

MULTISIM DEMO 8.4: THREE-PHASE IN MULTISIM

Multisim even has three-phase sources! Just for the sake of completeness, we'll briefly go over three-phase power in this current section.

To access a three-phase “Y” (or Wye) source, go to:

Group: Sources
 Family: POWER_SOURCES
 Component: THREE_PHASE_WYE

Place the component and double click on it to bring up its control window shown in Fig. 8.4.1. Ensure that the RMS Voltage is 120 and that the frequency (F) is set to 60 Hz. Leave Time Delay and Damping Factor alone.

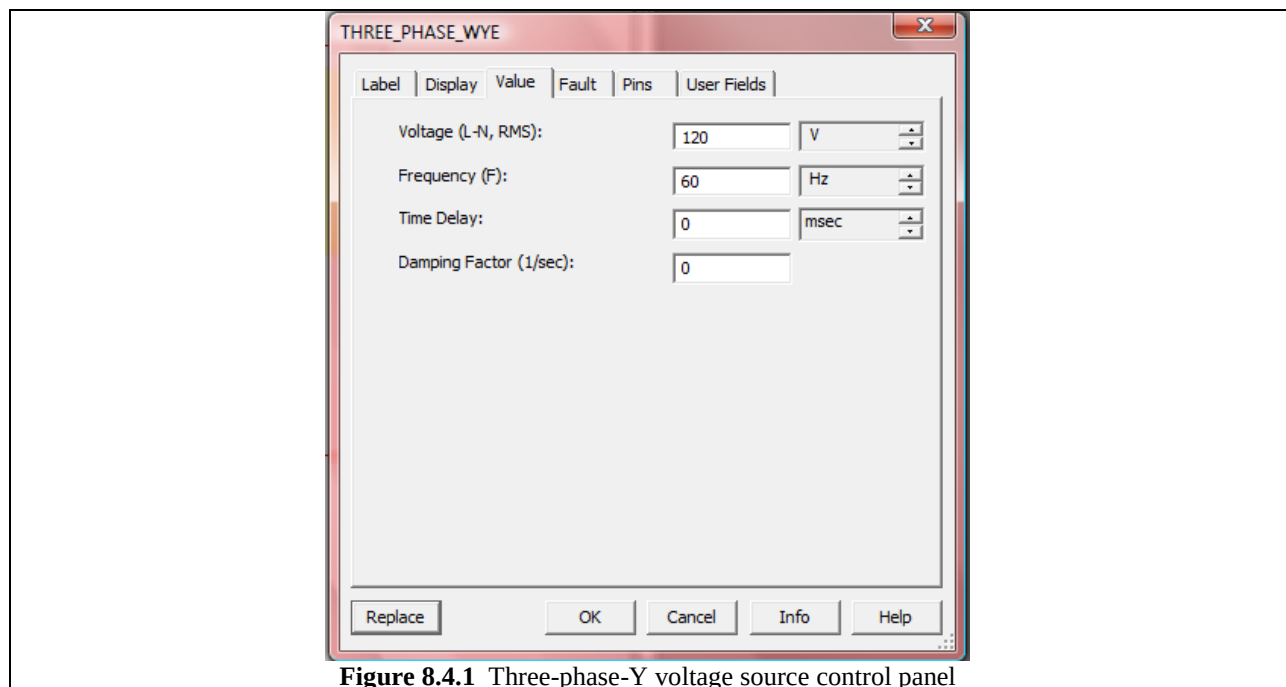


Figure 8.4.1 Three-phase-Y voltage source control panel

Build a circuit around the three-phase source as shown in Fig. 8.4.2 on the next page. Onto the branch of each load, place a Measurement Probe which displays the following parameters: $V(p-p)$, $V(rms)$, $I(p-p)$, and $I(rms)$. In addition, display the phase of the bottom two loads in reference to the top node.

When you are ready, run the Interactive Simulation. The probes should display the values shown in Fig. 8.4.3. Remember that the phase values displayed are actually the negative of how we often think of phase. Consequently, the voltage at V(2) actually lags the voltage at V(1), for example.

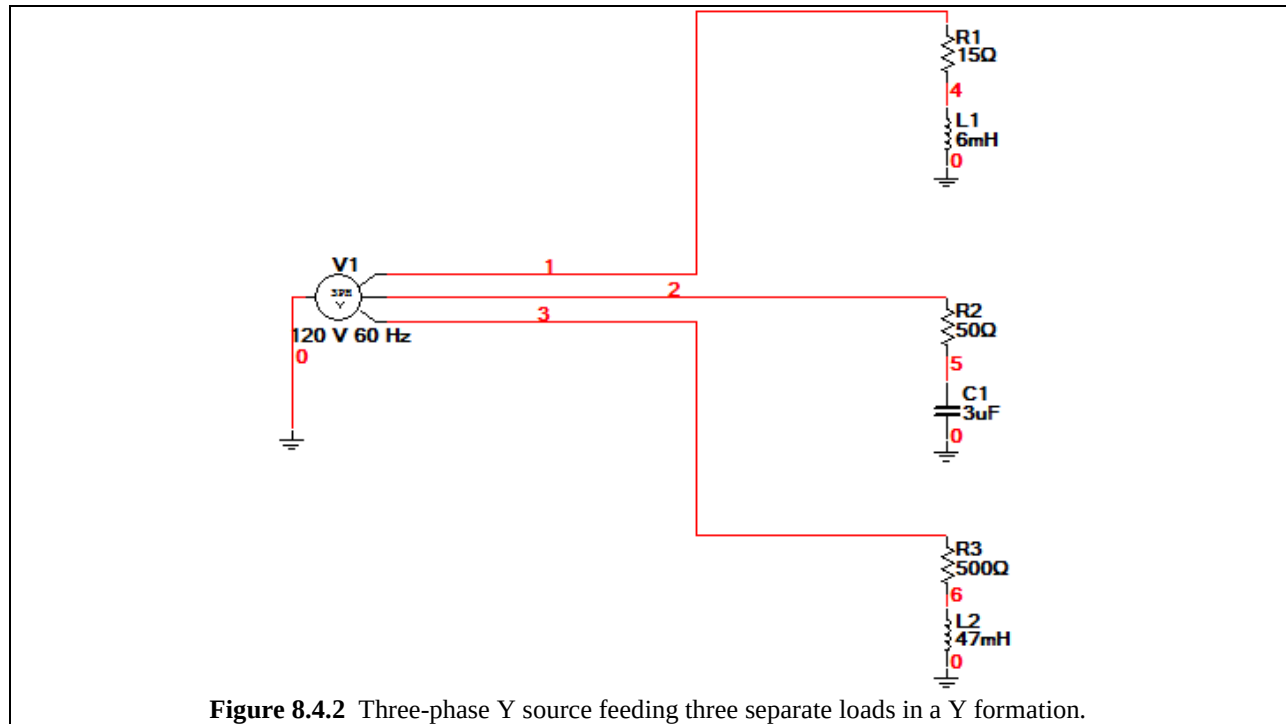


Figure 8.4.2 Three-phase Y source feeding three separate loads in a Y formation.

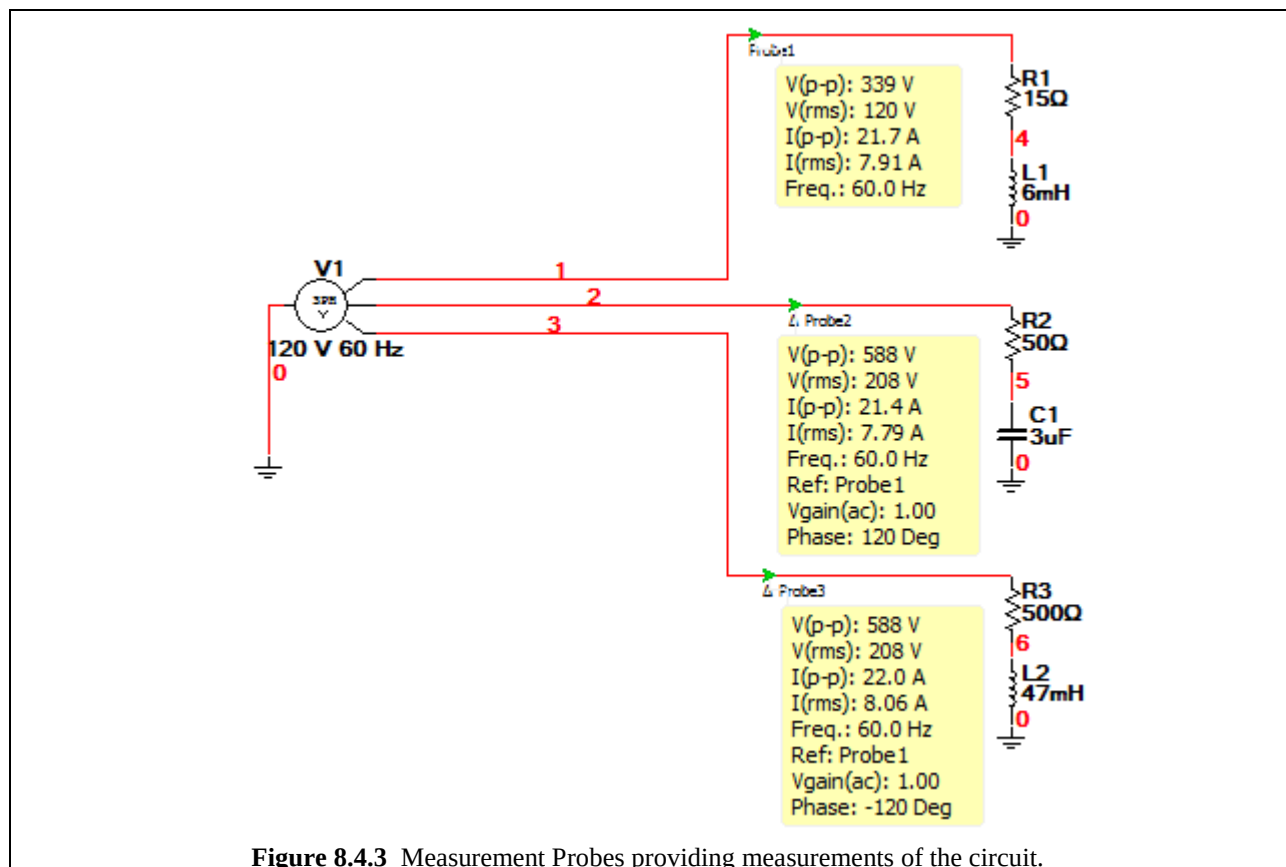


Figure 8.4.3 Measurement Probes providing measurements of the circuit.

Before we finish this Demo, let's run a Transient Analysis really quickly just so we can see in the time-domain what the three-phase signals look like. Run the Transient Analysis from 0.1 to 0.14 seconds, and set TMAX to 1e-005 seconds, as shown below in Fig. 8.4.4. Make sure that you remember to set V(1), V(2), and V(3) as the variables for analysis under the Output tab.

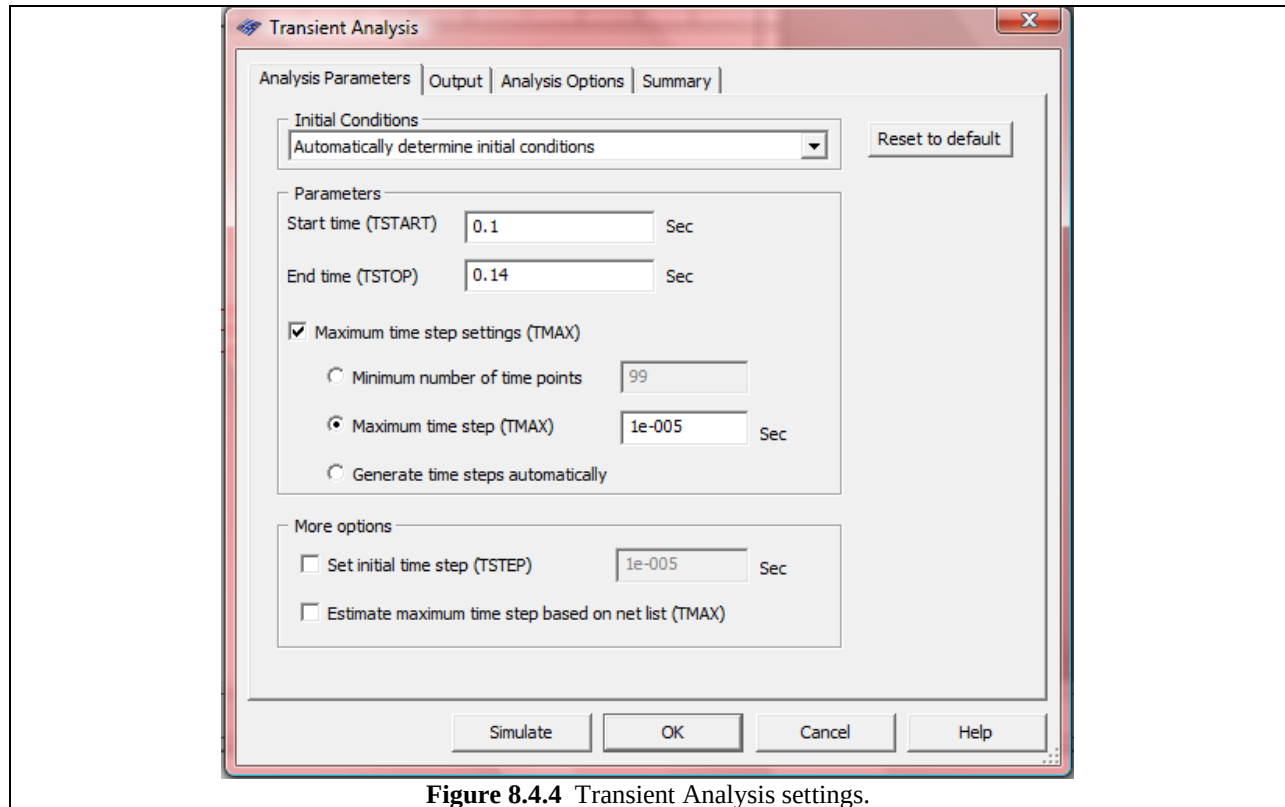


Figure 8.4.4 Transient Analysis settings.

Run the Transient Analysis by pressing Simulate, and the plot which appears should resemble Fig. 8.4.5 which is located on the next page. In agreement with the Measurement Probes, we see that the signal at V(2) lags the signal at V(1).

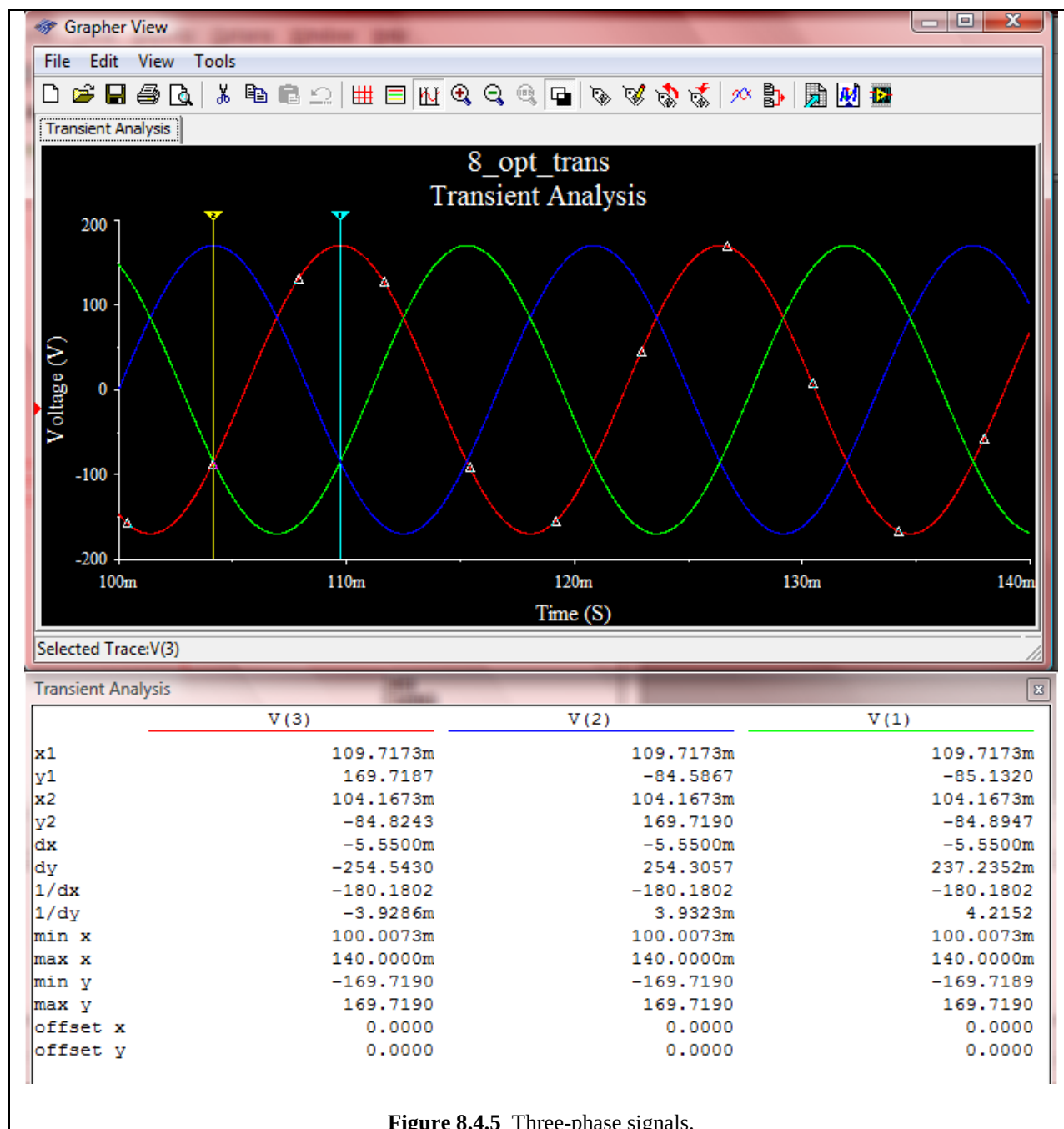


Figure 8.4.5 Three-phase signals.