AUTOMATIC THREE PHASE CHANGER

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Abstract

In developing countries like india , the main problem a consumer or we are facing is power failure or interruptions in present time and this interruption caused lots of money and time wasted. In power system 70% faults are single phase faults, and in single phase fault power is available in two other phases. All the domestic residential loads are mainly connected to single phase supply and in case of power failure or faults the power is available in other two phases but we can't utilize that power and for utilizing that power we require manual operation which results in fire accidents and also not as much reliable. Therefore we need automatic switching from one phase to other, which is " Automatic 3 phase changer".

As we earlier told that manual operation is not suitable in case of change of phase to other phase, because we are dealing with 3- phase 415V supply which may cause fire accidents. And manual changing is not possible at every time as identifying the phase of power interruption is difficult. Therefore instead of manual operation of phase changing we require automation which is done by "Automatic 3 phase changer". It automatically switches to the phase in which the power is available.

Introduction

Electrical energy is easily available energy and the main advantage of electrical energy is that we can convert any form of energy into electrical energy and then electrical energy can be change into any form of energy like mechanical or kinetic energy. As everybody knows that demand of energy is increasing day by day and electrical energy is one of them. India is the world's third largest producer and fourth largest consumer of electricity and the best example is in India in 1950 the generation of electrical energy was 150 MW and During the fiscal year 2015-16, the gross electricity generated by utilities in India was 1,116.84 TWh and the total electricity generation (utilities and non-utilities) in the country was 1,352 TWh or 1,075.64 kWh per capita.

As the load demand is increasing day by day and we are also able to generate that much power as per requirement and transmit power to various loads with minimum losses and therefore maximizing the efficiency. But the main problem a consumer or we are facing is power failure or interruptions in present time and this interruption caused lots of money and time wasted. In power system 70% faults are single phase faults, and in single phase fault power is available in two other phases. All the domestic residential loads are mainly connected to single phase supply and in case of power failure or faults the power is available in other two phases but we can't utilize that power and for utilizing that power we require manual operation which results in fire accidents and also not as much reliable. Therefore we need automatic switching from one phase to other, which is made possible by this "AUTOMATIC 3 PHASE CHANGER".

As we earlier told that manual operation is not suitable in case of change of phase to other phase, because we are dealing with 3- phase 415V supply which may cause fire accidents. And manual changing is not possible at every time as identifying the phase of power interruption is difficult. Therefore instead of manual operation of phase changing we require automation which is done by "AUTOMATIC 3 PHASE CHANGER". It automatically switches to the phase in which the power is available. So in this project our aim is to design a circuit called automatic three phase changer or selector.

Detailed methodology to be used for carrying out the project

All the domestic residential loads are mainly connected to single phase supply and ion case of power failure or any faults occurs the power is available in other two phases but we cannot utilize that power and for utilizing that power we require manual operation which results in fire accidents and also not as much reliable. Therefore we need automatic switching from one phase to other automatically which is made possible by this "AUTOMATIC 3-PHASE CHANGER".

As we earlier told that manual operation is not suitable in case of change of phase to other phase, it is not possible because we are dealing with 3- phase 415V supply which may cause fire accidents. And manual changing is not possible at every time as identifying the phase of power interruption is difficult. So therefore instead of manual operation of phase changing we require automation which is done by "AUTOMATIC 3-PHASE CHANGER". Its automatically switches to the phase where the power is available. So in this our aim is to design a circuit called automatic phase changer or selector.

Components & Equipment Required

Component names	Rating	Quantity
Step down transformer	(220v -9v),300Ma	3
Fuse	(F1-F3-5A)	3
Transistor	(T1-T2-T3) Bc=557	3
Relay	(RL1-RL3)12v 1c/o relay	3
Zener diode	(ZD1-ZD3) -5.1volts	3
Variable resistances	(VR1-VR3)=10k	3
Resistances	(R1-R2-R4-R5-R7-R8)=3.3k ,R3-R6-R9=10k)	9
Diode		9
Capacitor	(C1-C4=100uf)25v,C4-C7=470uf)35v	7
Wires		as req.

Working plan

Step 1: firstly we will gather the study materials and study about the project and ask to the concerned faculty about the project.

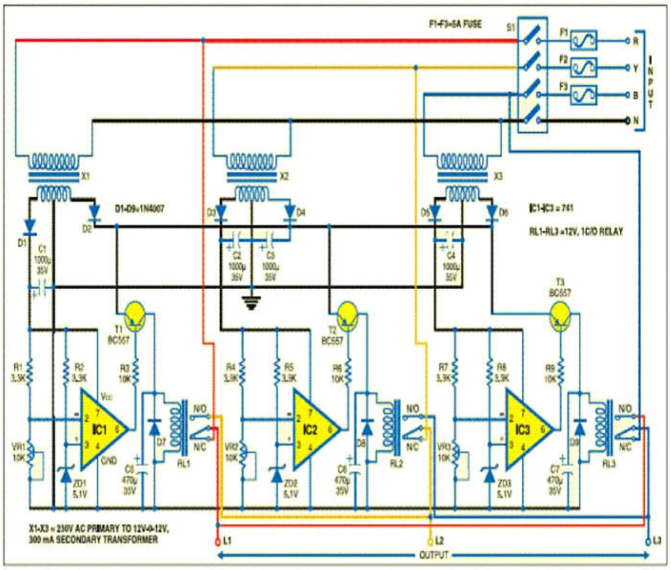
Step 2: Then we will assemble all the components to make a circuit.

Step 3: Then we will make a model to show the application of that circuit.
Step 4: We will do testing on our project

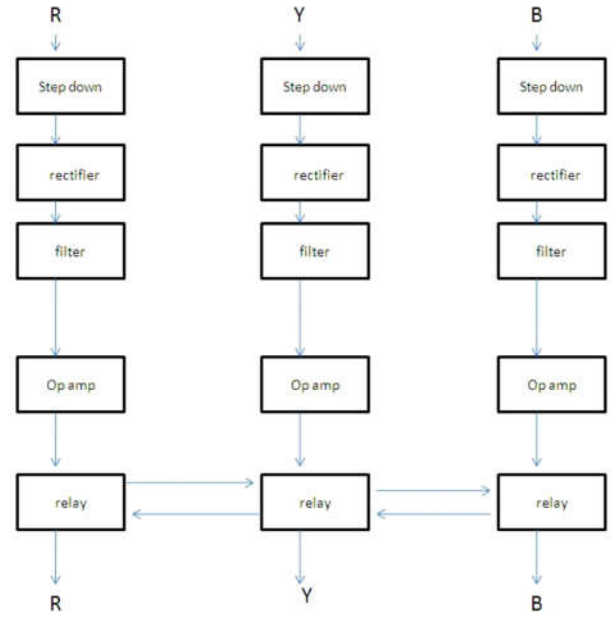
Applications of Project

This project will keep power supply uninterrupted. An Automatic 3 phase changer can be installed for commercial, industrial & residential application, where single phase supply is required for the equipment. An Automatic 3 phase changer automatically selects the available phase when any of the main phase line fails out of three phase line.

Circuit Diagram



Block Diagram:



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