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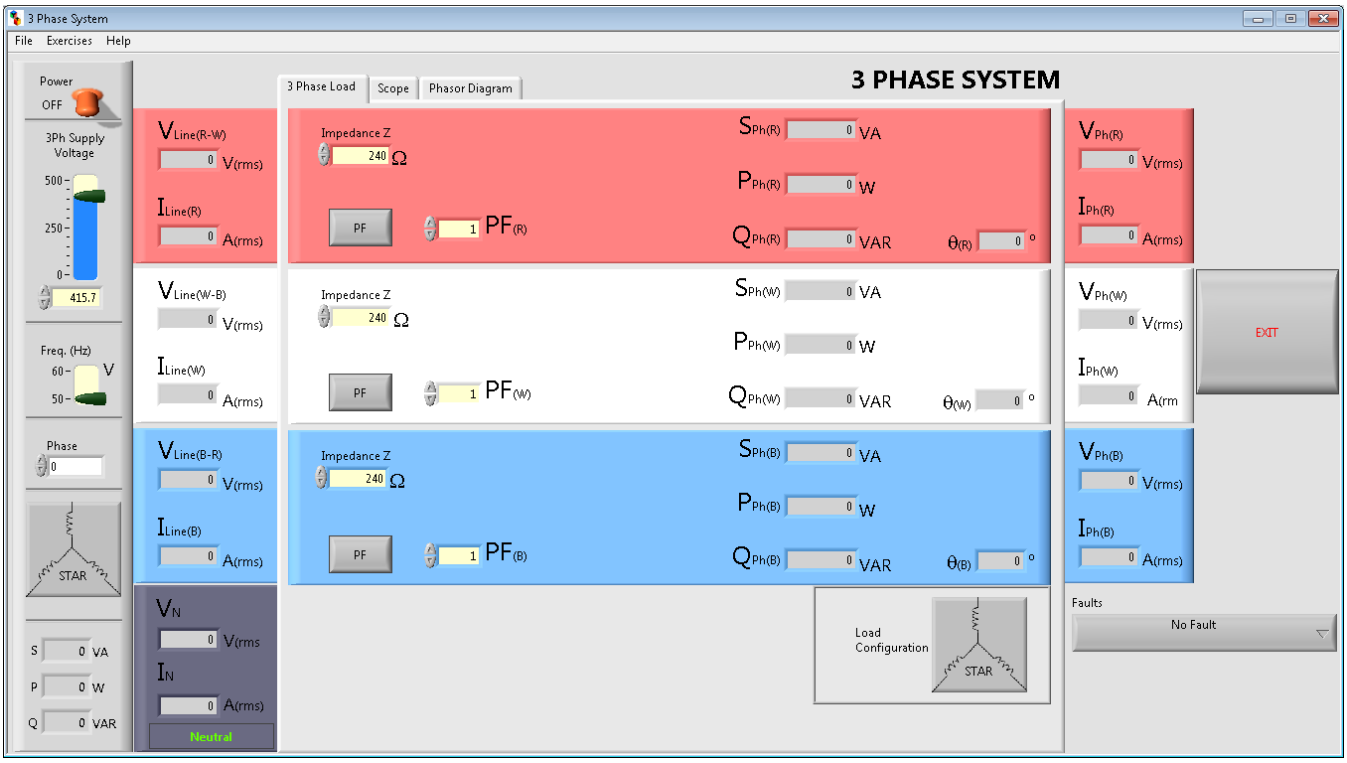
# USER GUIDE

## 3Ph IMPEDANCE – PHASOR

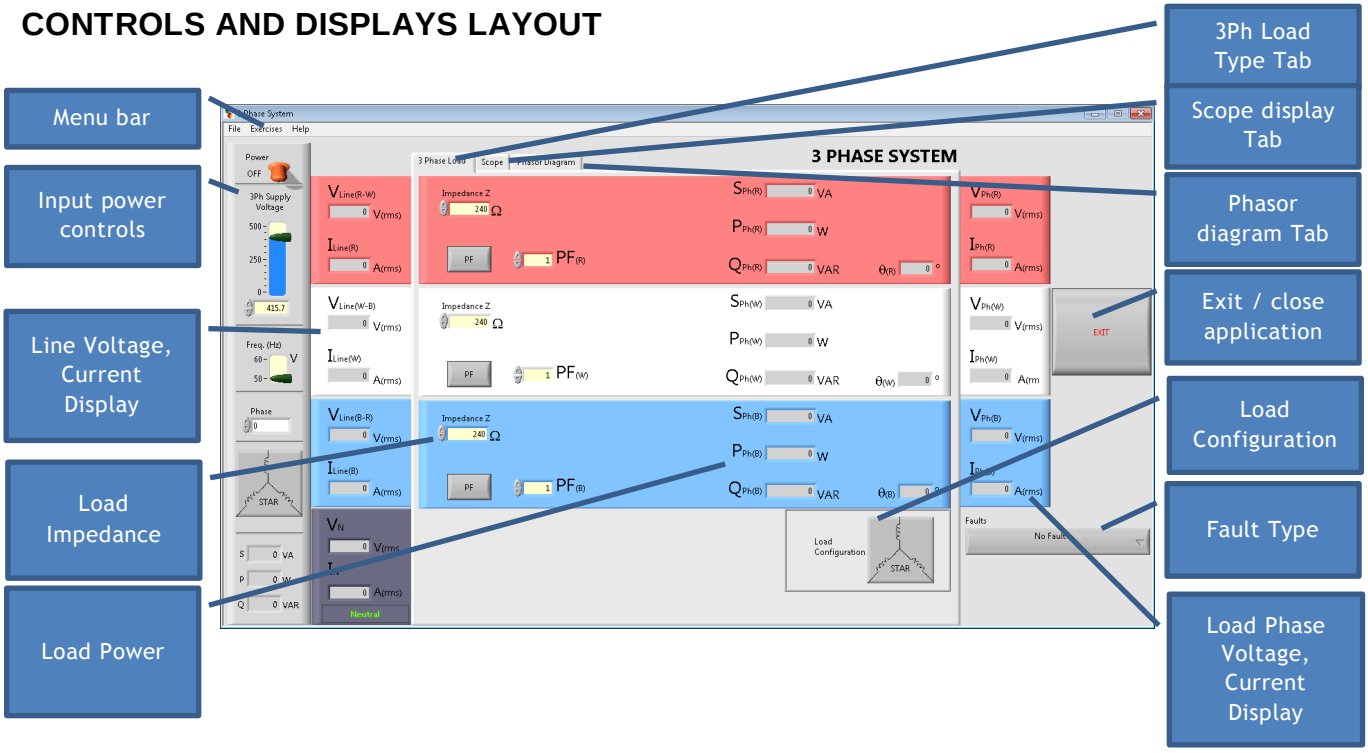



## LabVIEW Simulation Software

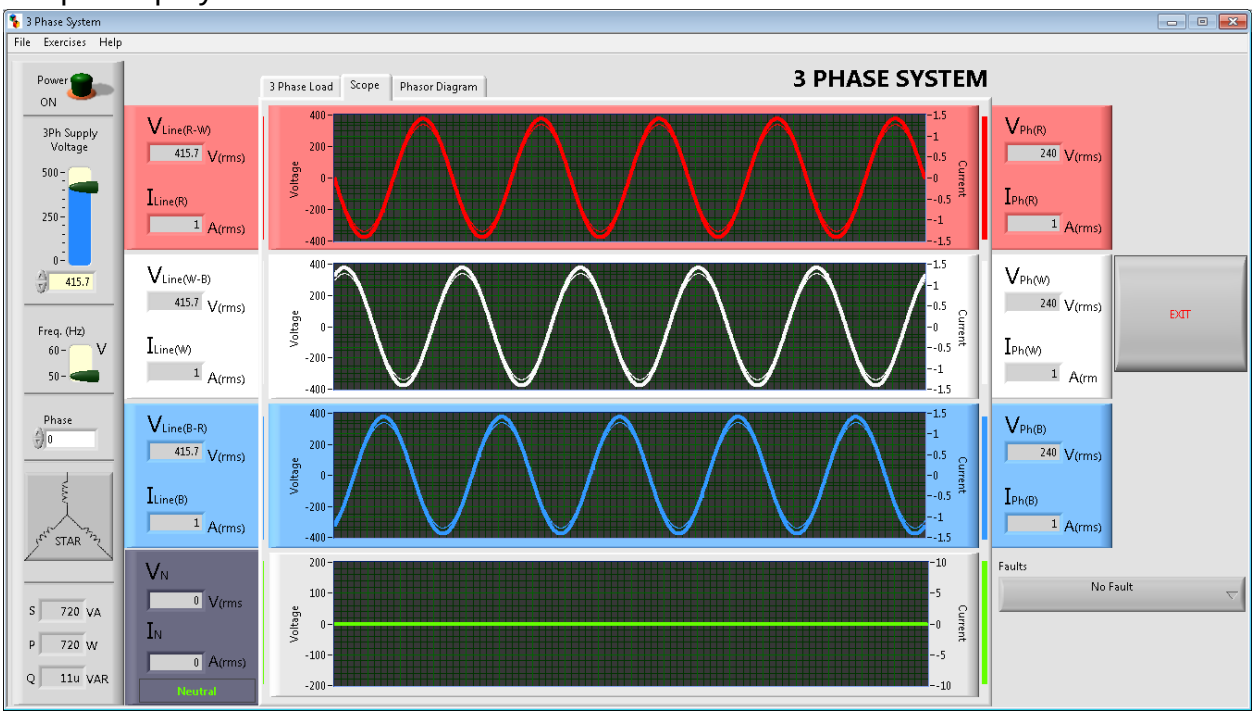
# INTRODUCTION

3Ph Impedance – Phasor application is written to help students to do practical exercises using LabVIEW simulation software. This application is for three phase star/delta circuits for reactive loads (LCR). You will find the intuitive controls and the layout of components very user friendly and easy to use with minimal help. The instructions below will help you to get started.

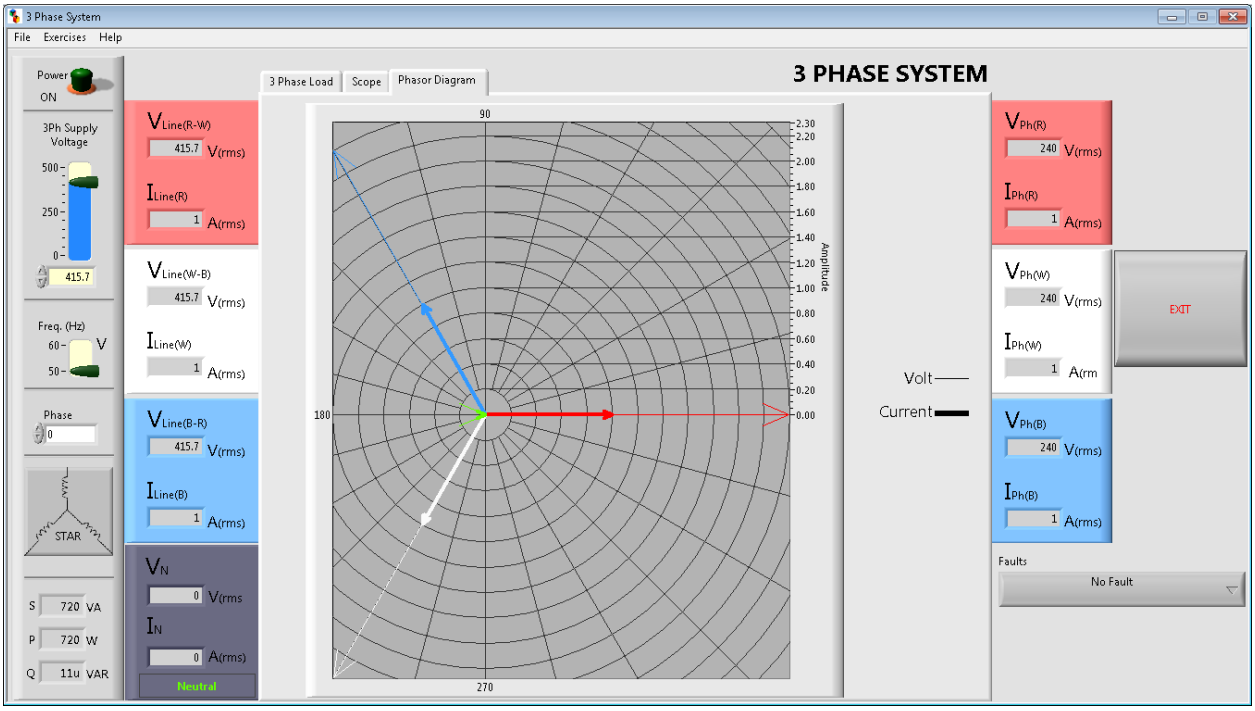
## CONTROLS AND DISPLAYS LAYOUT




## Scope Dispaly



Phasor Diagram Display




## MENU BAR

File

- Print Window. Print a screenshot of the window
- Exit. Close this application

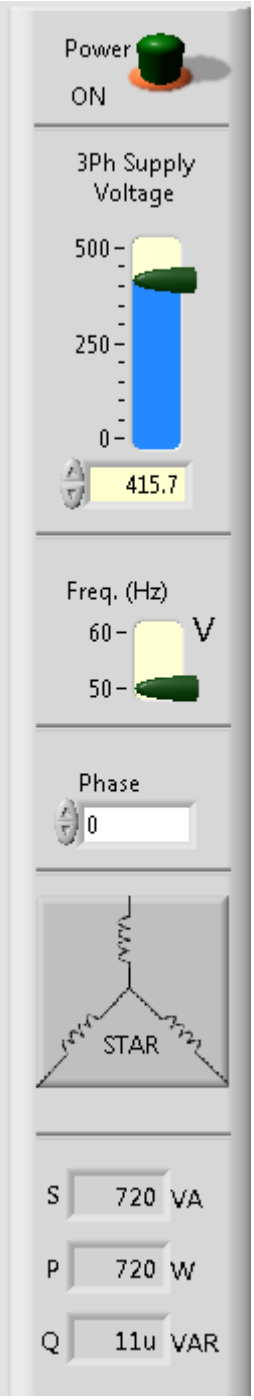
Exercises

- Student Exercises. Opens a student exercises document.
- Reactance XL. Opens a pop-up window to calculate reactance of an inductor value or to calculate the inductance of an inductor with a reactance value.
- Reactance XC. Opens a pop-up window to calculate reactance of a capacitor value or to calculate the capacitance of a capacitor with a reactance value.
- Power Factor. Opens a pop-up window to calculate power factor of a given angle or calculate the angle of a given power factor.
- Calculator. Opens the standard windows calculator

Help

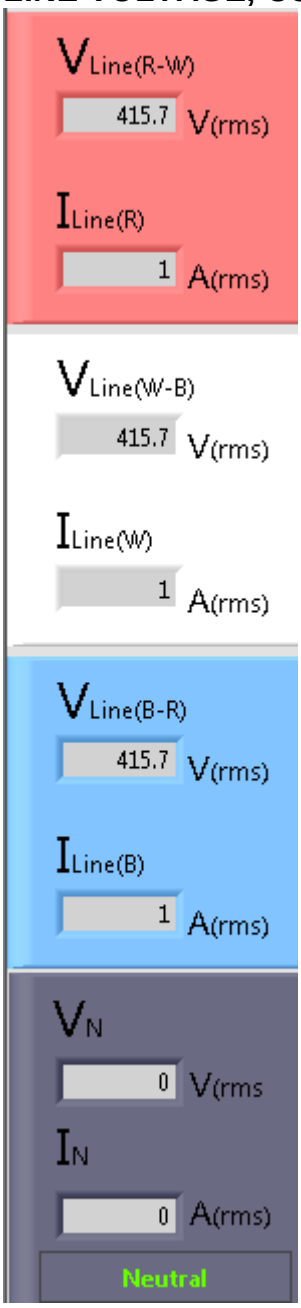
- Help on This VI. Opens a user guide document
- Licence. Opens a pop-up window to show the licence information for this application. Here you can enter the licence key to activate this application.
- About LabVIEW. Opens a pop up window to show the LabVIEW software information.

**INPUT POWER CONTROLS**



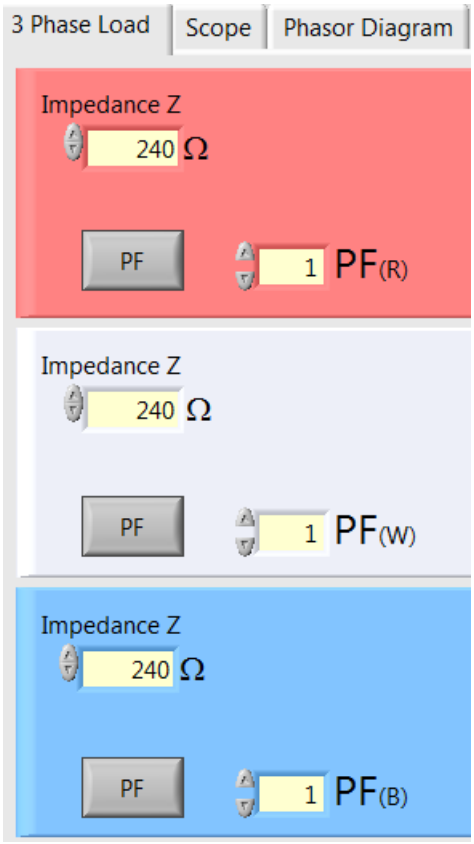

Set the supply voltage, frequency and turn on/off the power. You can set the frequency, phase angle between voltage and current of the power supply and select supply configuration to star or delta. It also shows the power drawn from the supply.

**LINE VOLTAGE, CURRENT DISPLAY**

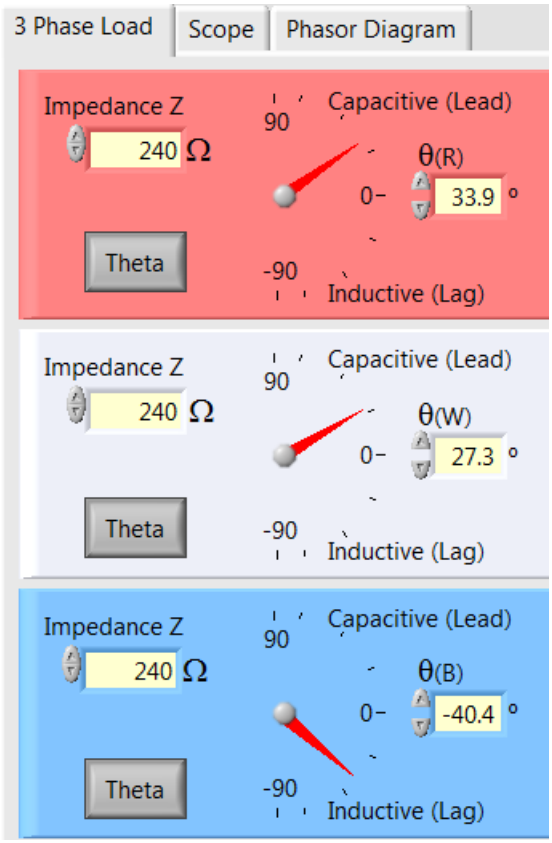



View the line voltage and current for the applied phase load.

## LOAD IMPEDANCE CONTROL

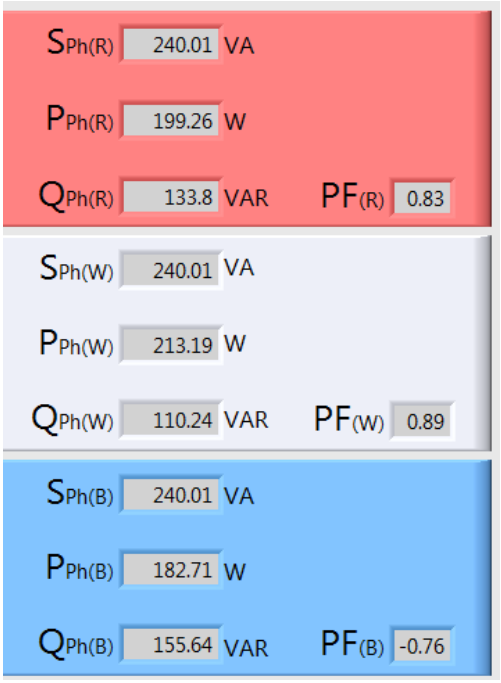



OR



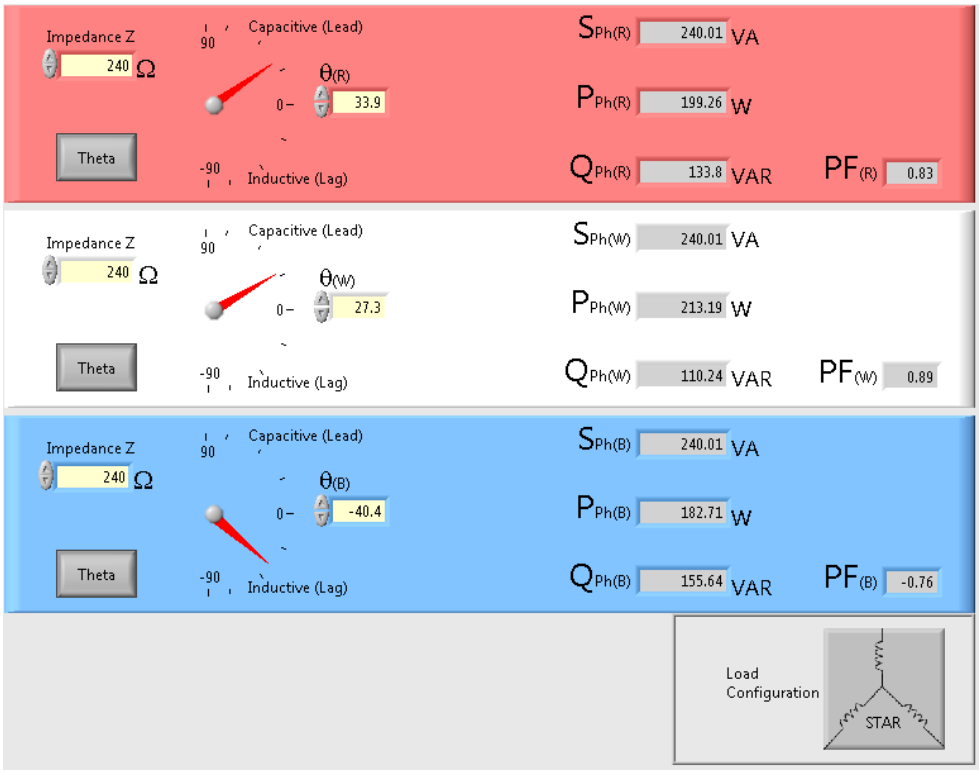

Adjust the impedance of each phase for the load. You can select the type of load for each phase by adjusting the power factor or phase angle. The power factor can range from 0 to +1. The phase angle can range from -90 to +90 degrees. If the power is 1 or phase angle is 0 degrees, it will be pure resistive load.

## LOAD POWER



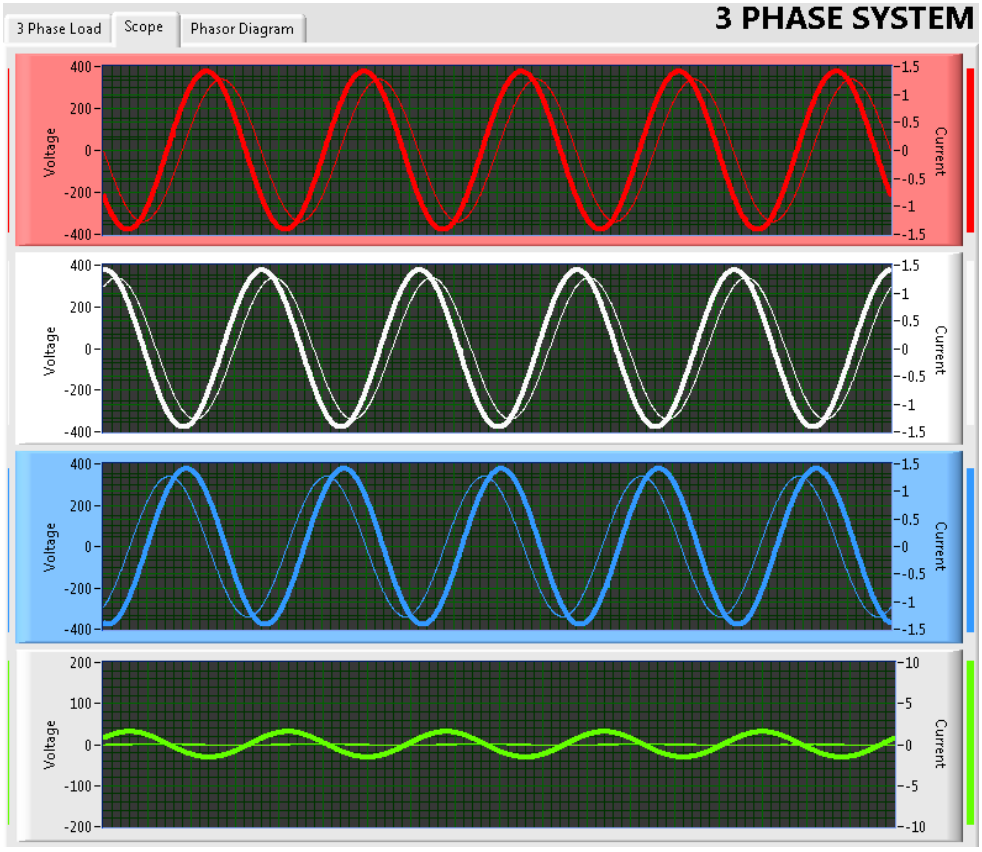

View the power meters for each phase and the power factor phase angle.

## LOAD TYPE TAB CONTROL



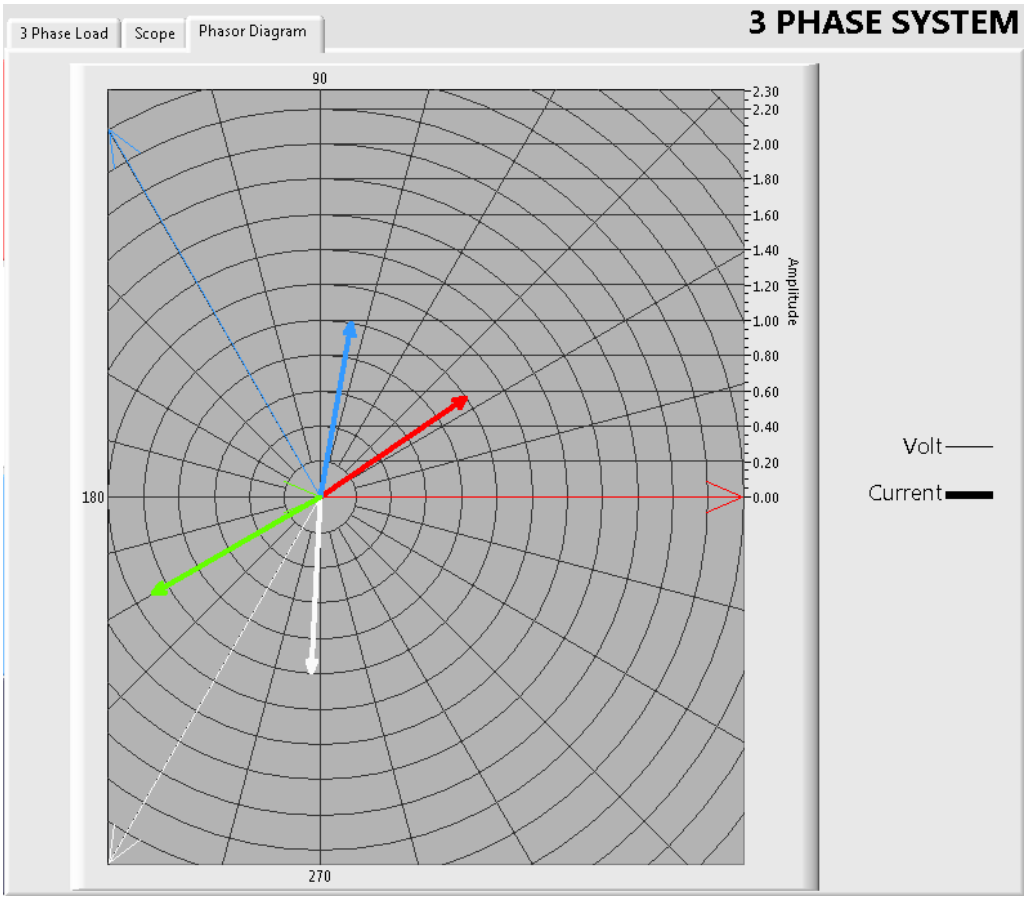

This tab selection allows you to adjust and view the load type and configuration.

## SCOPE TAB CONTROL




This tab selection allows you to view the load voltage and current waveforms on a scope and view the phase angle between voltage and current for each phase.

## PHASOR DIAGRAM TAB CONTROL

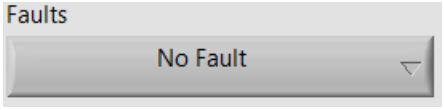



This tab selection allows you to view the phasor diagram of all the vectors including the neutral voltage and current in star load configuration or delta circulating current in delat load configuration.

## EXIT BUTTON


Click this button to exit and close this application.

## FAULT SELECTION




Click this drop list to select the fault type.

## USING THE SIMULATION APPLICATION

STEPS

1. Set the load impedance for each phase.
2. Adjust the power factor / phase angle values of each phase load.
3. Select the frequency of the power supply
4. Set the power supply voltage.
5. Turn on the power supply
6. Adjust the supply voltage and observe the line / phase voltage and current values.
7. Record the volt and current meter readings from the display area.
8. Draw the vectors in your notebook based on the type of load and the readings you recorded in step 7.
9. Select the phasor diagram tab to show all the vectors in the phasor diagram
10. Compare your vector plots with the phasor diagram. If different, then check your plot and explain why you have a different plot.

Enjoy learning phasors!