

EXPERIMENT #6

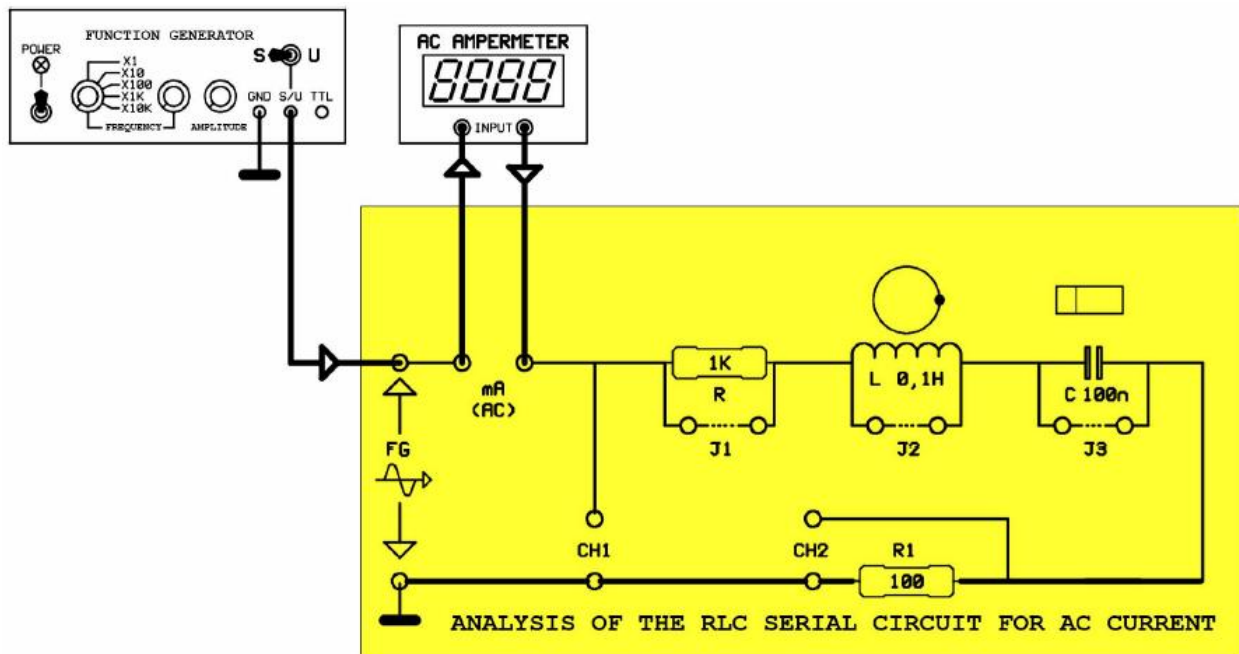
EXAMINATION OF THE SERIAL RLC CIRCUIT FOR AC CURRENT

REQUIRED MATERIALS:

1. Function generator
2. Oscilloscope (two channels)
3. AC Voltmeter
4. Y-0016/01AC module
5. Connection cable

EXPERIMENT:

Adjust the terminal of the function generator to sine, peak to peak value to **V_{pp}=10 Volt** and frequency to **F=1 KHz**. Connect the **Y-0016/01AC** module to its place. Make the circuit connections as in the Figure. Apply the power to the circuit.



EXPERIMENT OBSERVATIONS

1. Short-circuit the CH2 points so that the "R1" resistor will not effect the circuit. Calculate the total resistance.

2. Calculate the inductive reactance of the inductor.

3. Calculate the capacitive reactance of the capacitor.

4. Calculate the circuit impedance.

5. Calculate the circuit current.

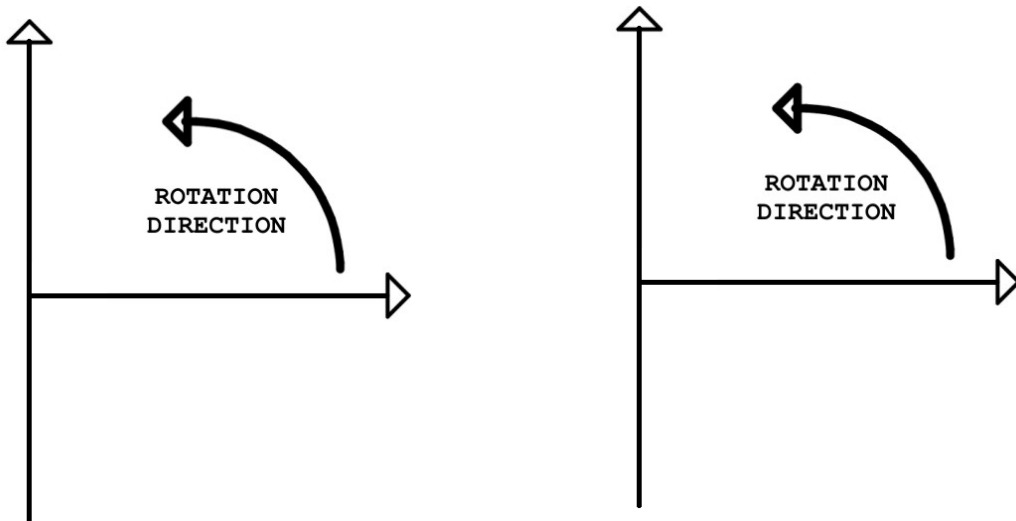
6. Compare the current value in Ampermeter with the calculated current value.

7. Calculate the voltages on resistor, inductor and capacitor using the current value.

8. Read the voltage values of resistor, inductor and capacitor with the AC Voltmeter. Compare these values with the ones we calculated.

9. Calculate the circuit voltage using the calculated voltage values (V_R , V_C and V_L). Compare the result with the voltage ($V=3,5V$) that you applied to the circuit.

10. Draw the phasor diagram of the circuit.



11. Calculate the power factor of the circuit, active power dissipated by the circuit and the phase angle.