

Automatic Control Laboratory 2

(Location: Electrical Engineering Department, 1st floor)

1- Lab Photos



Photo 1



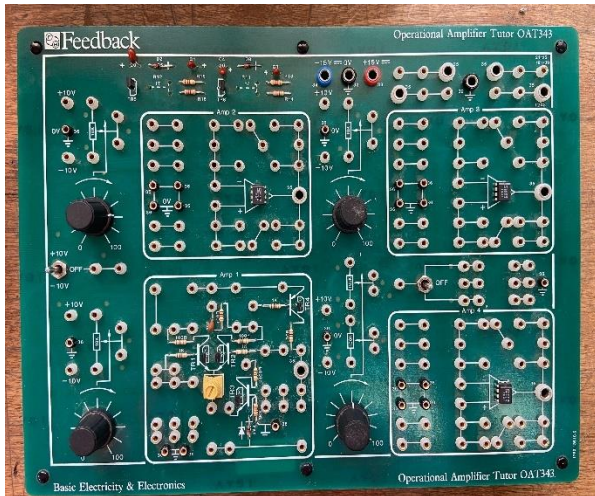
Photo 2

2- Lab Description

The Automatic Control lab 2 is used to teach the practical part of the courses of Electrical Testing (1) for students of the third level of the Electrical Power Engineering and Machines Program. It is also used in teaching the laboratory part of electrical machines courses for students of the other programs.

3- Lab Equipment

The following is a table of equipment and devices that are used in the experiments.



Operational Amplifier Tutor

Specification:

Model: OAT343

Rating: 15v-DC

• the OAT343 Trainer is an open-board construction mounted in a protective tray containing:

- 3 Op Amp type 741
- discrete component operational amplifier
- 3 Potentiometers 10k Ω
- pair of ganged Potentiometers 100 k Ω
- 2 three-position switches (one allocated to the supply of $\pm 10V$)
- 4 sets of +10, 0, -10V sockets for supplying signals



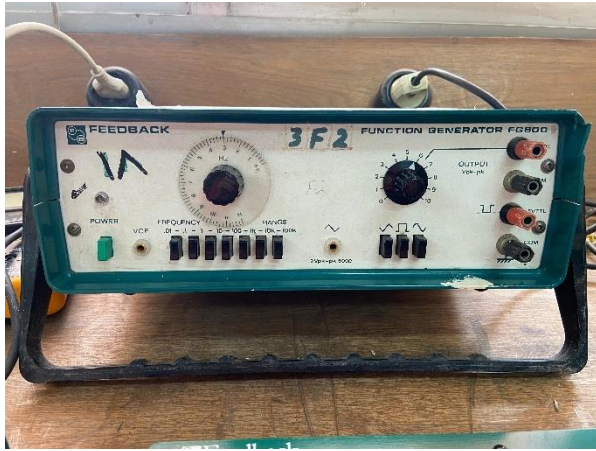
Feedback DC power supply

Specification:

Model: PS441

Rating: $\pm 15V$ d.c./200mA

- Dc Power supply of +15, 0, -15V sockets for supplying power to modules
- provide power to the OAT343 Trainer module



Power Function Generator

Specification:

Model: FG600

- Two terminals provide pulses of 5V amplitude with 50 Hz frequency.
- Two terminals provide different wave forms (triangular, square, and sine wave) by selecting the required wave shape using lower buttons.
- The Peak-to-Peak voltage level obtained is between 0 to 10V.
- The frequency provided of the wave form is from 0.002 to 1200kHz.



Digital Storage Oscilloscope

Specification:

Model: UTD2025CL

Rating: 25MHz

- Two channel oscilloscopes used to observe the input, output, and error signals for different order systems.
- In frequency response experiment, the phase shift is measured using cursor button while the amplitude of the input and output is shown from measure button.

4- Lab Experiments

First year:

Course: None

Code: None

Second year:

Course: None

Code: None

Third year:

Course: Electrical Testing (1)

Code: ELE305

- 1- Exp-1: Design and perform Addition, multiplication, and integration using operational amplifiers experiment.
- 2- Exp-2: Design and perform first order system for unit step input.
- 3- Exp-3: Design and perform second order system for unit step input.
- 4- Exp-4: Study state error evaluation subjected to different input signals.
- 5- Exp-5: Frequency response method: stability investigation of linear closed loop system and frequency response.
- 6- Exp-6: Dc servo system.

Fourth year:

Course: None

Code: None

5- Lab Maintenance

The laboratory is evaluated to determine the experiments and their readiness to participate in the teaching process and to determine the required maintenance periodically, and the capabilities and problems of the laboratory are periodically reported after each experiment.