

**ELECTRICAL AUTOMATION
SYSTEMS TOWARDS INTELLIGENT
AND ENERGY EFFICIENCY
APPLICATIONS**

Musse Mohamud Ahmed



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APPLICATIONS

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CHAPTER 6

PROTECTION SYSTEM FOR ELECTRICAL DISTRIBUTION

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This chapter covers several important parts of protection system elements for electrical distribution systems. These are circuit breakers, current transformers and contactors, however, relays which are one important element in electrical protection system will be discussed in chapter 7. Power system protection is to ensure maximum continuity of power supply. Protection devices against electrical faults may be broadly divided into fuses or circuit breakers. In some applications, fuses are used with the circuit breakers to take over the interruption of higher short-circuit currents, particularly with the miniature or lower-rated MCCB [1].

6.1 Circuit Breaker (CB)

A CB is defined in NEMA standards as a device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating. A CB is defined in ANSI standards as a mechanical switching device, capable of making, carrying and breaking currents under normal circuit conditions. It is capable of making and carrying for a specified time and breaking currents under specified abnormal circuit conditions such as those of a short circuit [2]. CB has the advantage of not requiring replacement after breaking a short circuit within its rated capability. Figure 6.1 shows the characteristics of CB.

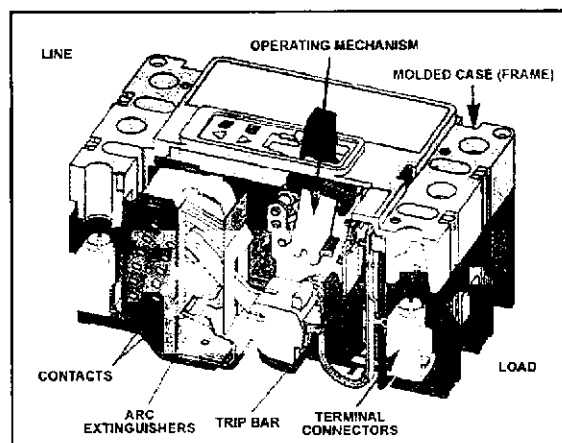


Figure 6.1: Characteristics of Circuit Breaker [3]