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Fault Detection with Password based Protection System

Ankit Jangra[1], Sandeep Jakhar[2] and Dr Vivek Kumar[3]

[1]EEE, BRCM CET, Bhiwani, Haryana, India
ankit.jangra121@gmail.com

[2]Asst. Prof, EEE, BRCM CET, Bhiwani, Haryana, India
sjakhar1989@gmail.com

[3]HOD, EEE, BRCM CET, Bhiwani, Haryana, India
hodeee@brcm.edu.in

Abstract

This paper focuses on the detection and classification of the faults in electrical power transmission line using microcontroller. Power systems often expertise variations in their operation, that are principally manifested as cable faults. Over the past decade, numerous techniques of fault diagnosing are developed to confirm reliable and stable operation of power systems. In this project, special care is given to that person who is resolving the fault on line. So for this purpose, in this project first it will detect the fault in line and give a signal on display about the type of fault in line and weeping a buzzer if anybody is not near the display. After that a person goes to clarify the fault that person will save its identity in password based protection system which is given in this project in special care and will clarify the fault. During this period, if other person wants to turn on the line then line will demand password and it the password is matched then line will be turn on otherwise it will be denied. This project is used to detect the fault and give the protection also from electric shock during the resolving fault. During this period our circuit will isolate the line completely which is faulty by giving password protection given by the person who is resolving the fault on line. In this project we detect three types of fault, single line to ground fault, line to line fault and high temperature fault.

Keywords: *Fault Detection, Protection System, Microcontroller.*

1. Introduction

This paper focuses on the detection and classification of the faults in electrical power transmission line using microcontroller. Power systems often expertise variations in their operation, that are principally manifested as cable faults. Over the past decade, numerous techniques of fault diagnosing are developed to confirm reliable and stable operation of power systems. In this project, special care is given to that person who is resolving the fault on line. So for this purpose, in this project first it will detect the fault in line and give a signal on display about the type of fault in line and weeping a buzzer if anybody is not near the display. After that a person goes to clarify the fault that person will save its identity in password based protection system which is given in this project in special care and will clarify the fault. During this period, if other person wants to turn on the line then line will demand password and it the password is matched then line will be turn on otherwise it will be denied. This project is used to detect the fault and give the protection also from electric shock during the resolving fault. During this period our circuit will isolate the line completely which is faulty by giving password protection given by the person who is resolving the fault on line. In this project we detect three types of fault, single line to ground fault, line to line fault and high temperature fault.

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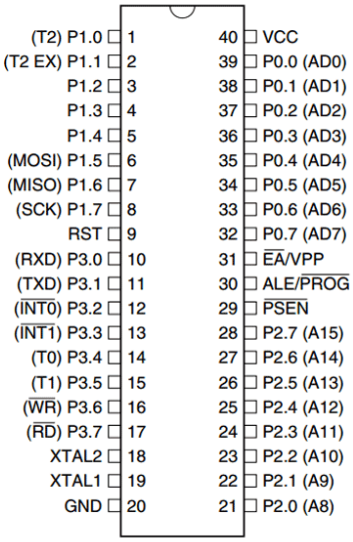
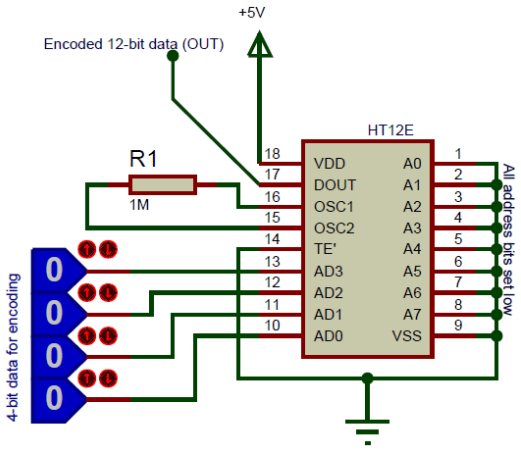
AT89S52 µcontroller

Low-power, high-working CMOS 8-bit microcontroller with 8KB of ISP flash memory. The device uses µchip high-density, non volatile memory. The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer with 8K bytes of Flash programmable and erasable read only memory (PEROM). The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K a monolithic chip, the Atmel AT89S52 is a powerful microcontroller. Crystal oscillator having frequency 3 MHZ is used for supply



HT12E "RF" Encoder IC

The primary function of HT12E is to encode a 12-bit and send it out through the output pin. Since the IC comes with an in-built Oscillator it is very easy to make this IC work. The IC is has a wide range of operating voltage from 2.4V to 12V, but normally the Vcc pin (pin 18) is powered by +5V and the ground pin (pin 9) is grounded. Pull the Transmission Enable pin (pin 14) to ground to activate transmission. For decoding a data the IC will requires an oscillator, luckily this IC has one in-built. We just have to connect the OSC1 and OSC2 (pin 15 & 16) through a 1M resistor to invoke it. The 4-bit data that has to be sent has to be given to the pins AD0 to AD1 and an address of 8-bit has to be set using the pins A0 to A7. It is very important that your Decoder should also have this same address for them to talk to each other. A basic connection diagram for the HT12E IC is shown below



HT12D RF Decoder chip

The **IC HT12D** can be used only with its pair HT12E. These two ICs together form an **Encoder and Decoder pair**. They are 12-bit Encoders/Decoders, meaning they can transmit 12-bit a data among them. But your encoder IC should not communicate with someone else's decoder IC, so an Encoder and Decoder IC pair will share a common Address which is an 8-bit data. So out of the 12-bits 8-bits will be used to set address and the remaining 4-bit will be used to transmit data. With 4-bit data we can create 16 types (2^4 =16) of combinations. These IC's are commonly used with RF pairs or IR pairs. So if you are working on a project which has to transmit a 4-bit data from one end to other either by wire or wireless then this IC pair will be best suited for you.

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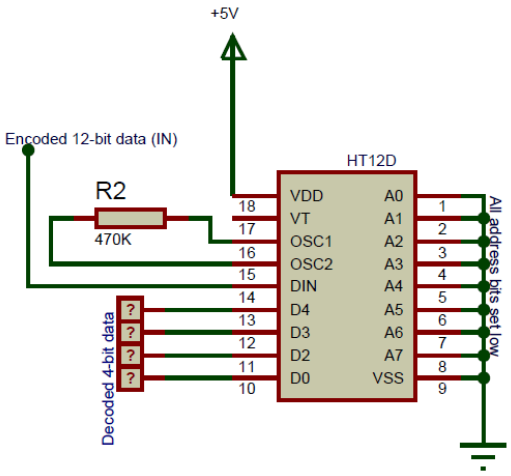


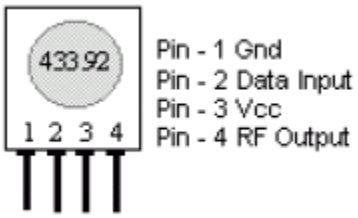
RF MODULES 433MHz

The TWS-434 and RWS-434 are extremely small, and are excellent for applications requiring short-range RF remote controls. The transmitter module is only 1/3 the size of a standard postage stamp, and can easily be placed inside a small plastic enclosure.

TWS-434: The transmitter output is up to 8mW at 433.92MHz with a range of approximately 400 foot (open area) outdoors. Indoors, the range is approximately 200 foot, and will go through most walls.....

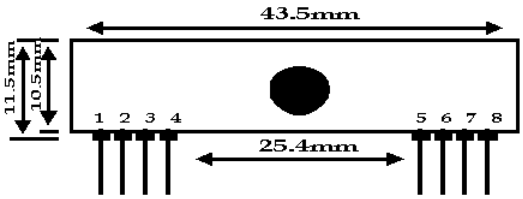

TWS-434A

The TWS-434 transmitter accepts both linear and digital inputs, can operate from 1.5 to 12 Volts-DC, and makes building a miniature hand-held RF transmitter very easy. The TWS-434 is approximately the size of a standard postage stamp.



RWS-434: The receiver also operates at 433.92MHz, and has a sensitivity of 3uV. The RWS-434 receiver operates from 4.5 to 5.5 volts-DC, and has both linear and digital outputs.
Click on picture for larger image

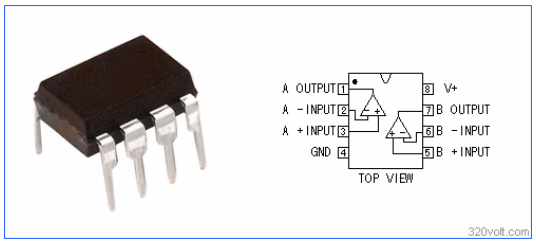

RWS-434 Receiver



pin 1 : Gnd
pin 2 : DigitaL Output
pin 3 : Linear Output
pin 4 : Vcc
pin 5 : Vcc
pin 6 : Gnd
pin 7 : Gnd
pin 8 :Ant (About 30 - 35 cm)

LM 358 Operational Amplifier:

The LM 358 is a dual standard operational amplifier. As it is a single supply it eliminates the need for a dual power supply, thus it will make design simple. One drawback is that the single supply does not offer a negative voltage supply. Due to this the output will not be-able to go below 0V otherwise the waveform will cutoff which is said to be clipping.



Conclusions

To detect the fault and to protect the person who resolving fault by password based protection system.

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[4] U.S Department of energy, ”Energy saver system,”