

# A Review on Automatic Phase Shift using Three Phase Supply

Gaurav Gupta<sup>1</sup>, Mr. Pravin Kumar<sup>2</sup>, Dr. Deepika Chouhan<sup>3</sup>, Md. Asif Iqbal<sup>4</sup>

<sup>1,2,3,4</sup> Department of Electrical Engineering,

<sup>1,2,3,4</sup> Poornima College of Engineering, Jaipur, India

**Abstract-** Amid the transmission and conveyance of the power, we have isolated the power as per the need. In numerous Companies, enterprises and local burdens are straightforwardly relies upon open power supply which can confront numerous issues like stage disappointment or awkwardness because of specialized issues in control age. To conquer this whole issue we require computerization with the goal that at whatever point or there is a stage disappointment. The whole part mount on the PCB and the three stages are inputs: Red stage, Yellow stage and Blue stage from general society utility supply was encouraged to the framework.

The fundamental point of this paper is to display the genuine thought of a programmed stage change for 220v to 240v exchanging current. At the point when blame is happening amid supply is persistent to the home then it naturally changes the stage and we can have the consistently supply of power. At whatever point there is such disappointment of the power manual change over happens. Thus, there is requirement for programmed stage moving framework.

**Keywords-** under Voltage, overvoltage, relay

## I. INTRODUCTION

In the present situation power assumes a virtual part step by step; the age of power is expanding step by step utilizing numerous ways. We additionally need To deal with control solidness issue. Power insecurity and stage disappointment has postured genuine idea to their monetary improvement. The thought behind this task is to give the ceaseless supply to the heap side. At the point when any of the eliminate of three stage has disappointment. The circuit naturally changes to other stage with the outline of this task the issue of manual difference in the supply and the power perils will be settled.

We can state that the stage changer in the supply we are interfacing the three stages from the transmission line(R,Y,B). There are three switches stacks in a stage by another stage. In the event that any maybe a couple stage is missing we stage. This mechanization is required as the rate of

energy blackout turns out to be prevalently high. Most mechanical and business process is reliant on control supply and if the procedures of progress over are manual, genuine time isn't just squandered yet in addition makes gadget or machine harm from human mistake amid the change-over associations, which could bring misfortunes.

In an electrical power framework, a blame or blame current is any anomalous electric current. For instance, a short out current is a blame in which by pass the typical load. In three-stage frameworks, blame may include at least one planes and ground, or may happen just between stages. In a ground blame, current streams into the earth. The outline of framework to recognize and interfere with control framework blames in the fundamental goal of energy framework insurance.

## II. LITERATURE REVIEW

In three-stage applications, if low voltage is accessible in any maybe a couple stages, and you need your gear to take a shot at typical voltage, this circuit will comprehend your problem[1]. The programmed stage changer was produced using electronic segments which incorporates; operational intensifiers, diodes, resistors, capacitors, Zener diodes, transformers, transfers and circuits. Results got amid the test demonstrates that, at whatever point the framework detects a higher voltage over the three sources of info and after that draws in the heap. There are numerous plans and model frameworks that can perform relatively comparative capacities like, single stage change-over switches, two stage programmed exchange switch and three stage programmed change-over switch, however this model is around a programmed stage switchover (stage selector) which is intended for just three stage A.C input energy to single stage yield applications.

The framework is high many-sided quality in "Programmed Voltage Regulator " utilizing air conditioning voltage – voltage convertor created by Steven .M Hietpas [4]. As factual examination were muddled to accomplish in single discovery Automatic Phase Shift Method for discovering Detection of Grid Connected Photo Voltaic inverter. The

framework is fundamentally intended to choose between the three stages at sensible speed, and furthermore address stage lopsided characteristics regarding loads. At the end of the day, the exchanging thought shows the genuine and commonsense circumstance for the most part local, direct mechanical propelled needs.

**III. CIRCUIT DIAGRAM**

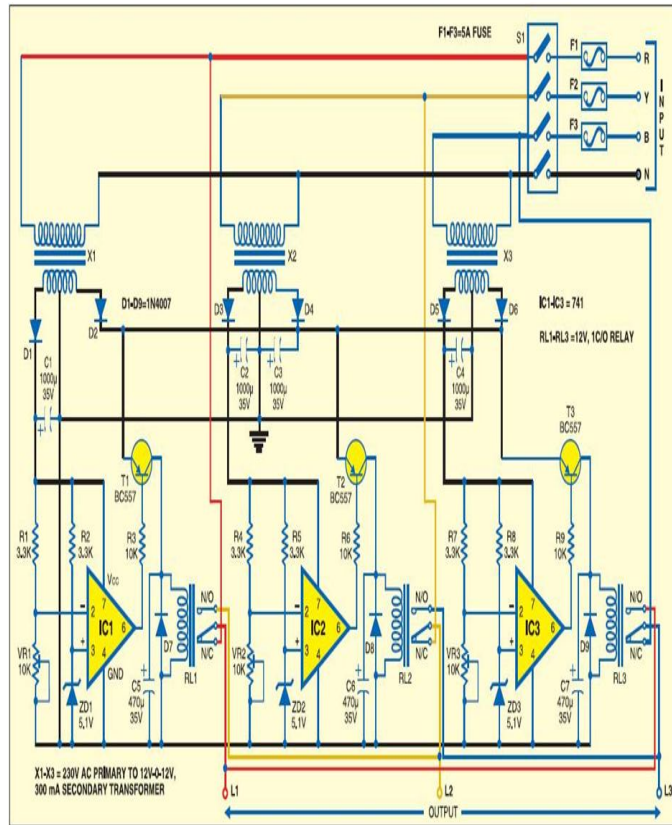


Figure 1. Circuit diagram

**IV. WORKING**

The primary utilization of three stage supply is the place the substantial burdens are associated in structures, businesses and so forth.. Where there is an overwhelming burden we can't work them if any of the three stages is absent. Manual adjustment of these stages is troublesome and is excessively unsafe. To maintain a strategic distance from these challenges robotization is required. Presently a - days mechanization assumes a noteworthy part as it diminishes manual work and the dangers can be decreased with this. The circuit gives amend voltage in a similar power supply lines through transfers from other stage where rectify voltage is accessible. Utilizing it we can work every one of our types of gear notwithstanding when remedy voltage is accessible. The circuit essentially comprises of transformers, comparators, transistors and transfers. We have three stages and for three

stages we have three people comparative circuits associated with the three stage supply. Give us a chance to think about the working of blue link ('B' stage).

The supply is given to the progression down transformer whose yield is 12V, 300mA which is additionally amended and sifted by the capacitor by the circuit of that specific stage. The supply which is separated by the capacitor is utilized to deliver the working voltage for the operational enhancer (IC3). The voltage at reversing pin 2 of IC3 is taken from the voltage divider circuit of R7 and VR3. VR3 is utilized for setting up the reference voltage as per our need. ZD3 is utilized to settle the reference voltage at non - modifying pin 3. The voltage which is set as a source of perspective is of esteem 5.1 V. the voltage at altering pin 2 of IC3 will stay high till the supply voltage is accessible at the period of the incentive between 200-230 V that is more than the reference voltage 5.1 V and the yield 6 likewise stays high. Thus T3 does not direct, hand-off RL3 remains de-empowered and stage supplies energy to stack through typically shut contact of hand-off RL

Table 1.

Sr no.	Component Name	Quantity
1	Step down transformer(220V-12V 300ma)	3
2	Fuse(F1-F3=5A)	3
3	IC(IC1-IC3=741)	3
4	Transistor(T1,T2,T3=BC557)	3
5	Relay(RL1-RL3=12V,1C/O RELAY)	3
6	Zener diode(ZDI-ZD3=5.1V)	3
7	Variable resistance(VR1-VR3=10K)	3
8	Resistance(R1,R2,R4,R5,R7,R8=3.3K, R3,R6,R9=10K)	9
9	Diode	9
10	Capacitor(C1-C4=1000Uf 25v,C5- C7=470Uf 35v)	7

When the stage voltage goes beneath 200 V, the voltage at modifying pin 2 of IC3 goes underneath to 5.1 V and the yield goes low. This outcome in conduction of transistors T3 and the heap is separated starting with one stage then onto the next stage that is disengaging from blue stage to red stage. This disengagement of the stage and interfacing

with another stage is finished with the assistance of the transfers, here RL3 is detached and the association is done to the RL1. S1 is the fundamental power on/off switch. Likewise the auto stage change of the staying two stages can be clarified. A few safety measures ought to be taken care while exchanging the stage starting with one then onto the next. Hand-off contact of legitimate rating and wire ought to have the capacity to go up against the heap. While doing the associations, gathering and introducing the circuit avoid potential risk.

## V. OUTPUT

As we name proposed of the task programmed stage shifter utilizing three stage supplies. At whatever point there is blame in any of the stage then the heap programmed move to the next solid stages.

## VI. MODE OF OPERATION

Case1: when all the three stage have supply proceed with then all the LED will be glow that is called healthy stage happen. As appeared in figure.

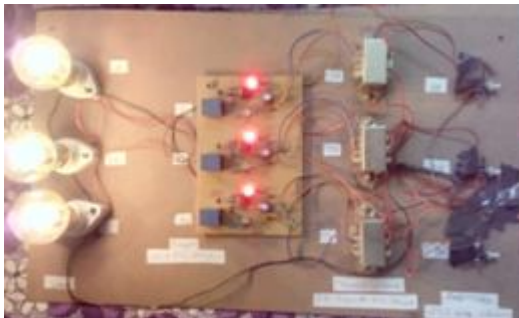


Figure 2. all phase healthy

Case2: Case2: when fault happen at one of the stage then the LED won't sparkle of that stage and stage move towards the healthy stage and supply proceed with energy to the consumer. As appeared in figure

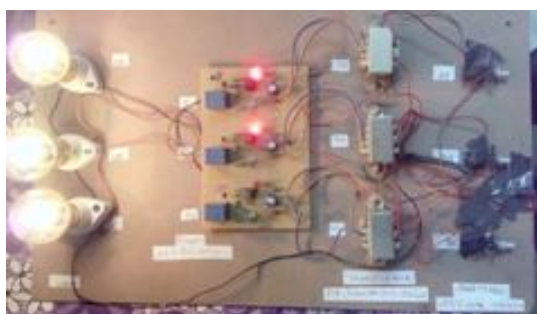


Figure 3. fault occur at a phase

Case3: when fault happen at two of the stage at that point LED won't glow of those stage however power will keep on supplying because of stage move at the third healthy stage for this supply. As appeared in figure:



Figure 4. fault occur at two phases

## VII. ADVANTAGE

- Highly sensitive
- Works according to the phase availability
- Fit and Forget system
- Low cost and reliable circuit
- Complete elimination of manpower
- Can handle heavy loads up to 7A

## VIII. DISADVANTAGES

- Switching happen only if there is total power failure.
- Three phase loads cannot attach to this system.
- There is an external supply required.

## IX. APPLICATIONS

- Small and medium scale industries
- Residential Apartments
- Office
- ATM
- Factories operating with single phase machineries.
- Hospitals/Banks/Institutions.
- Automatic Phase Changer naturally cuts supply amid low voltage in this way, protect hardware from the harmful impacts of low voltage.
- It automatically supplies voltage in case of power failure or low voltage in up to 2 of the 3 incoming phases.

## X. CONCLUSION

In three stages application if low voltage is accessible in any one stage, and you need your hardware to take a shot at ordinary voltage, this phase stage changer will take care of

your concern. This gadget is more solid, is of less cost and upkeep free. Programmed stage changer finds wide application in modern world. Amid prior days, if there is a power disappointment in any of three stages, we need to physically change to the accessible stage. In this work the stage changer utilizing LM324 comparator has been configuration, constructed and tried. The framework works easily obviously. By actualizing programmed stage changer it naturally moves to the stage where redress voltage is accessible. It can be utilized as a part of living arrangements, little workplaces, structures and so forth.

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