IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 7, May 2022
Impact Factor: 6.252

IoT Based Three Phase Fault Detection

Ashish Avadhut Amane[1], Suyash Sanjay Desai[2], Rohit Navin Dhumal[3], Gourav Suryakant Mhetar[4], Mr. Pratik Yogesh Karandikar[5]
Students, Sharad Institute of Technology Polytechnic Yadrav, Ichalkaranji, Maharashtra, India[1,2,3,4]
Lecturer, Sharad Institute of Technology Polytechnic Yadrav, Ichalkaranji, Maharashtra, India[5]

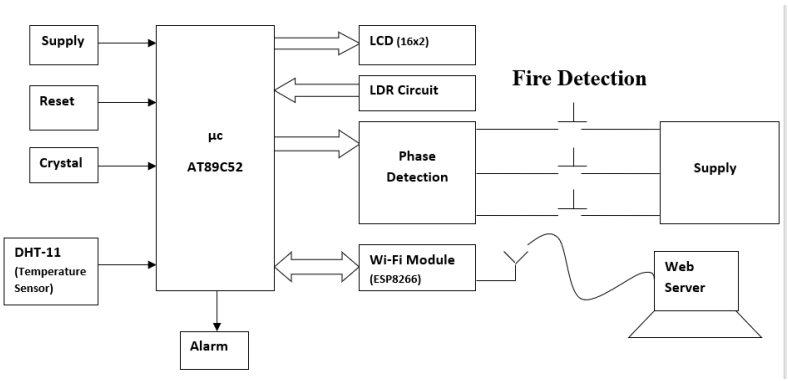
Abstract: *Any distribution network is prone to faults, and intermittency in power availability creates loss for the supplier as well as user. Majorly, a supply line can be affected by conditions of overvoltage and overcorrect, also under-voltage condition. During the occurrence of any fault, the incident goes unreported for long duration. Manual reporting can lead to long outage time. To overcome this problem, we have developed signalling system that will detect the changes in voltage-current parameter, and using a microcontroller-based circuit, the faults can be classified based on comparison values obtained from rated parameters of the distribution substation.*

Keywords: Internet of Things (IOT), Wi-Fi Module, Microcontroller, Temperature sensor, Transformer, etc.

I. INTRODUCTION

Generally, when a fault occurs in distribution line or transmission line, unless it is severing it is Unseen. But gradually their minor fault can lead to damage of transformer it may also cause an Infinite five. During occurrence of any faults. The incident goes unreported for long duration. Manual Reporting can lead to long outage time. So, to overcome all these things we are going to develop 8051 microcontroller-based system That will automatically detect the faults occurred in any distribution system. As we can monitor the faults occurred in distribution line at any time & anywhere, the System will help to serve the time which is required for troubleshooting. This system can be implemented at various power distribution organization line MSEB & Also at distribution transforms.

II. METHODOLOGY



Block Diagram

The word supply is used as a verb to mean to provide something. As a noun, supply refers to a stockpile or quantity of something. To use 5v to 12v supply used in our project. The chip first came to the attention of Western makers in August 2014 with the ESP-01 module, made by a third-party manufacturer Ai-Thinker. The Wi-Fi module ESP-8266 used in our project. The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer with 8K bytes of Flash programmable and erasable read only memory (PEROM).

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 7, May 2022
Impact Factor: 6.252

III. COMPONENTS DETAILS

1) Relay:

Figure 1.0

A relay is an electrical switch that uses an electromagnet to move the switch from the off to one position Instead of a person moving the switch. It takes a relatively small amount of power to turn on a relay but the Relay can control something that draws much more power. Ex: A relay is used to control the air conditioner in your home. The AC unit probably runs off of 220VAC at around 30A. That's 6600 Watts! The coil that Controls the relay may only need a few watts to pull the contacts together. When the coil is energized the Common is connected to the Normally Open contact and the Normally Closed contact is left floating. The Double Pole versions are the same as the Single Pole version except. There are two switches that open and close together.

2) AT89C52 (Microcontroller):

Figure 2.0

AT89C52 is an 8-bit microcontroller and belongs to Atmel's 8051 family. AT89C52 has 8KB of Flash Programmable and erasable read only memory (PEROM) and 256 bytes of RAM. AT89C52 has an endurance Of 1000 Write/Erase cycles which means that it can be erased and programmed to a maximum of 1000.
Times.28-Mar-2011, RAM: 256 Bytes, Number of Timers/Counters: 3 (16-bit each), Flash: 8 KB

3) BC547 Transistor

Figure 3.0

A transistor is basically an electrically controlled switch. The BC547 is a NPN transistor meaning when power is applied to the base (control pin) it will flow from the collector to the emitter. Typically, NPN transistors are used to "switch ground" on a device, meaning, they are placed after the load in a circuit.
Maximum Current: 100mA, Frequency – Transition: 300MHz, Maximum Power: 500mW, Max Voltage: 45V

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 7, May 2022
Impact Factor: 6.252

4) DHT11(Temperature Sensor)

Figure 4.0

This DF Robot DHT11 Temperature & Humidity Sensor features a temperature & humidity sensor complex with a calibrated digital signal output. By using the exclusive digital-signal-acquisition technique and temperature & humidity sensing technology, it ensures high reliability and excellent long-term stability. This sensor includes a resistive-type humidity measurement component and an NTC temperature measurement component, and connects to a high performance 8-bit microcontroller, offering excellent quality, fast response, anti-interference ability and cost-effectiveness.

5) Buzzer

Figure 5.0

A buzzer or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

6) IR Sensor

Figure 6.0

An infrared sensor (IR sensor) is a radiation-sensitive optoelectronic component with a spectral sensitivity in the infrared wavelength range 780 nm … 50 µm. IR sensors are now widely used in motion detectors, which are used in building services to switch on lamps or in alarm systems to detect unwelcome guests. In a defined angle range, the sensor elements detect the heat radiation (infrared radiation) that changes over time and space due to the movement of people. Such

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 7, May 2022
Impact Factor: 6.252

infrared sensors only have to meet relatively low requirements and are low-cost mass-produced items. Infra Tec does not supply such products; Infra Tec develops, produces and sells piezoelectric detectors.

7) WI-FI Module

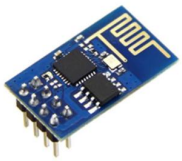


Figure 7.0

The chip first came to the attention of Western makers in August 2014 with the ESP-01 module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first, there was almost no English-language documentation on the chip and the commands it accepted. The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.

8) LCD:

Figure 8.0

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

IV. CONCLUSION

The system is effective in the sense that a complete online monitoring of the distribution transformer is Achieved through this system. Also, the concluding result regarding the fault is deducted based on Tested variations in parameters. But the difficult part is to include all the sensing parameters for the Fault analysis as it makes the programming complex. The use of GSM modem helps in effective Message signalling to the required receiver.

REFERENCE

[1] https://iaeme.com/MasterAdmin/Journal_uploads/IJEET/VOLUME_12_ISSUE_6/IJEET_12_06_032.pdf
[2] https://www.ijresm.com/Vol.2_2019/Vol2_Iss3_March19/IJRESM_V2_I3_31.pdf
[3] https://www.irjet.net/archives/V8/i7/IRJET-V8I7139.pdf