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An overview on

" DETECTION OF TEMPORARY FAULT AND PERMANENT FAULT FOR 3 PHASE LOAD "

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ABSTRACT - Power travels from the power plant to consumers through a system called the distribution System. For power to be useful in a home or business; it comes off the power station and is stepped-down to the suitable level of voltage. It is the transformers that step up the voltages or step down the voltages according to consumer's requirement. We can say that Transformer plays important role in our Power System. To maintain reliability in power system it is important to protect the 3 phase devices like inductive, resistive, etc against various faults occurring in it. This fault should be identified quickly for their remedies. The aim of our project is to study various fault detection technique and monitoring system. The purpose of this project is also to send the information to the mobile by using Global system for Mobile Communication (GSM) technology about the 3 phase operations.

In this project work we are forwarding a design model by which we can see how to implement various fault identification technique and to transfer each record operation of to the mobile number stored by Global system for mobile communication. In addition to this we also provide a feature to auto reset the system if input fault may automatically get restored.

Keywords – Fault detection of temporary and permanent fault, LG,LL,LLL, Three phase load system.

1.INTRODUCTION

A fault in a very grid may be brought up any abnormality within the current flowing in it. As an example, if this is interrupted by some failure within the circuit, the ensuing fault is associate electric circuit fault. If this within the circuit bypasses the traditional load, it leads to a brief circuit fault. In a very three-phase system, the fault could occur between one or a lot of sections and ground or solely between phases of the system. Generally, protecting device's area unit utilized in transmission systems to observe fault conditions and end in operation of circuit breakers or isolators that facilitate in limiting the harm because of the failure. In three phase or poly-phase systems, a fault could have an effect on some phases (causing asymmetrical faults). If all the phases are affected equally, it leads to a symmetrical fault. Symmetrical faults area unit easier to research than asymmetrical faults.

INTRODUCTION TO THREE PHASE FAULT :

Six number of step down transformers are used for forming star and delta secondary's at low voltage output. Fault condition is created with a set of switches to input LL, LG, 3L fault the circuit. This triggers a 555 timer in monostable to reset after fault clearance in a short duration temporary fault or permanently trip the output in case of prolonged fault. We know that if the fault accurse then it create many problem to the load. Many times load is damaged. So it is very important to protects the system again the faults.

PROBLEMS OCCURS :

Over loading – When load increased its results in voltage increased and insulation is overheating.

Over voltage – Voltage is increased to its rated voltage and stressed to the insulation.

Power swings – Generators outage and loss of synchronism.

TYPES OF FAULTS ON 3 PHASE SYSTEM

Fault occurred on three phase A.C. system are as follows

- Phase-to-phase fault
- Single line to ground fault
- Phase-to-phase-to-earth fault
- Three phase fault
- Three phase-to-earth fault

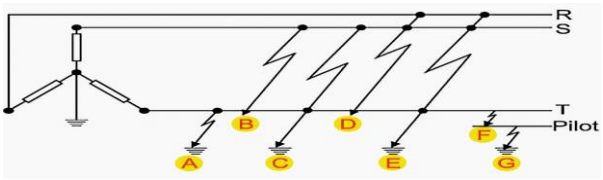

Fig:1 Types of faults

2. CONSTRUCTION OF BLOCK DIAGRAM

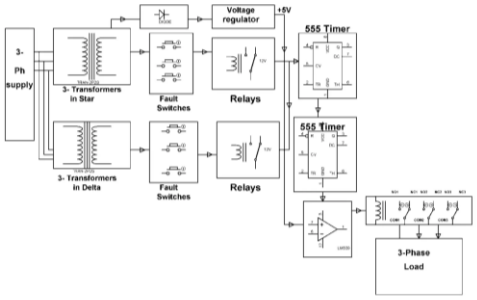

Fig:2 Block diagram

A. Transformer

Area unit a static theme that carries power from one path to a different path consistent with the principle of mutual induction. Electrical device converts AC current from one voltage to a difference with a small loss of power. Change of magnitude transformers rise voltage, diminution transformers decrease voltage. Most powering provides use a transformer to decrease the dangerously high voltage to a harmless low voltage.

B. 555 TIMER

The standard 555 bundles incorporate over twenty transistors, two diodes associated fifteen resistors on a chip introduced in an 8-stick smaller than usual double in-line bundle incorporates over twenty transistors, two diodes associated fifteen resistors on a chip introduced in an 8-stick smaller than usual double in-line bundle. Ultra-low power variants of the 555 areas unit to boot accessible. The 7555 is meant to cause less offer than the exemplary 555 and also the producer asserts that it usually doesn't need a control

electrical device and far from the time doesn't need an influence offer sidestep electrical device.

The 555 has 3 operational modes:

• Mono-stable mode: during this mode, the 555 capacities as a "one-shot." Applications embrace timers, missing pulse identification, bounce free switches, bit switches, frequency divider, capacitance measure, pulse-width modulation (PWM) etc.

• A stable — free running mode: the 555 will work as associate generator. Associate application includes light-emitting diode and light-weight flashers, pulse generation, logic clocks, tone generation, security alarms, pulse position modulation, etc.

• bistable mode or Schmitt trigger: the 555 will work as a flip-flop, if the Orcus pin isn't associated and no electrical device is employed. Uses embrace bounce free secured switches.

C. VOLTAGE REGULATOR 7805

Although designed primarily as fastened voltage controllers, these gadgets may be utilized with outer elements to urge versatile voltages and streams. The LM78XX/LM78XXA arrangements of three-terminal positive controllers area unit accessible within the TO-220/D-PAK bundle and with a number of settled yield voltages, creating them valuable in a very Wide scope of utilization. Every type utilizes within current restricting, heat closing.On the off likelihood that satisfactory heat sinking is given. they will convey quite 1A yield Current.

D. LM358

The LM358 series consists of 2 freelance, high gains; within frequency salaried operational amplifiers that were planned significantly to figure from one power provide over a special vary of voltages. Split power provides is doable and also the low power provides current drain is freelance of the worth of the ability provide voltage. Associate degree application of it electricaldevice amplifiers, DC gain blocks, and every one the traditional operational amplifiers circuits that currently is all the additional effectively actualised in single power provide system. For instance, the LM358 series is directly off the quality +5V management provide voltage that is employed as a district of digital system and can simply provide the desired interface physical science while not requiring the additional ±15V powerprovides.

E. RELAY

A relay is associate degree electrically worked switch. Several relays utilize associate degree magnet to figure a switch mechanism automatically, but different operating principles are used. Relay area unit utilised wherever it's necessary to management to regulate to manage a circuit by a low-control motion (with complete electrical isolation among control and controlled circuits), or wherever many circuits should be controlled by one signal. A relay is associate degree electrically worked switch.

F. DIODES

Diodes living AC into DC these area unit utilised as half-wave rectifier or full wave rectifier. 3 points should he remembered whereas utilizing any variety of diode.

1. Maximum forward current limit

2. Maximum spin voltage limit

3. Maximum forward voltage limit

3. WORKING

The project uses 6 numbers step-down transformers for handling the entire circuit under low voltage conditions of 12 v only to test the 3 phase fault analysis. The primary of 3 transformers are connected to a 3 phase supply in star configuration, while the secondary of the same is also connected in star configuration. The other set of 3 transformers with its primary connected in star to 3 phase have their secondary's connected in delta configuration. The output of all 6 transformers are rectified and filtered individually and are given to 6 relay coils. 6 push buttons, one each connected across the relay coil is meant to create a fault at star i.e. LL Fault or 3L Fault. The NC contacts of all the relays are made parallel while all the common points are grounded.

4. RESULT

The transformers area unit connected to the PCB circuit whose input is 12v. Push buttons, LEDs glows and is dead by pressing electric switch. once with success implementing the association of transformers and cargo with PCB circuit, we tend to give three-phase provide to electrical device. we tend to created fault by pressing electric switch and fault created with success. The fault was like a shot inside seconds notifying the incidence of temporary fault.

5. CONCLUSION

This paper mentioned project style within the sort of hardware for 6 single part electrical device to 230v to 12v of output for to develop automatic tripping mechanism for the three-phase provide system whereas temporary fault and permanent fault happens in system. Throughout temporary fault, it returns the provision to the load like a shot, otherwise it leads to permanent trip. The construct within the future will be extended to develop a mechanism to send message to the authorities via SMS by employing a GSM electronic equipment.

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