

## EXPERIMENT: 6

### OBJECTIVE:

Plot V-I characteristic of a single-phase line with and without fault using Simulink.

### SOFTWARE:

MATLAB 2008a

### APPARATUS REQUIRED:

S.No	Parameter	Range
1	Voltage	230V
2	Inductor	100e-6 H
3	Resistor	10 $\Omega$
4	Frequency	50 Hz
5	Capacitor	100e-6 F

### THEORY:

In an electric power system, a fault is any abnormal electric current. For example, a short circuit is a fault in which current bypasses the normal load. An open-circuit fault occurs if a circuit is interrupted by some failure. In three-phase systems, a fault may involve one or more phases and ground, or may occur only between phases. In a "ground fault" or "earth fault", charge flows into the earth. The prospective short circuit current of a fault can be calculated for power systems. In power systems, protective devices detect fault conditions and operate circuit breakers and other devices to limit the loss of service due to a failure.

**line-to-ground** - a short circuit between one line and ground, very often caused by physical contact, for example due to lightning or other storm damage.

### CIRCUIT DIAGRAM:

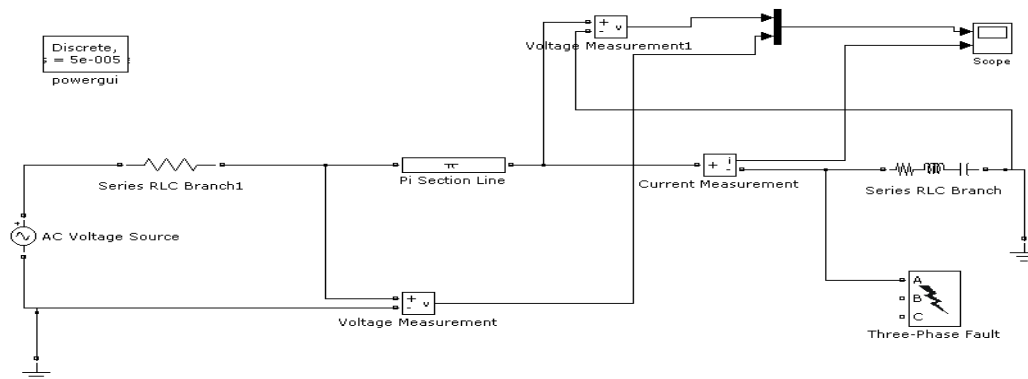


Fig.1. With Fault

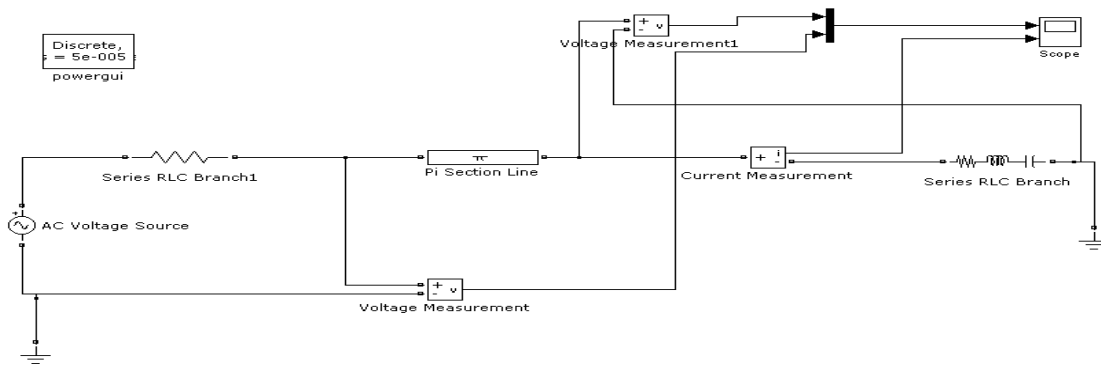


Fig.2. Without Fault

**OUTPUT WAVEFORM:**

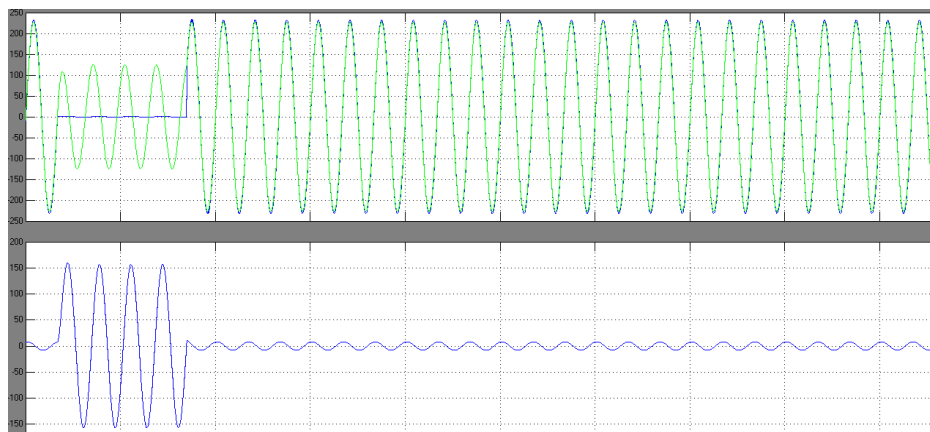


Fig.3. With fault

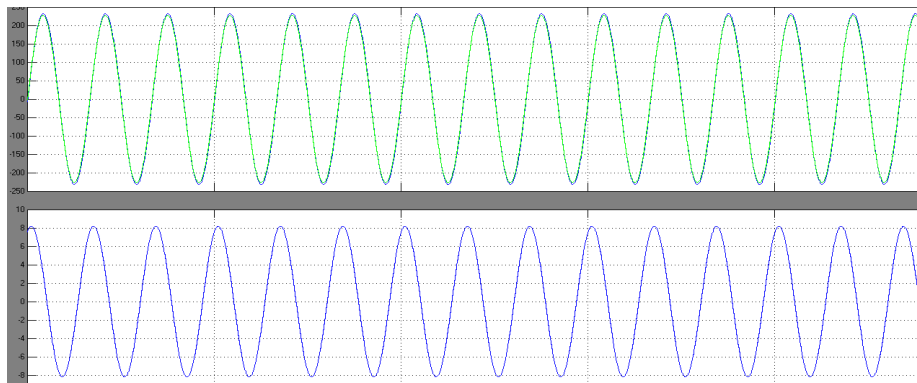


Fig.4. Without fault

**RESULT:**

V-I characteristic of single-phase line with and without fault was plotted using Simulink