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Motorized Circuit Breaker by using Arduino

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Abstract: *Circuit breakers are the primary devices for the protection and switching operations of electrical systems. B. If the building burns down or the control panel is damaged by exposure to direct impact from an electrical short circuit or overload, to limit these risks: It is necessary to take more advanced measures such as B. Intelligent and fast reacting circuit breaker. Protect your system from overloads and short circuits through this project. The concept of electronic circuit breakers came to the fore when it was discovered that traditional circuit breakers such as MCBs take a long time to trip. Therefore, it is very important for sensitive loads to activate the trigger mechanism as soon as possible, preferably immediately. Electronic circuit breakers are based on the voltage drop across a series element (usually a low value resistor) proportional to the load current. This voltage is detected and converted to direct current. It is then compared to a preset voltage by a level comparator and produces an output that drives a relay through the Arduino Uno to trigger the load. Since such solid-state switches will inevitably fail in the event of an accidental short circuit, it is preferable to use relays instead of solid-state switches. This project is very fast and overcomes the shortcomings of thermal circuit breakers. In this project, a motorized circuit breaker is built based on an Arduino and the necessary sensors, so you can print the voltage and current results with the help of current and voltage sensors and an LCD. In a short circuit condition, the current is very high and the voltage is almost zero. The Arduino receives these values from the sensors and compares them to thresholds to make the correct decisions to protect the system from damage. The same principle applies. to increase the load limit. Additionally, this project can be extended by using a current transformer (CT) for galvanic isolation between mains and control circuits. The use of power electronics devices such as high-power transistors enables faster operation compared to conventional ones.*

Keywords: circuit breaker, over load protecter

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