



A REVIEW ON THREE PHASE FAULT ANALYSIS WITH AUTO RESET ON TEMPORARY FAULT AND PERMANENT TRIP

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ABSTRACT The paper is about a tripping mechanism for a three-phase power supply in a power system. After a brief interruption in the event of a temporary fault, the project output resets. A permanent fault causes tripping condition. Because of temporary or permanent faults, electrical grid substation that supplies power to many consumers fails. The fault has harmed powering the system's equipment. It is quite common in India. Power supply system faults are LG (Line to Ground), LL (Line to Line), 3L (Three lines), and faults in three phase systems affect the entire power system. To address the issue, a system that detects faults and automatically disconnects the power supply is being developed in order to avoid large-scale damage to control gears.

I. INTRODUCTION

The faults on most overhead lines are transient. The transient fault is insulator flashover, this fault which is cleared by immediately tripping of circuit breakers to isolate fault. The Faults tend to be less transient at lower, in distribution voltages and more transient at higher, sub transmission and transmission voltages are used interchangeably. Lightning is a common cause transient faults, which are caused by insulator flashover caused by lightning's high transient voltages. Swing wires may come into contact with foreign objects on occasion. Deenergizing the line, allowing the fault to clear, autoclosing, and then restoring line service clears transient faults. Permanent flaws will not prevent the system from tripping and closing. An example of a permanent overhead fault line is the broken wire causing a phase to open, the broken pole causing the phases to short. The Faults on underground line is considered permanently. The Cable faults is cleared without the auto reclosing system and the damage cable repair the service is restored.

I. WORKING PRINCIPLE

In this paper use 6 step-down transformers which handle the circuit at low voltage conditions of 12v for test in 3 phase fault analysis power system. The primary of three transformers is connected to 3 phase supply in star type configuration, & the secondary of the same is also connected in star type. The next set of three transformers primary connected in star to three phases has secondaries connected in delta type. Outputs of each the six transformers rectified and filtered and supply to six relay coils. Six push buttons each connect at the relay coil it mean to create the fault condition. LL Fault or 3I Fault the Normally closed contact of relays are parallel while at common points is grounded. The parallel connect point of relay is given to pin2 by a resistor R5 to a 555 timer i.e. wired in monostable type, output of U3 555 timer IC is given through Op-amp LM358 through wire 1 & 2 is inverting in pin3, while the inverting input is fixed voltage to a potential divider RV2. The voltage pin2 coming from pd.

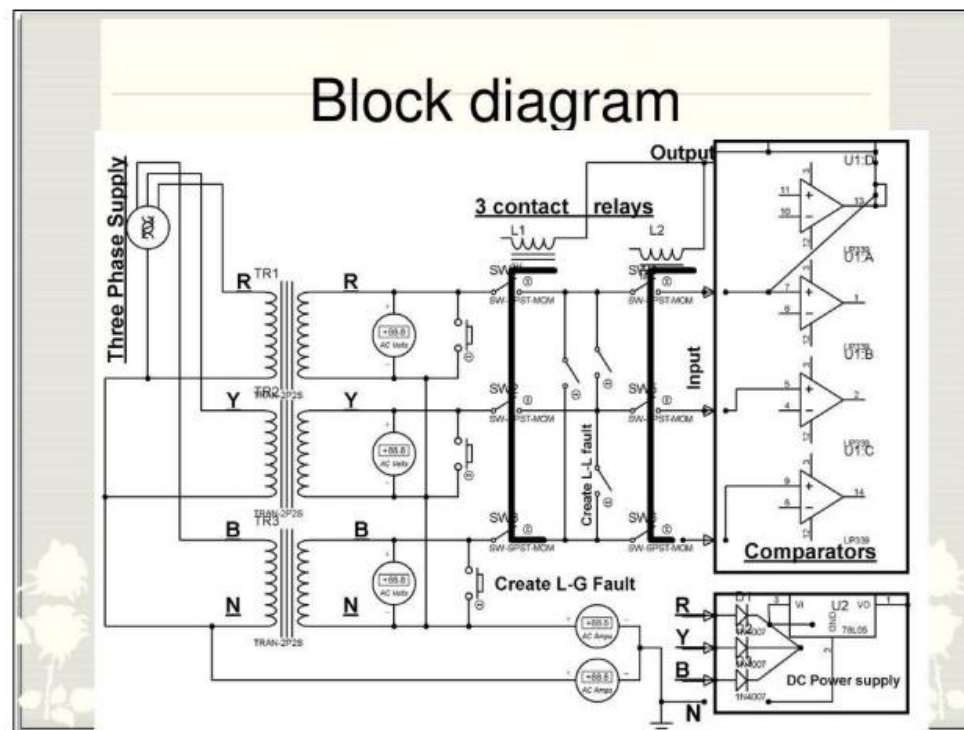


Fig.1 - Working Principle



Block diagram operating procedure - When 3phase supply all the 6 relay coils get DC voltage and the common point disconnects to the NC and moves to the normally open points, this is providing logic high at 555 timer U1 L.e. so it kept on monostable mode. When push button across relay is pressed disconnects the relay and. process contacts moves to the normally closed position & provide a logic low at trigger at pin 555 timer to develop the output to brings the U3 timer is used in astable mode for its reset pin high the astable operation took place at output which also indicate by LED. If the fault is temporary i.e. the push button pressed release immediately by U1 monostable of U3 the output is goes to zero in event of push button pressed for time of longer duration in monostable output the longer duration active situation in U3, the astable timer the output which charges capacitor C13 & R11 such the output of a a comparator goes high which drives the relay to switch off three phase load.

II. OPERATING PROCEDURE

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APPLICATION - The output of project resets after a brief interruption in event temporary fault while remains tripping condition the case of permanent fault. b. The electrical grid substation which supply power to the many consumer's failures due to some faults which is temporary or permanent. c. to ensure safety of equipment's and maintain power system stability at high speed.

ADVANTAGE - The output of project resets after a brief interruption in event temporary fault while remains tripping condition the case of permanent fault. The electrical grid substation which supply power to the many consumers failures due to some faults which is temporary or permanent.



III. RESULT

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IV. CONCLUSION

The paper is design by 3 single phase transformer 20v to 12v of output develop auto tripping mechanism & 3-phase supply system to create temporary fault and permanent fault occur in 555 timer with relay temporary and permanent fault. The short time duration fault return supply by the load immediately called temporary trip while long duration time result is permanent trip this is use in future to extend develop a mechanism for sending message by authorize via sms by interfacing gsm system.

REFERENCES

- [1] Sathish Bakanagari (2013) Three Phase Fault Analysis with Auto Reset for Temporary Fault and Trip for Permanent Fault" Int. Journal of Engineering Research and Applications vol.3.1082-1086
- [2] Akagi H, HE Watanabe, M. Aredes (2007) "Instantaneous power theory and applications to power conditioning". Wiley-IEEE Press, 2007, pp. 43-105 131 Aleksandar M. Stankovic (2000) "Analysis of Asymmetrical Faults in Power Systems Using Dynamic Phasors" IEEE Transactions On Power Systems 15,1062-1068.