

	MINISTRY OF RESEARCH, TECHNOLOGY AND HIGHER EDUCATION UNIVERSITAS NEGERI JAKARTA FACULTY OF MATHEMATICS AND NATURAL SCIENCES Hasyim Asjari Building, Campus A UNJ Rawamangun Jl. Rawamangun Muka, East Jakarta 13220 Tel/Fax 021-4894909	WORK INSTRUCTION (IK)	
		HAMEG'S OSCILLOSCOPE	
		No. Document	OH/LF/2022
		Edition	01
		Revision	0
		Is effective	February 2022
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1. Objective

This instruction is needed as a guide in operating the Hameg type HM 303 brand oscilloscope

2. Scope

These work instructions cover oscilloscope calibration and oscilloscope operation

3. Executor

related PLP.

4. Terms and Definitions

Oscilloscope in a physics laboratory, it is a measuring instrument used to measure electric voltage, frequency and see the waveform of an electric voltage source

5. Tool Image



Important parts of an oscilloscope:

- Volt/div Selector Knob : displays the height or crest of the wave
- Time selector knob : displays the wave width
- Displays : to display the measurement results
- CH 1 and CH2 inputs : to connect the oscilloscope probe/cable to the source to be measured
- CH I/II button : Select the input channel to use
- Power : To turn the oscilloscope off and on
- Intense knob : Set the brightness of the display light
- Focus knob : Set the thickness of the wave line
- Red knob : as initial calibration
- x-pos knob : set the left and right wave positions
- y-pos knob : set the position of the top and bottom of the wave

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6. Work Instructions

6.1 Oscilloscope Operation.

6.1.1 calibration

- Insert the probe/cable into **the ch1 or ch 2 input**
- Set **the switch** to the input position ch1 or ch2
- Connect the probe to the **Cal point of** the oscilloscope
- Turn on the oscilloscope, adjust the brightness of the oscilloscope and the thickness of the wave lines by turning the **intensity** and **focus buttons**
- After the square waveform appears, adjust the volt and **time selector knobs** to get the wave height
- Make sure all the **red buttons** are in the maximum position or stuck to the right
- Calculate the peak to peak voltage, the results must match the calibration value printed on the oscilloscope

6.1.2 Voltage and frequency measurements

- Set **the input** to CH1 or CH2.
- Attach the probe to the CH1 or **CH2 input** , for example using **CH1**
- Connect the probe cable to the source to be measured, for example an audio generator
- Turn on the oscilloscope **power** and audio generator
- Give input **frequency** and **amplitude** to the audio generator,
- **the volt/div CH1** and **time/div CH2** knobs until the waveform from the audio generator or source to be measured is read.
- Adjust **the knob x-pos** and **y-pos** position the measured wave in the middle of the screen or easy to read
- Calculate the voltage by measuring **the number of squares** from **the top peak to the bottom peak X Volt/Div X probe magnification**
($V_{pp} = \text{number of vertical boxes} \times \text{Volt/div} \times \text{Probe}$)
- Calculate the frequency by measuring the amplitude first, namely by measuring **the number of boxes 1 peak/belly to 1 valley X Time/Div**
 $f = 1/T$ (T = number of boxes in 1 wave X Time/div)

7. Oscilloscope Maintenance:

After finishing use, turn off the oscilloscope. Unplug the power cable from the power source

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8. Storage

Store the oscilloscope in a storage cupboard, at room temperature

9. Endorsement

	Name	Position	Signature	Date
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