

Intelligent Protector for all Electrical Appliances

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Abstract— This paper proposes a force framework assurance gadget intended to be incorporated in shrewd situations dependent on innovations. The proposed framework upgrades electrical wellbeing by quick disengagement of the force supply if there should be an occurrence of shortcoming occasions like spillage flow, electrical circular segment, over flow or over voltage and has been planned with the objective to be incorporated in keen situations like shrewd homes or brilliant urban areas for ensuring the electrical gear. The framework likewise empowers continuous observing and notice occasions through a propelled correspondence interface.

The on-time defer circuit shields the heap from changing floods as well as from snappy changeover (now and again) impact of over/Here is a cheap auto cut-off circuit. It very well may be utilized to ensure loads, for example, fridge, T.V., and VCR from unwanted over and under line voltages, just as floods caused because of unexpected disappointment/resumption of fundamental force supply. This circuit can be utilized legitimately as an independent circuit between the mains supply and the load. The over/under voltage cut-off with ON-Time delay provides various types of protection

- 1) Over-voltage protection.
- 2) Under-voltage protection.
- 3) Protection to load from frequent turning ON & OFF by providing time delay.

Keywords: Intelligent Protector, Electrical Appliances

I. INTRODUCTION

A device used to protect equipment, machinery, components and devices, in electrical and electronic circuit, against short circuit, over current and earth fault, is called as protective devices. Necessity of Protective Devices. Protective devices are necessary to protect electrical appliance or equipment against.

Electrical circuits accomplish two main functions namely consistency as well as protection. Protection is assured through detaching power supply in a circuit through overcurrent protection

II. METHODOLOGY

Application-intelligent protective device for all electrical appliances it has to protect high voltage switch gears from short circuits. Used for backup security. Used for protection of electrical appliances such as motors, transformers, automobiles, home appliances etc. other information can be seen through the LCD and indicating buzzer cheapest protection device in electrical circuit against short circuits and overloading of circuits.

Which is inserted into the electrical circuit as protective device.

A. Block Diagram of Proposed System

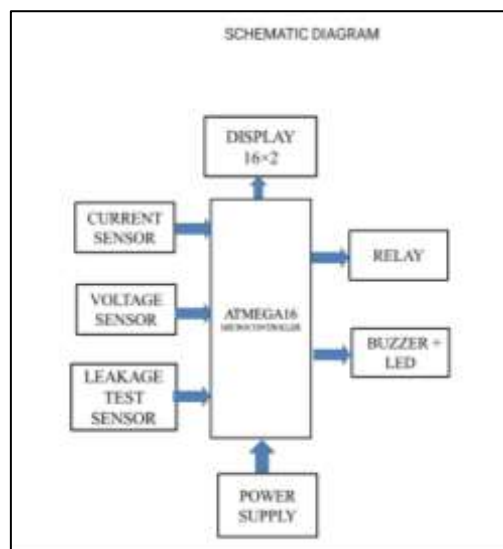


Fig. 2 a): Schematic Block Diagram

III. WORKING



Fig. 3 a): View of Intelligent Electrical Protector

This project is for to protect the appliances & the Human being from the over voltage issues and leakage current issues.

We use the Stepdown Transformer to operate the full system i.e 230 V AC input and 12 V AC output.

The transformer sends the 12 V AC output to the Rectifier and Rectifier converts the 12 V AC output to 12 V DC and then after Conversion of AC to DC then it sends to the 1000 microfarad Capacitor (i.e its used as a Filter)

That filter converts the unwanted DC pulse to Pure DC then after Filtering

Its goes to Voltage regulator IC & This Voltage Regulator IC converts the From pure 12 V DC to 5 V. This Voltage regulator IC used as a to operate the LCD display and the ATMEGA 16 Microcontroller.

Then at the time of operation the main supply goes through the CT to the Load and The maximum limit of current in CT is 5A, If incase the load is higher than the set value the current goes to the Rectifier nd Filter after Filtering pulse goes to the Optocoupler & from that Optocoupler the current output goes to the Microcontroller That microcontroller takes continuously readings that the flowing of supply is proper or not if in case the over current flow then the IC sence the fault nd its sends the information to Transistor after provided pulse to Transistor The relay operates because the Relay is a protective device

Relay occurs the faulty condition and break the supply in circuit and the Buzzer beeps loudly. So that The Appliances and the Human are safe Because of this Operation.

This project is also used for earth leakage Protection , this process is also same as above.

The cost is also affordable than MCB and RCCB. Because, MCB is mechanical device and if in case at the time of S/C the MCB is not Trip then, The chances of accidents is more.

Thats Why we use this Intelligent protector Microcontroller based project. To protect all the things.

A. Advantages

- 1) It is very helpful for prevent from unwanted shock any electrical appliances.
- 2) Easy construction.
- 3) Get output quickly because of innovative sensors.
- 4) Low maintenance.
- 5) Higher sensitivity.
- 6) Value of short circuit current can set manually.
- 7) No mechanical losses

B. Specification

- 1) Line to earth fault protection
- 2) Over and low voltage protection
- 3) Over current protection
- 4) Short circuit protection

IV. CONCLUSION

The total realistic "Harmful faults detection and protection in Electrical system" is an Integrating feature of all the hardware components been used and developed in it. The Presence of each and every module has been reasoned out and placed very carefully.

The design of an intelligent electrical appliance protector is main motive to prevent from hazardous activity which is created in electrical power supply in our day to day life. We have completed the monitoring of this project successfully.

REFERENCES

- [1] Lundqvist,Bertil.history"(PDF).ABB.Retrieved30December2015.
- [2] Schossig,Walter(September2014)."ProtectionHistory".*Pacworld*.Retrieved30December2015.
- [3] Mooney,Joe(March25–28,1996).*Microprocessor-BasedTransmissionLineRelayApplications*.AmericanPublicPowerAssociation'sEngineering&OperationsWorkshop.SaltLakeCity,Utah:SchweitzerEngineeringLaboratories,Inc.p.1.
- [4] *SilentSentinels*.Newark,NewJersey:WestinghouseElectric&ManufacturingCompany.1940.p.3.
- [5] "AEMC CurrentRules".*www.aemc.gov.au*.Retrieved2015-12-30.
- [6] "ProtectionSystemMaintenance-ATechnicalReference"(PDF).*www.nerc.com*.p.1.Retrieved2016-01-05."100yearsofrelayprotection,theSwedishABBrelay
- [7] Gadgil,Kaustubh(September2010).*Solution*(Technicalreport).TexasInstruments.SLAA466.
- [8] Mason,C.Russell(January15,1956).*TheArtandScienceof ProtectiveRelaying*.ISBN978-0-471-57552-8.
- [9] ProtectiveRelaysApplicationGuide(Report).London:The GeneralElectricCompany(PLC)ofEngland.January1974.
- [10] Paithankar,Yeshwant(September1997).*TransmissionNetworkProtection*.CRCPress.ISBN978-0-8247-9911-3.