UPGRADING HOME MOLDED CASE CIRCUIT BREAKER FOR AUTOMATIC TURN ON AFTER TRIPPING

SYED MOHD AFDHAL BIN SYED HASSAN

FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA

ACKNOWLEDGEMENT

I would like to acknowledge the contributions of the following groups and individuals to the development of my project:

My supervisor, Prof. Madya Pauziah Mohd Ashad always directed me to wide range of supervision, guidance, invaluable advice and suggestion upon completing this project. She answered all of my questions as well as asked me questions that helped me to narrow my search. Further, she helped me figure out correct documentation for sources for my project. She gave me this help during lecture time and after lecture.

My family who always supported and encouraged me, Thanks to my mother, for her for never ending love and encouragement. My father, Syed Hassan Syed Mohamaad who has a lot experience in mechanical engineering that helps to solve mechanical problem. My second brother, Syed Mohd Afiq Bin Syed Hassan who is still learning in mechanical designing and innovation always spend time to help me finish my project, and my third brother, Syed Mohd Aiman Bin Syed Hassan now concentrate for SPM always cheer me all the times.

My lecturers, Prof. Madya Dr Ahmad Maliki Omar for teaching me in Peripheral Interface Controller (PIC) class and also gave me idea to do this project.

My friends, Mickolas Judah, Langga Ramon, Azizul Azlan, Helmy Ghazali, and Nora Anzalina for their supports, patience, and advises in every possible way throughout my study and completing this thesis and project.

ABSTRACT

This report describes the upgrading home main circuit breaker, Moulded Case Circuit Breaker (MCCB) from manual switch ON to automatic switch ON after tripping. This report covered all aspect of design and development. The types and circuit breaker operations that already been used as electrical circuit protection have been discussed. The suitable mechanism called plunger, which will help to pull up circuit breaker to turn ON position. Peripheral Interface Controller (PIC) has been used as the plunger main circuit controller that will operate at five times. The numbers of operation will indicate with five LED. Plunger mechanism has been employed to reset the circuit breaker to its ON position to meet the objective of the project.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTIONS

1.1 BACKGROUND OF STUDY

Moulded case circuit breaker, MCCB studies are generally categorized into two major parts, moulded case circuit breaker (MCCB) in residential studies and upgrading moulded case circuit breaker (MCCB) studies. Moulded case circuit breaker (MCCB) in residential studies is about main protection in the house. MCCB is a electrical switch designed to protect an electrical branch inside the house from damages caused by overload or short circuit that produce very high current. Example if the life wire inside 13A socket outlet is touching the neutral wire, without a person realize, it will result in short circuit that might produce a fire, so the MCCB will quickly trip or cut off the electrical supply. Upgrading moulded case circuit breaker, MCCB study, is to convert the normal MCCB to automatically turn ON after trip. When MCCB is tripped, then the house owner will need to turn it ON. Therefore to turn ON automatically, another device is needed. These studies are important to determine the suitable mechanism to upgrade the MCCB and a possibility to install this MCCB for residential usage. [1]

In moulded case circuit breaker (MCCB) in residential studies is about the design and the origin of MCCB. The operations of circuit breaker have common features; depend on current rating, voltage class, and the different type of circuit breaker. There are three types of circuit breaker namely low voltage circuit breakers, medium voltage circuit breakers, and high voltage circuit breakers. Low voltage circuit breakers, is operated at less than 1kV, and are common in commercial industrial application. There are several type of low voltage circuit breaker which include Miniature Circuit Breaker(MCB), Moulded Case Circuit Breaker (MCCB), and low voltage power circuit breaker that be