

DIGITAL SYSTEM

2nd PRACTICUM: RECOGNITION OF SIGNALS



Writed by :

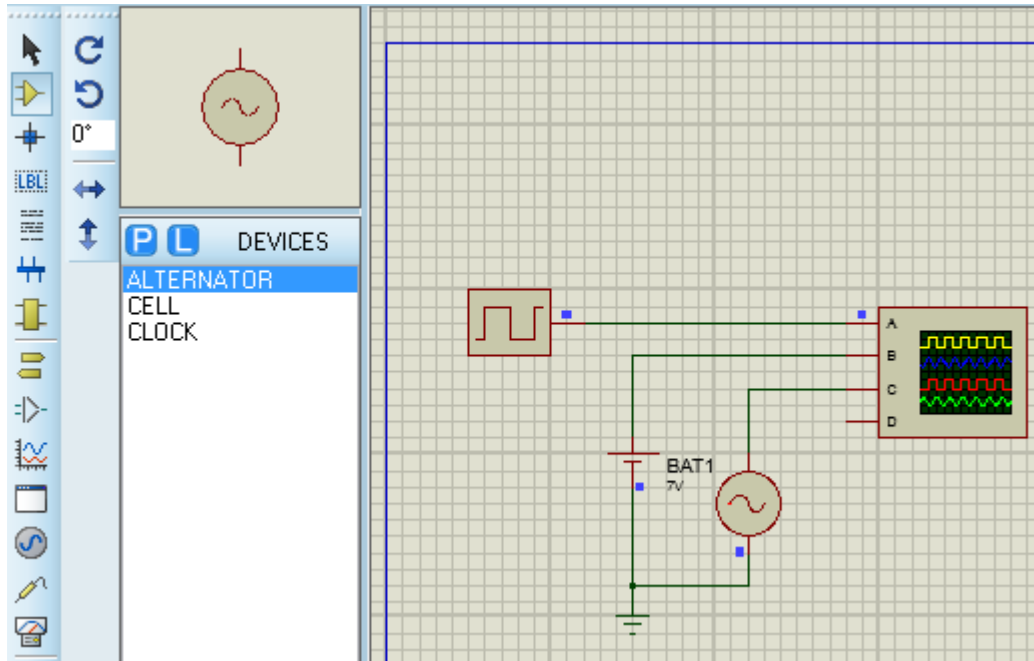
Name : Ainayah Syifa Hendri
NIM : L200183203
Major : Information Engineering

INFORMATION TECHNOLOGY
FACULTY OF COMMUNICATION AND INFORMATICS
MUHAMMADIYAH UNIVERSITY OF SURAKARTA
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PRACTICUM ACTIVITIES

1st Experiment. Signal Type Exercises

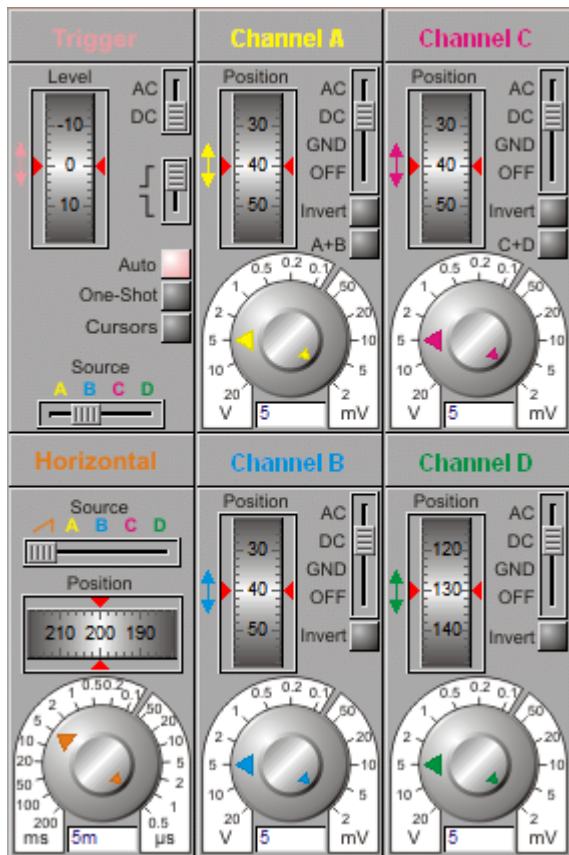
1. Make a series in Figure 2.3 and edit the properties of each component as shown in Table 1.



Tabel 1. Components in the circuit

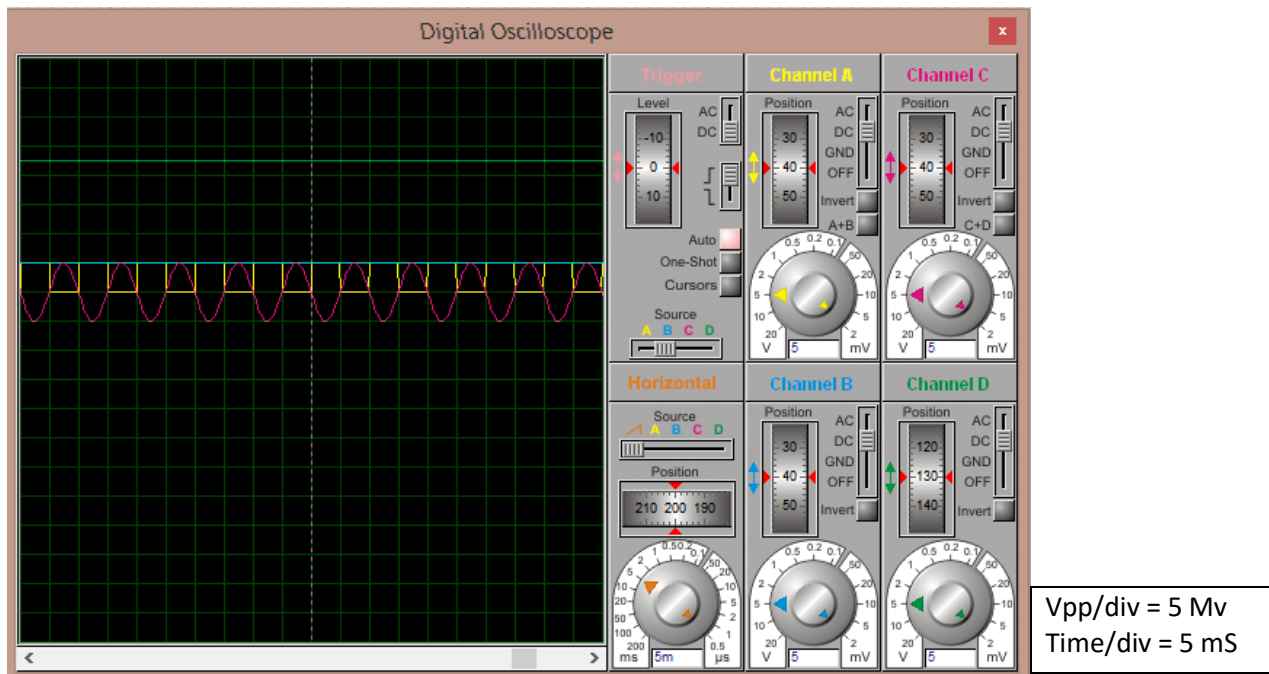
NO	Device	Information
1	Alternator	V = 5 Volt, F = 100 Hz
2	Cell	V = 5 Volt
3	Clock	F = 100 Hz
4	Ground	Pick from Terminals
5	Osiloskop	Pick from Instrument

2. Simulate! Then an oscilloscope window will appear



3. Try to understand about trigger source, signal type, volt / div, signal position, and time / div by setting each switch. Then set the switches as in Figure 2.4.

4. The simulation will show us the signal lines from the battery, clock and alternator. Draw your simulation results!



And give an explanation!

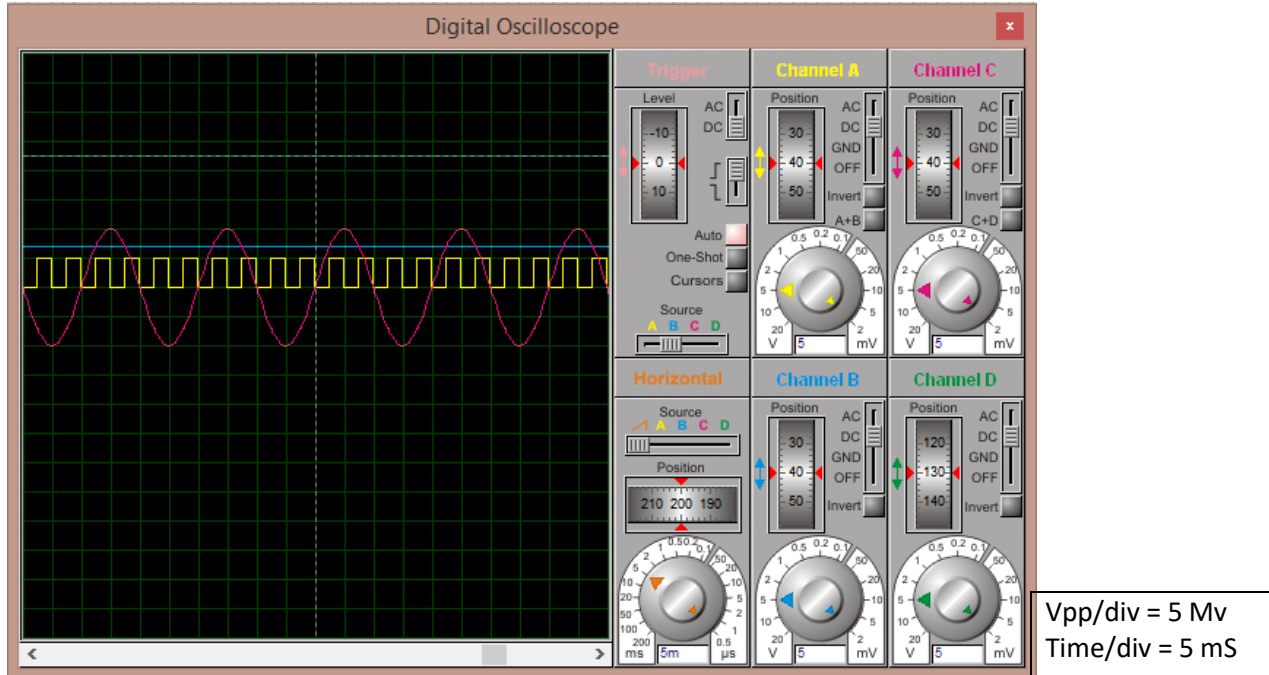
Channel A is at position 40, with DC voltage, and the amount of volt / div is 5mV. Channel B is at position 40, DC voltage, volt / div is 5mV. Channel C occupies position = 40, DC voltage, volt / div = 5mV. Channel D is at position 130, DC voltage, volt / div is 5mV. The trigger is at level 0 with DC voltage sourced in channel B. Horizontal at position 200 with volt / div = 5mV. In channels A, B, C and D have a consistent pattern.

5. Turn off the simulation! Then edit your component as shown in Table 2 below.

Table 2. Component Properties

NO	Device	Information
1	Alternator	V = 10 Volt, F = 50 Hz
2	Cell	V = 7 Volt
3	Clock	F = 200 Hz

6. Run simulation! Draw your simulation results!



And give an explanation!

Signal Trigger 0 with DC voltage. Signal Channel A = 40 with DC voltage, volt / div = 5mV.

Signal Channel B = 40, DC voltage, volt / div = 5mV. Signal Channel C = 40, DC voltage, volt / div = 5mV. Signal Channel D = 130, DC voltage, volt / div = 5mV. Horizontal signal 200, volt / div = 5.

7. Answer these questions!

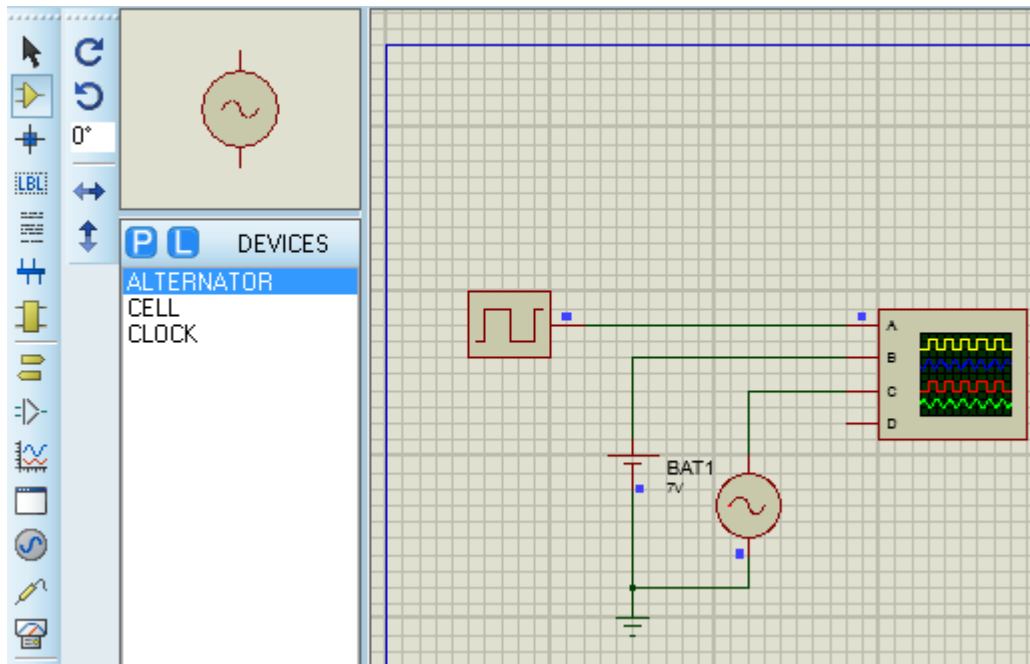
- a. What is the difference between analog and digital signals?
 - Analog signal is a data signal in the form of a continuous wave, which carries information by changing wave characteristics.
 - Digital signals are data signals in the form of pulses that can undergo sudden changes and have magnitudes of 0 and 1.
- b. What is the signal character of each component?
 - Signal from Alternator :(Analog). Because continue
 - Signal from Battery :(Analog). Because stable
 - Signal from Clock source :(Digital). Because regular pulses

8. Make conclusions based on your observations on various types of signals.

Alternators include analog signals, batteries including analog signals, and Clock source including digital signals.

2nd Experiment. Digital Signal Range Exercises

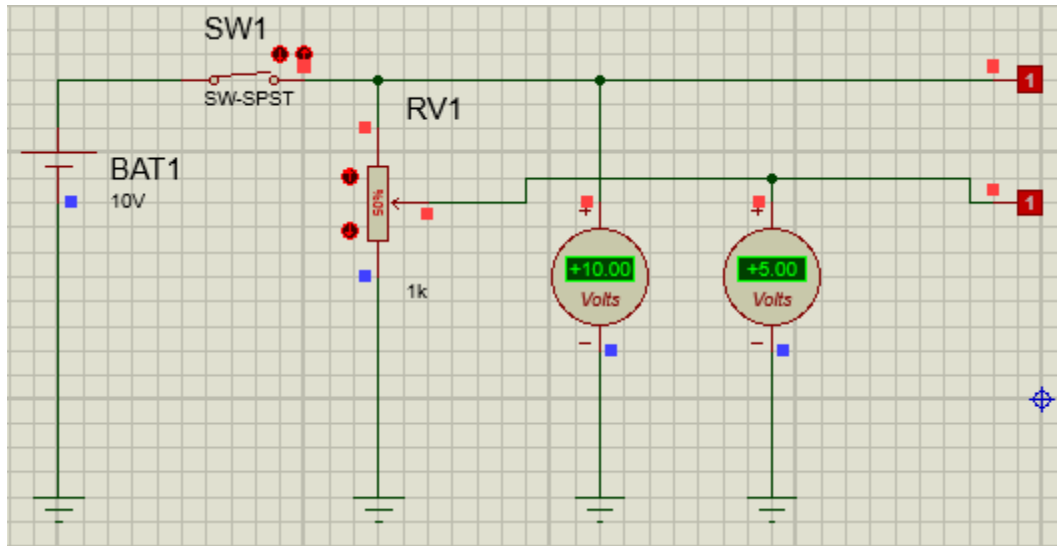
1. Create a series of proteus 8 simulations in Figure 2.5.



Tabel 3. Components in the circuit

NO	Device	Information
1	Cell	Edit to 10V
2	SW-SPST	
3	POT-HG	
4	Logicprobe	
5	Ground	Pick from Terminals
6	DC Voltmeter	Pick from Instrument

2. Run Simulation like Figure 2.6!



3. Click SW1! Based on your simulation, fill in the tick points below!

- a. Voltmeter DC 1 : +10.00 Volt
- b. Voltmeter DC 2 : +5.00 Volt
- c. Logicprobe 1 shows logic conditions:1
- d. Logicprobe 2 shows logic conditions:1

4. Click the RV1 component (variable resistor / POT-HG) up and down! And then fill in the points below!

- a. Logicprobe 2 shows logic conditions **1 (High).**
If Voltmeter DC 2 : +3.01 Volts until +10.00 Volts
- b. Logicprobe 2 shows logic conditions **0 (Low).**
If Voltmeter DC 2 : +1.5 Volts until 0 Volts

5. Make conclusions based on your analysis in digital signal range training!

When logicprobe on logic 1 condition, then the DC voltmeter is +3.01 to +10.00. Logicprobe 2 under the condition of logic 0, then the voltmeter DC +1.5 to 0.