

*Heaven's Light is Our Guide*



# Rajshahi University of Engineering & Technology

Department of Electrical & Computer Engineering

## Lab Report

Experiment No: 02

Name of the experiment: Study the relationship between phase current and line current of delta connected 3-phase balanced system.

Course Code	ECE 1201
Course Title	Circuit & Systems II Sessoinal
Date of experiment	28.05.2024
Date of Submission	09.07.2024

Submitted By:	Submitted To:
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## Experiment No: 02

**1. Name of The Experiment:** Study the relationship between phase current and line current of delta connected 3-phase balanced system.

**2. Objectives:** This lab's goal is to examine and validate the theoretical relationship in a balanced Delta-connected three-phase system between the line and phase currents.

### 3. Theory:

In a balanced Delta-connected system:

- **Phase Current:** The current that flows through each phase of the load in a three-phase system

- **Line Current:** The current that flows through each line connecting the power source to the load in a three-phase system.

In a delta connected three phase system, the relationship between line voltage and current and phase voltage and phase current respectively is:

$$V_{\text{line}} = V_{\text{ph}}$$

which represents the relationship between the line and phase voltages.

$$I_{\text{Line}} = \sqrt{3} I_{\text{Ph}}$$

which represents the relationship between the line and phase currents.

### 4. Required Apparatus:

- 4.1. Ammeter
- 4.2. Voltmeter
- 4.3. Multimeter
- 4.4. Source
- 4.5. Connecting wires
- 4.6. Resistors

### 5. Circuit Diagram:

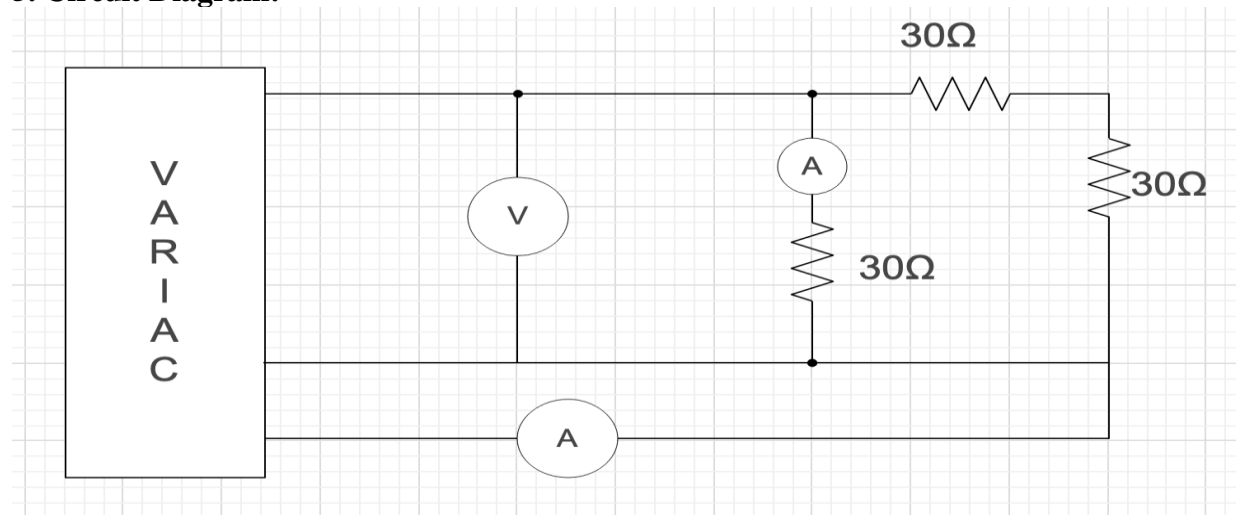


Figure: Circuit Diagram

### 6. Data Table & Result:

SL NO.	$I_L$ (A)	$I_P(m)$ (A)	$I_P(cal)$ (A)	$V_P$ (V)	$V_L$ (V)	<b>Error(%)</b> $e = \frac{ I_{P(m)} - I_{P(cal)} }{I_{P(m)}} \times 100$
01	3	1.7	1.732	50	50	1.88
02	4.11	2.44	2.37	70	70	2.86
03	1.3	0.73	0.751	25	25	2.87
04	5.7	3.3	3.29	100	100	0.3
05	3.3	1.9	1.905	60	60	0.27

$$I_P = I_L / \sqrt{3}$$

## 7. Discussion:

The results we had gotten from the experiment were exactly what were anticipated. However, due to few mechanical and mathematical errors, they had not been precise and minor errors were found and calculated. It had occasionally taken many attempts to finish the experiment because sometimes experiment materials seemed to appear faulty and also was used by the experimenters incorrectly, which had led to incorrect calculations and results. If everything was flawless, the outcome would be precisely correct as per the theory.

## 8. Precautions:

- i. All connection should be perfectly connected.
- ii. Before connecting the instruments check their zero reading.
- iii. The terminal of the resistance should be properly connected.

## 9. Reference:

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