Heaven's Light is Our Guide

Rajshahi University of Engineering & Technology

Department of Electrical & Computer Engineering

Lab report

Course Code : ECE 1202

Course Title : Circuits and Systems-2 Sessional

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Submitted To:	Submitted By:
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Experiment No: 04

Name of the experiment: Three phase sequence test using motor.

Objective:

To understand the concept of phase sequence in three phase system and study the effect of phase sequence on the direction of rotation in six phase motor.

Theory:

In a three-phase electrical system, the phase sequence refers to the order in which the voltages of the three phases (a, b, C) reach their peak values. The sequence can be either forward (abc) or reverse (acb). This sequence directly impacts the direction of rotation in AC motors. In a six-phase motor, which consists of two sets of three-phase windings, the direction of rotation depends on the phase sequence of the input supply. A forward sequence results in clockwise rotation, while reversing the sequence causes counterclockwise rotation.

Required Apparatus:

1. Source
2. VARIAC
3. Six-phase motor
4. Connecting wires

Circuit Diagram:

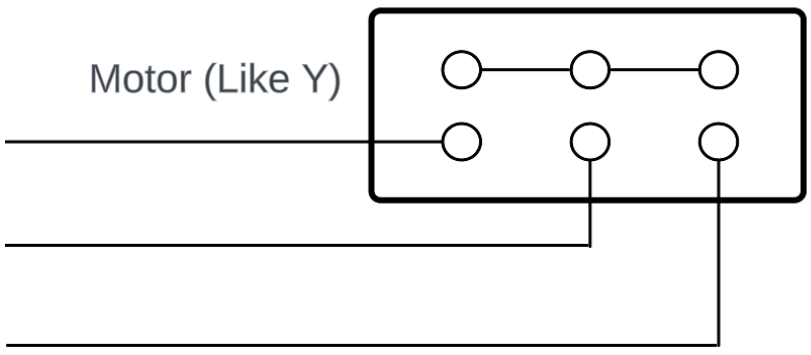

Fig-4.1: Circuit Diagram

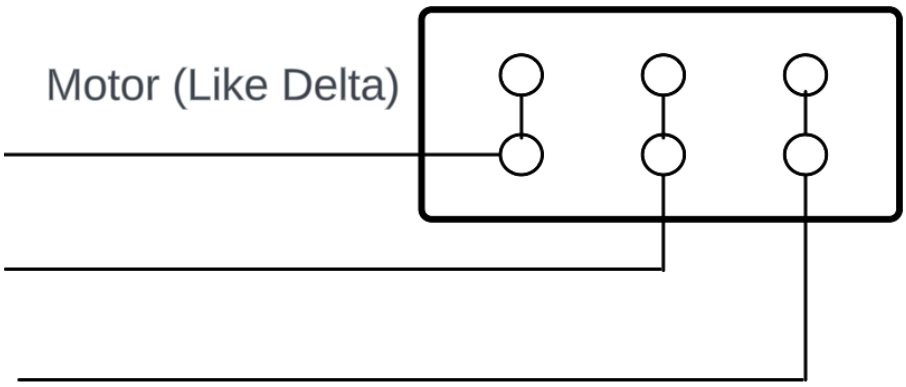

Fig-4.2: Circuit Diagram

Result:

At first the motor rotated clock-wise that is the sequence was positive or abc.

Then after swapping two of the connection the motor rotated anti clock-wise that is the sequence was negative or acb.

Discussion:

The experiment demonstrates that the direction of rotation of the motor may be changed by varying the phase sequence. Reverse sequences (acb) result in counterclockwise rotation, whereas forward sequences (abc) induce clockwise rotation. This attests to the crucial function phase sequence plays in motor control, as Damage or undesirable motor activity may result from improper sequencing. The six-step. The motor's reaction highlights the need of confirming the accurate phase sequence in three phase systems in industrial applications to guarantee correct functioning.

Precautions:

1. The connections were made carefully and were double checked

2. The AC voltage source and variac were handled with care maintaining safety measures.

Reference:

(i) Charles K. Alexandar and Matthew N. O. Sadiku, “Fundamentals of Electric Circuit”, 5th Edition, 1221 Avenue of the Americas, New York

(ii) Wikipedi