MULTI CHANNEL PRODUCT MEASURMENT AND REJECTION SYSTEM

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ABSTRACT

The conveyor belt rotates between the IR sensors. Whenever, the product flows through the conveyor, it cuts the sensor wave and at once the timer starts counting. If the product moves from the sensor wave completely, then the time should be stopped. According to this time duration we can determine the product length. The length of the product is displayed through LCD. We already program the controller with the required product length through the keypad attachment. If the measurement of the product is less or more than this preset value, then the alarm indicates the faulty product and it is then rejected. So these main concepts are programmed in micro controller using embedded system.

Key words: *Multi channel product measurement, Rejection system, Embedded system*

I. INTRODCTION

Block codes have been the subject of a considerableamount of research in information theory Generalcoding theorems and sophisticated implementationtechniques have been developed for these codes.In general, though, when dealing with binary codes, the decoding techniques developed assume a channei whose output is also binary. For many communication applications this assumption is not necessary, and furthermore, as indicated by the coding theorems developed for binaryinput channels with J(> 2) outputs,' there is a significant loss in performance when just a binary output is assumed. The subject of this paper is to extend the binary decoding techniques previously developed to channels where more than just a binary output is Available . A block diagram of the communication system of interestis shown in Fig. 1. Each sequence of K binary information digits is assumed to be encoded into a block of N binary digits denoted by X = X, ,X2,. . .,X,. These binary digitsare fed into a data modulator, which determines the transmitted waveform x(t).

II. LIST OF MATERIALS

1. MICRO CONTROLLER
2. LCD
3. IR SENSOR
4. CONVEYOR BELT
5. ALARM
6. KEYBOARD

III. MICRO CONTROLLER:

A microcontroller (or MCU for microcontroller unit) is a small computer on a single integrated circuit. In modern terminology, it is similar to, but less sophisticated than, a system on a chip or SoC; an SoC may include a microcontroller as one of its components. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals. Program memory in the form of ferroelectric RAM, NOR flash or OTP ROM is also often included on chip, as well as a small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications consisting of various discrete chips.

Microcontrollers are used in automatically controlled products and devices, such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools, toys and other embedded systems. By reducing the size and cost compared to a design that uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes. Mixed signal microcontrollers are common, integrating analog components needed to control non-digital electronic systems

IV. EMBEDDED DESIGN

A microcontroller can be considered a self-contained system with a processor, memory and peripherals and can be used as an embedded system. The majority of microcontrollers in use today are embedded in other machinery, such as automobiles, telephones, appliances, and peripherals for computer systems.

While some embedded systems are very sophisticated, many have minimal requirements for memory and program length, with no operating system, and low software complexity. Typical input and output devices include switches, relays, solenoids, LED's, small or custom liquid-crystal displays, radio frequency devices, and sensors for data such as temperature, humidity, light level etc. Embedded systems usually have no keyboard, screen, disks, printers, or other recognizable I/O devices of a personal computer, and may lack human interaction devices of any kind.

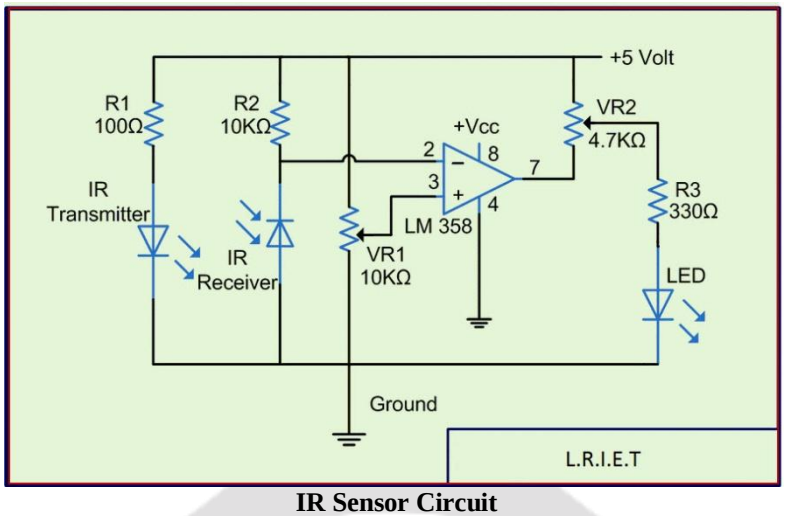
INFRARED IR SENSOR CIRCUIT DIAGRAM AND WORKING PRINCIPLE:

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes, that can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, The resistances and these output voltages, change in proportion to the magnitude of the IR light received.

3.3.2 IR SENSOR CIRCUIT DIAGRAM AND WORKING PRINCIPLE:

An infrared sensor circuit is one of the basic and popular sensor module in an electronic device. This sensor is analogous to human's visionary senses, which can be used to detect obstacles and it is one of the common applications in real time. This circuit comprises of the following components

- LM358 IC 2 IR transmitter and receiver pair
- Resistors of the range of kilo ohms.
- Variable resistors.
- LED (Light Emitting Diode).



IR Sensor Circuit

V. IR SENSOR APPLICATIONS:

IR sensors are used in various Sensor based projects and also in various electr.onic devices which measures the temperature that are discussed in the below.

Radiation Thermometers

IR sensors are used in radiation thermometers to measure the temperature depend upon the temperature and the material of the object and these thermometers have some of the following features

- Measurement without direct contact with the object
- Faster response
- Easy pattern measurements

Flame Monitors

These types of devices are used for detecting the light emitted from the flames and to monitor how the flames are burning. The Light emitted from flames extend from UV to IR region types. PbS, PbSe, Two-color detector, pyro electric detector are some of the commonly employed detector used in flame monitors

Moisture Analyzers

Moisture analyzers use wavelengths which are absorbed by the moisture in the IR region. Objects are irradiated with light having these wavelengths(1.1 µm, 1.4 µm, 1.9 µm, and 2.7µm) and also with reference wavelengths. The Lights reflected from the objects depend upon the moisture content and is detected by analyzer to measure moisture (ratio of reflected light at these wavelengths to the reflected light at reference wavelength). In GaAs PIN photodiodes, Pbs photoconductive detectors are employed in moisture analyzer circuits.

Gas Analyzers

IR sensors are used in gas analyzers which use absorption characteristics of gases in the IR region. Two types of methods are used to measure the density of gas such as dispersive and non dispersive

Dispersive

An Emitted light is spectroscopically divided and their absorption characteristics are used to analyze the gas ingredients and the sample quantity.

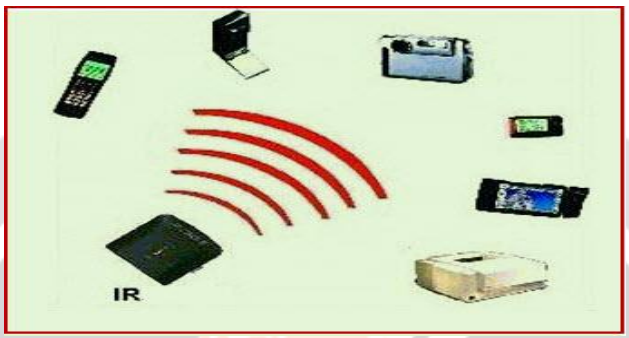
Non dispersive

It is most commonly used method and it uses absorption characteristics without dividing the emitted light. Non dispersive types use discrete optical band pass filters, similar to sunglasses that are used for eye protection to filter out unwanted UV radiation.

This type of configuration is commonly referred to as non dispersive infrared (NDIR) technology. This type of analyzer is used for carbonated drinks, whereas non dispersive analyzer is used in most of the commercial IR instruments, for an automobile exhaust gas fuel leakages.

IR Imaging Devices

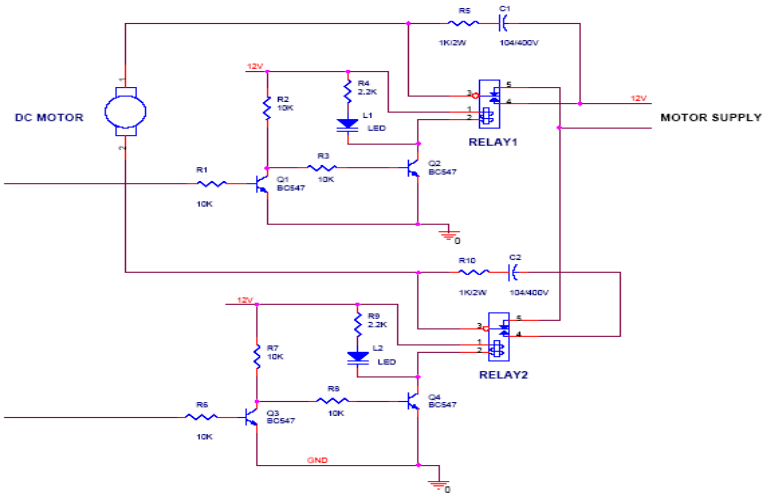
IR image device is one of the major applications of IR waves, primarily by virtue of its property that is not visible. It is used for thermal imagers, night vision devices, etc.



IR Imaging Devices

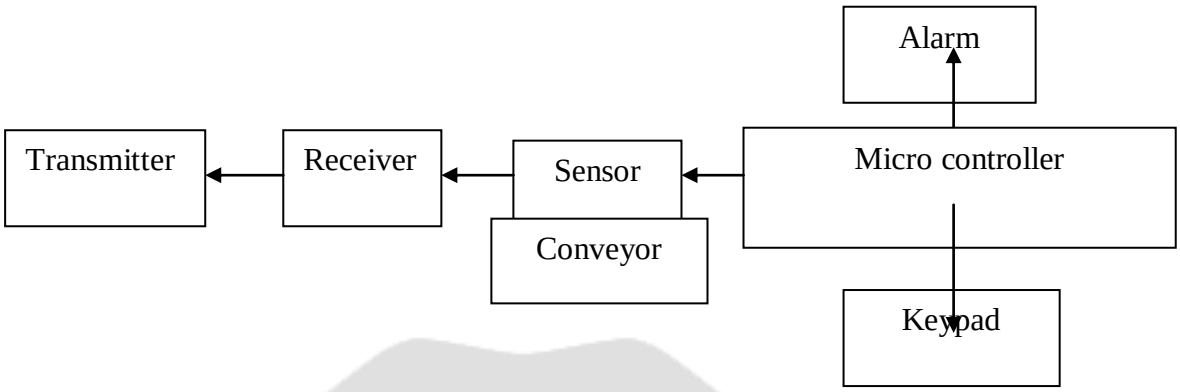
For examples Water, rocks, soil, vegetation, an atmosphere, and human tissue all features emit IR radiation. The Thermal infrared detectors measure these radiations in IR range and map the spatial temperature distributions of the object/area on an image. Thermal imagers usually composed of a Sb (indium antimonite), Gd Hg (mercury-doped germanium), Hg Cd Te (mercury-cadmium-telluride) sensors.

DC MOTOR FORWARD REVERSE CONTROL



Dc motor forward reverse control

VI. CONSTRUCTION

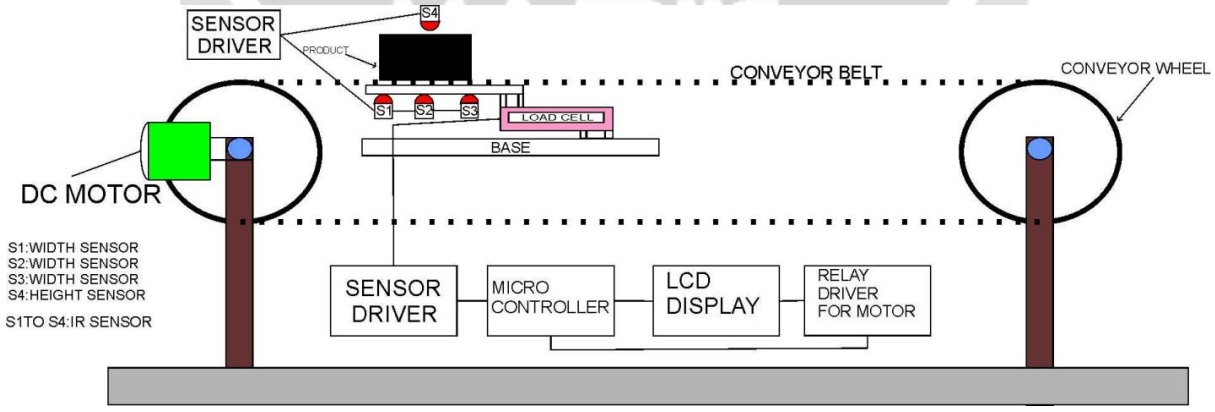


Construction Block Diagram

The conveyor belt rotates between the IR sensors. Whenever, the product flows through the conveyor, it cuts the sensor wave and at once the timer starts counting. If the product moves from the sensor wave completely, then the time should be stopped. According to this time duration we can determine the product length. The length of the product is displayed through LCD .We already program the controller with the required product length through the keypad attachment. If the measurement of the product is less or more than this preset value, then the alarm indicates the faulty product and it is then rejected. So these main concepts are programmed in micro controller using embedded system.

Our aim is to measure the product and reject the faulty product automatically in industries using embedded system. The main concept of our project is to sense the product and find out the exact length of the product. In our project we use the IR sensor to sense the product measurement.

VII. WORKING PRINCIPLE



working principle

The main concept to four project is to sense the product and find out the exact length of the product. In our project we use the IR sensor to sense the product measurement. The conveyor belt rotates between the IR sensors. Whenever, the Product flows through the conveyor, it cuts the sensor wave. And at once the timer starts counting. If the product moves from the sense or wave completely, then the time should be stopped. According to this time duration we can determine the product length. The length of the product is displayed through LCD.

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VIII. CONCLUSION

Multi product measurement and rejection system was successfully fabricated. The design can be implemented to manufacturing working model. Knowledge of various fields of engineering such as strength of material machine design was applied to carry out efficient designing. While designing manufacturability of the design was considered. Simplicity of the design was maintained to its best order to achieve the objective of designing cost efficient Multi product measurement and rejection system.

IX. REFERENCE

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