirectional the same as for the previous two diode full-wave rectifier, therefore the average DC voltage across the load is 0.637Vmax.

Image : Typical Bridge Rectifier

However in reality, during each half cycle the current flows through two diodes instead of just one so the amplitude of the output voltage is two voltage drops (2 x 0.7 = 1.4V) less than the input VMAX amplitude. The ripple frequency is now twice the supply frequency (e.g. 100Hz for a 50Hz supply or 120Hz for a 60Hz supply.) Although we can use four individual power diodes to make a full wave bridge rectifier, pre-made bridge rectifier components are available "off-the-shelf" in a range of different voltage and current sizes that can be soldered directly into a PCB circuit board or be connected by spade connectors. The image to the right shows a typical single phase bridge rectifier with one corner cut off. This cut-off corner indicates that the terminal nearest to the corner is the positive or +ve output terminal or lead with the opposite (diagonal) lead being the negative or -ve output lead. The other two connecting leads are for the input alternating voltage from a transformer secondary winding.

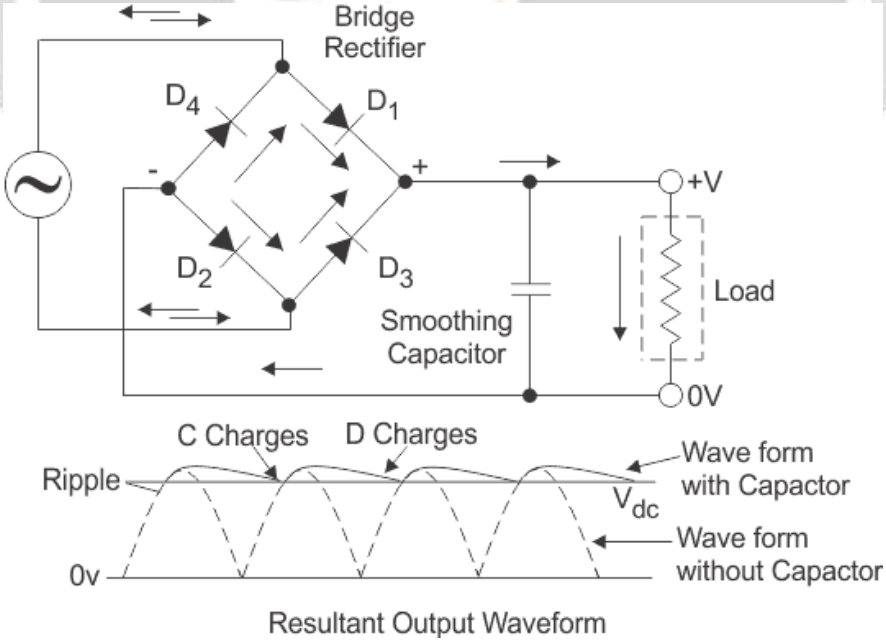


Fig. Output waveform of full wave bridge rectifier

III. Filter

Fig. : Electrolytic capacitor

An electrolytic capacitor is a sort of capacitor that utilizes an electrolyte to obtain greater capacitance than the other type of capacitors. An electrolyte is a gel or fluid in which concentration of ions is very high. Electrolytic capacitor is a general term used for three different capacitor family members:

Aluminum electrolytic capacitors

Tantalum electrolytic capacitors

Niobium electrolytic capacitors

Fig. a) Aluminum electrolytic capacitor indicating positive and negative terminals

Almost all the electrolytic capacitors are polarized which means the voltage of anode must be always higher than the cathode. The ability of large capacitance makes them highly useful for sending low-frequency signals. They are extensively used for noise filtering or decoupling in power supplies. The advantage of large capacitance comes with few drawbacks as well. Drawbacks include leakage currents, equivalent series resistance and a limited lifetime. Electrolytes are made up of aluminum or tantalum and few other metals.

A special type of electrolytic capacitors with capacitances of hundreds and thousands of farads are known as super capacitors. They are also known as double-layer electrolytic capacitors.

Characteristics :

Capacitance Drift :

The electrical characteristics highly depend on the type of electrolyte used and the anode. The capacitance of electrolytic capacitors has large tolerances 20% and drifts from nominal value as the time passes. This implies aluminum capacitor whose nominal capacitance is 47µF is expected to have a value between 37.6µF and 56.4µF. Tantalum capacitors can also be made with higher tolerances, but their maximum operating voltage is very low. So they cannot be used as perfect replacement aluminum capacitors.

Applications :

- Used to reduce voltage fluctuations in various filtering devices.
- Used in output and input smoothing to filter when DC signal is weak with AC component.
- They are extensively used for noise filtering or decoupling in power supplies.

They are used for coupling signals between amplifier stages and also to store energy in flash lamps

3.5 Voltage Regulator

A voltage regulator is an electronic circuit that provides a stable dc voltage independent of the load current, temperature and ac line voltage variations. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages. Voltage sources in a circuit may have fluctuations resulting in not giving fixed voltage outputs. Voltage regulator IC maintains the output voltage at a constant value. 7805 IC, a voltage regulator integrated circuit (IC) is a member of 78xx series of fixed linear voltage regulator ICs used to maintain such fluctuations. The xx in 78xx indicates the fixed output voltage it provides. 7805 IC provides +5 volts regulated power supply with provisions to add heat sink as well. Let's look into some of the basic ratings to get an overview.

7805 IC Rating

- Input voltage range 7V- 35V
- Current rating Ic = 1A
- Output voltage range VMax =5.2V, VMin =4.8V

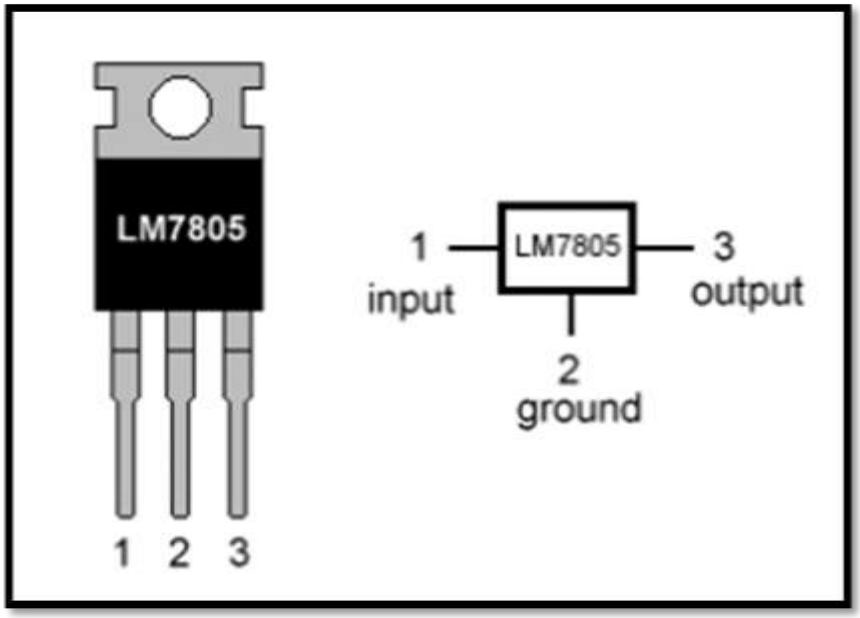


Fig. 1pin out diagram of LM7805

PIN NO	PIN	Function	DESCRIPTION
1	INPUT	Input voltage (7V-35V)	In this pin of the IC positive unregulated voltage is given in regulation.
2	GROUND	Ground (0V)	In this pin where the ground is given. This pin is neutral for equally the input and output.
3	OUTPUT	Regulated output; 5V (4.8V-5.2V)	The output of the regulated 5V volt is taken out at this pin of the IC regulator.

Table: 1 Pin Details of 7805 IC

The difference between the input and output voltage appears as heat. The greater the difference between the input and output voltage, the more heat is generated. If too much heat is generated, through high input voltage, the regulator can overheat. If the regulator does not have a heat sink to dissipate this heat, it can be destroyed and malfunction. Hence, it is advisable to limit the voltage to a maximum of 2-3 volts higher than the output voltage. So the two options are, design your circuit so that the input voltage going into the regulator is limited to 2-3 volts above the output regulated voltage or place an appropriate heat sink that can efficiently dissipate heat.

3.6 LCD Display

Fig. LCD

LCD modules are very commonly used in most embedded projects, the reason being its cheap price, availability and programmer friendly. Most of us would have come across these displays in our day to day life, either at PCO's or calculators. The appearance and the pinouts have already been visualized above now let us get a bit technical.

16×2 LCD is named so because; it has 16 Columns and 2 Rows. There are a lot of combinations available like, 8×1, 8×2, 10×2, 16×1, etc. but the most used one is the 16×2 LCD. So, character will be made of 5×8 Pixel Dots. A Single character with all its Pixels is shown in the below picture

Now, we know that each character has (5×8=40) 40 Pixels and for 32 Characters we will have (32×40) 1280 Pixels. Further, the LCD should also be instructed about the Position of the Pixels. Hence it will be a hectic task to handle everything with the help of MCU, hence an Interface IC like HD44780is used, which is mounted on the backside of the LCD Module itself. The function of this IC is to get the Commands and Data from the MCU and process them to display meaningful information onto our LCD Screen. You can learn how to interface an LCD using the above mentioned links. If you are an advanced programmer and would like to create your own library for interfacing your Microcontroller with this LCD module then you have to understand the HD44780 IC is working and commands which can be found its datasheet it will have (16×2=32) 32 characters in total and each **.**

3.7 SOFTWARE USED

ARDUINO IDE

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.

This software can be used with any Arduino board.

Refer to the Getting Started page for Installation instructions.

[1].The Arduino Integrated Development Environment (IDE) is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++

[2]. It is used to write and upload programs to Arduino compatible boards, but also, with the help of 3rd party cores, other vendor development boards.
[3]The source code for the IDE is released under the GNU General Public License, version.
[4] The Arduino IDE supports the languages C and C++ using special rules of code structuring.
[5] The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub main() into an executable cyclic executive program with the GNU tool chain, also included with the IDE distribution.
[6] The Arduino IDE employs the program avrdude to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.
[7] By default, avrdude is used as the uploading tool to flash the user code onto official Arduino boards
[8]Arduino Pro IDE:

Developer(s)	: Arduino Software
Preview release	: v0.0.2 / 28 October 2019; 4 months ago[9]
Repository	: github.com/arduino/Arduino
Written in	: C, C++
Operating system	: Windows, macOS, Linux
Platform	: IA-32, x86-64, ARM
Type	: Integrated development environment
License	: LGPL or GPL license
Website	: blog.arduino.cc/2019/10/18/arduino-pro-ide-alpha- preview-with-advanced-features/

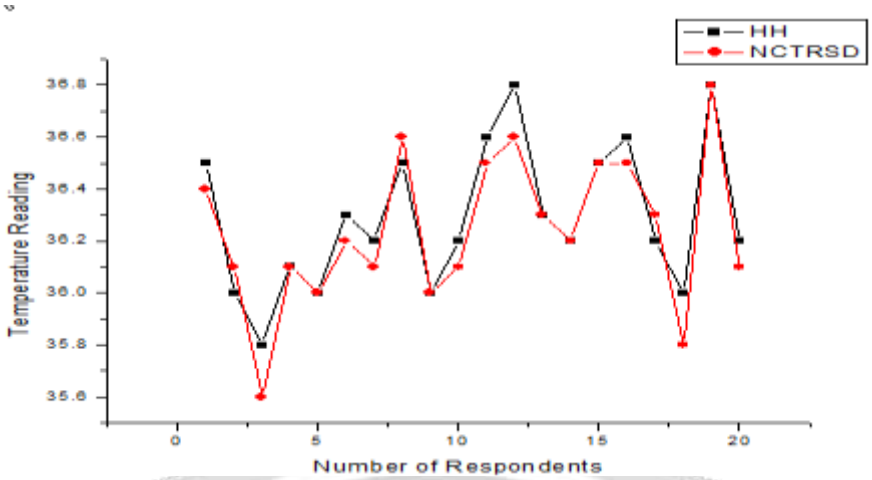
In October 2019 the Arduino organization began providing early access to a new Arduino Pro IDE with debugging and other advanced features.

4. RESULT :

System Tests and Data Collection:
Throughout the number of iterations undertaken in the development of the NCTRSD, from hardware prototype, a series of similar tests are conducted. There are 7 test cases on the system as follows.

- User Approach Sensor 1- The User will put his/her hand in the hand sanitizer box and the sensor 1 will be activated than it will dispensed after that he can go to temperature sensor.
- User Approach Sensor 2 - The user approached the sensor 2 within a distance of 20 cm, than the sensor 2 will read the temperature and the LCD will display the reading.
- User Approach sensor 1 - and do again in sensor 1(Sensor 1 dispensing)- The user approach sensor 1 and it dispense while the user hand not removed the machine will not dispense but if the user hand he remove in the dispensing machine and return the machine will dispense.
- User Approach sensor 2 - and do again in sensor 2(Sensor 2 Reading)- The user approach sensor 2 , the reading will be displayed and if the user move away in at least one(1) meter from sensor 2 and he return in same sensor than the reading will be display again.
- User Approaches Sensor 1- and another User Approaches Sensor 2 at the same time – Once a sensor is activated the other is waiting.
- User Approaches Sensor 2 -and another User Approaches Section 1 at same time- Once a sensor is activated the other is waiting.

System testing for temperature :



Graph : System checking result for human body temperatur.

5. CONCLUSION :

- The Non-Contact Temperature and Sanitizer Dispenser Devices is best way to avoid the used of traditional contact thermometer and Handheld device for preventing the spread of SARS-Cov-2 infections, The measured temperature is displayed through the LCD indicator if the reading is normal or above 38 degrees centigrade.
- The system shows that the temperature reading results is accurate based on the data gathered. The system help the frontlines on checking the temperature and dispensing alcohol to workers in any company. The advancement of the Sanitizer dispenser is that virus will be eliminated easily since no body will touch the pump and this system is will Dispense only few amount of sanitizer per motion activation and its highly efficient in which waste will be minimal.

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