

Three Phase Induction Motor Safety Implementation with Auto Turn ON and Turn OFF facility

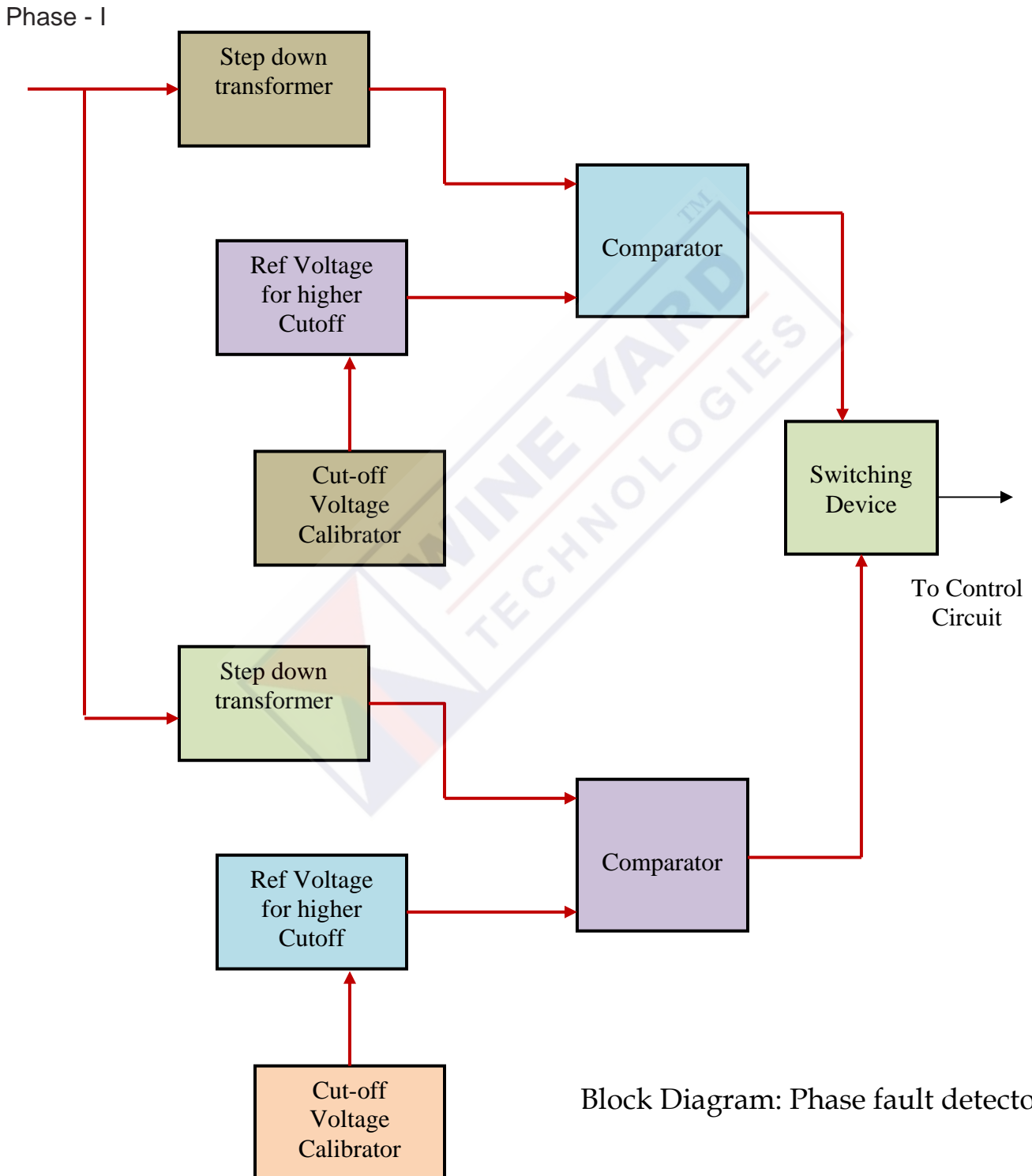
The common problem with three-phase supply is, absence of any one of the phase. This leads to damage of induction motor or any three-phase load. This project is designed to monitor the presence of three phases and to display condition of each phase on LED. If any phase is absent, immediately this system shuts down the three-phase load. If all the three phases are present, automatically this system switches on the load.

This project is also designed to monitor the voltage condition of each phase. If the voltage level of any phase is over or under the rated / specified voltage rating, immediately this system shuts down the load.

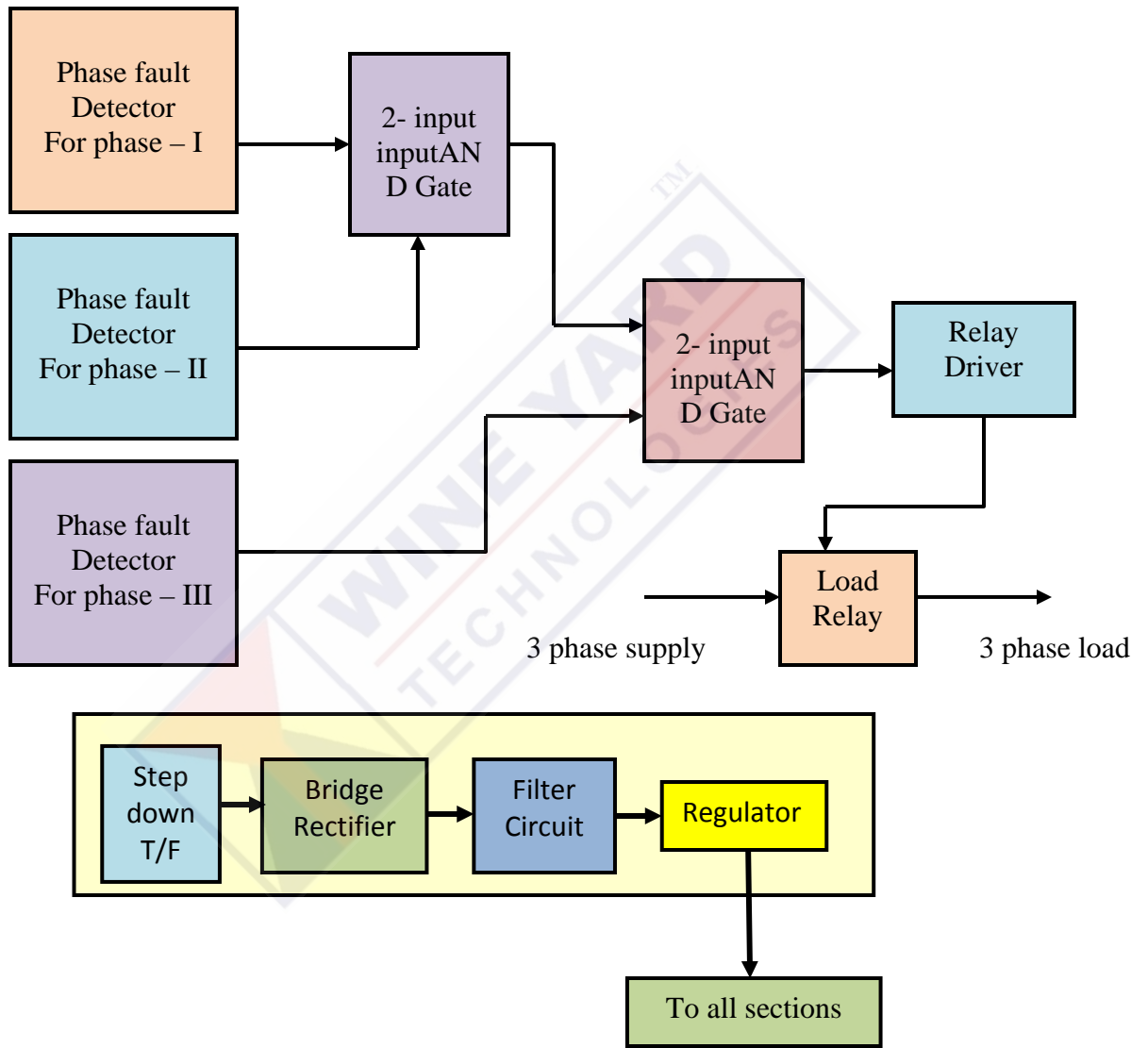
Operational amplifier IC LM324 is used here as a comparator. IC LM324 consists of four operational amplifiers, of which only two operational amplifiers are used in the project.

All the three phases are connected to an AND gate and the load is driven by a relay. In case of any error in the three phase input supply, the AC supply is disconnected and electrical appliances turn off. Thus the appliances are protected against under-voltage.

This project uses regulated 12V, 750mA power supply. 7812 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac out put of secondary of 230/18V step down transformer.



Block Diagram: Three-Phase Induction Motor safety Implementation



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Advantages:

- Highly sensitive
- Fit and Forget system
- Low cost and reliable circuit
- Complete elimination of manpower
- Can handle heavy loads up to 7A
- Auto switch OFF in abnormal conditions
- Auto switch ON in safe conditions

Applications:

- Industrial machinery
- Agriculture Motors
- Water pumps

